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Ongoing Monitoring Interpretive Report (September 2020 to April 2023)

HMAS Cairns and Former WWII RAN Fuel Installation

28-Feb-2024
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Prepared by

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Table of Contents

List of Tables (in text)

List of Figures (Appendix A)

List of Tables (Appendix B)

List of abbreviations

Abbreviation	Term
AECOM	AECOM Australia Pty Ltd
AFFF	Aqueous Film Forming Foam
AHD	Australian Height Datum
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure
BOM	Bureau of Meteorology
CSM	Conceptual Site Model
Defence	Department of Defence
DFI	Defence Fuel Installation
DO	Dissolved Oxygen
DoH	Department of Health
DSI	Detailed Site Investigation
EC	Electrical conductivity
GWE	Groundwater Elevation
HEPA	Heads of Environment Protection Authority
HHERA	Human Health and Ecological Risk Assessment
HMAS	His Majesty's Australian Ship
LOR	Limit of Reporting
MW	Monitoring Well
NEMP	National Environmental Management Plan
NHMRC	National Health and Medical Research Council
OMP	Ongoing Monitoring Plan
OMIR	Ongoing Monitoring Interpretive Report
ORP	Oxidation Reduction Potential
PFAS	Per- and poly-fluoroalkyl substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PFHxS	Perfluorohexane sulfonate
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control
RAN	Royal Australian Navy
SAQP	Sample and Analysis Quality Plan
SW	Surface Water
SWL	Standing Water Level
WWII	World War II

Units	Term
%	percent
°C	Degrees Celsius
ha	hectare
km	Kilometre
L	Litres
L/s	Litres per second
m^3	Metres cubed
m AHD	Metres Australian Height Datum
m btoc	Metres below top of casing
µS/cm	Microsiemens per centimetre
µg/L	Micrograms per Litre
mg	Milligrams
mg/kg	Milligrams per kilogram
Mg/L	Milligrams per litre
mm	millimetres
mV	millivolts

Executive summary

Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) to implement the Ongoing Monitoring Plan (OMP) (Defence, 2020a) presented in the PFAS Management Area Plan (PMAP) (Defence, 2020b) for monitoring select per- and poly-fluoroalkyl substances (PFAS) at His Majesty's Australian Ship (HMAS) Cairns and the former World War II (WWII) Royal Australian Navy (RAN) Fuel Installation, located in Cairns, Queensland.

This Ongoing Monitoring Interpretive Report (OMIR) summarises the results of the monitoring undertaken over the period between September 2020 and April 2023. The scheduled sampling events were completed in September 2020, April 2021, October 2021, April 2022, September 2022 and April 2023. This report provides interpretation of changes that have occurred during the monitoring period.

Objective

The overarching objective of implementing the OMP is to provide information on changes in the location and concentrations of PFAS within HMAS Cairns, the WWII RAN Fuel Installation and surrounding areas, herein collectively referred to as the Management Areas. There are two Management Areas as defined in the PMAP (Defence, 2020b):

- The HMAS Cairns Management Area comprises HMAS Cairns and land situated to the east and south of the boundary, including Trinity Inlet. This Management Area is herein referred to as on-Base.
- The WWII RAN Fuel Installation Management Area comprises the former WWII RAN Fuel Installation, Cairns Botanic Gardens, private residential properties along Greenslopes Street and Collins Avenue. This Management Area is located approximately 3.5 km from HMAS Cairns and is herein referred to as off-Base.

The locations of the Management Areas are shown in **Figure F1** in **Appendix A**.

The data collected in this program help inform risk management decisions by Defence and State Government agencies which help protect human health and the environment.

Monitoring scope

AECOM completed periodic monitoring of groundwater, surface water and sediment between September 2020 and April 2023 in general accordance with the Sampling and Analysis Quality Plan (SAQP) developed by AECOM (2022a). This monitoring targeted PFAS, namely perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and perfluorohexane sulfonate (PFHxS) at selected locations in both Management Areas.

What is an 'order of magnitude'?

This refers to something 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.

Interpretive assessment

Data collected during the monitoring period were compared to historical data for the included sampling locations and the following was observed:

- PFAS concentrations in groundwater were within the same order of magnitude as historical results and within the known extent of the PFAS contaminant plume[1] (Aurecon, 2019 and 2020).
- PFAS concentrations at surface water sample locations were generally within the same order of magnitude as historical results and did not

[1] PFAS contaminant plumes are areas of groundwater with elevated PFAS concentrations that are slowly moving from the source areas in the same direction that the groundwater flows.

exceed the adopted human health recreational guideline value. One exception was at surface water location SW030 at HMAS Cairns where a new exceedance of the adopted human health recreational use guideline was reported in September 2022. However, it is noted that the concentration returned to below the guideline value in the subsequent monitoring event of April 2023. This result may be associated with above average rainfall through the 2022 dry season and 2022/2023 wet season. This may have resulted in increased surface water runoff and/or infiltration from PFAS source areas and groundwater discharge to Trinity Inlet resulting in the observed PFAS concentration in surface water.

- PFAS concentrations in sediment sample locations were generally consistent with historical results. First-time detections of PFOA were reported within the Management Areas at concentrations close to the laboratory limit of reporting (LOR). These first time detections were followed by concentrations below the laboratory LOR in subsequent sampling rounds and are not considered significant due to this fluctuation close to the detection limit.

Conceptual Site Model and risk profile

The monitoring period has provided additional data to further understand the potential changing conditions of the PFAS concentrations in groundwater, surface water and sediment. Comparison to the available historical dataset indicates that PFAS concentrations in groundwater, surface water and sediment are relatively stable since the conceptual site model (CSM) was developed in the Detailed Site Investigation (DSI) (Aurecon, 2019 and 2020) and the plume extent has not changed.

The CSMs for both HMAS Cairns and the former WWII RAN Fuel Installation were reviewed and no changes were identified to sources, pathways, or receptors.

The data collected over the monitoring period suggest that the risk profile to human health and ecological receptors within the Management Areas as presented in the PMAP is unchanged.

Conclusions

The monitoring conducted over the period covered within this report is considered to have met the objectives of the SAQP (AECOM, 2022a) and the overall OMP (Defence, 2020a).

Following a review of the data collected during the current monitoring period, there have been no significant changes to the understanding of risks associated with PFAS in the Management Areas, spatial distribution of PFAS and the need for monitoring of additional media. Based on this, there are currently no triggers for the review of the OMP.

The monitoring network is considered generally appropriate and sufficient for the program objectives. It is recommended that the ongoing monitoring program of groundwater, surface water and sediment is continued to monitor the extent of PFAS, potential migration and any associated risk changes.

1.0 Introduction

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, 2020a) at His Majesty's Australian Ship (HMAS) Cairns and the former World War II Royal Australian Navy (WWII RAN) Fuel Installation located in Cairns, Queensland. There are two Management Areas as defined in the PFAS Management Area Plan (PMAP) (Department of Defence, 2020b):

- The HMAS Cairns Management Area comprises HMAS Cairns and land situated to the east and south of the boundary, including Trinity Inlet. This Management Area is herein referred to as on-Base.
- The WWII RAN Fuel Installation Management Area comprises the former WWII RAN Fuel Installation, Cairns Botanic Gardens, private residential properties along Greenslopes Street and Collins Avenue. This Management Area is located approximately 3.5 km from HMAS Cairns and is herein referred to as off-Base.

The locations of the Management Areas are shown in **Figure F1** in **Appendix A**. The monitoring targeted PFAS in groundwater, surface water and sediment at selected locations in these Management Areas (shown in **Figure F2** and **Figure F3** in **Appendix A**).

To meet the objectives of the OMP (Defence, 2020a) and PMAP (Defence, 2020b), the monitoring was undertaken in accordance with Sampling and Analysis Quality Plan (SAQP) (AECOM, 2022a) (refer to **Appendix B**). The SAQP was reviewed and updated as required, prior to each monitoring event.

This Ongoing Monitoring Interpretive Report (OMIR) has been prepared in general accordance with the Defence (2022) *PFAS OMP Annual Interpretive Report Guidance* (Version 0.4) issued in October 2022 (Defence, 2022). This report summarises the results of the monitoring completed in the monitoring period from September 2020 to April 2023 (hereafter referred to as "the monitoring period").

1.1 Purpose and objective

The objective of the monitoring program set out in the OMP is to continue to assess changes in the nature and extent of PFAS within the environment, where Defence's historical use of legacy Aqueous Film Forming Foam (AFFF) has led to a potentially elevated risk to a receptor, or potential future risk to a receptor within the Management Area.

Assessing changes in the distribution, concentration, and transport (pathways) of the contaminants against appropriate guideline values provides:

- An evidence-based approach for targeted and effective risk management decision making to protect human health and environmental receptors.
- An early warning indication that additional management of PFAS contamination may be warranted in areas not currently understood to be affected by PFAS.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PMAP (Defence, 2019b).

1.2 Scope

The scope of works for this OMIR is to assess changes to the nature and extent of selected PFAS over the monitoring period and evaluate if these changes have implications for the understanding of the conceptual site model (CSM) and the risk profile with respect to PFAS impacts at the Site.

This included the evaluation of data reported during the current monitoring period in the following factual reports, which are included in **Appendix B**:

- *Sampling Event Factual Report, September/October 2020. PFAS OMP – HMAS Cairns and Former WWII RAN Fuel Installation.* 31 May 2021 (AECOM, 2021).
- *Sampling Event Factual Report – April 2021. PFAS OMP – HMAS Cairns and Former WWII RAN Fuel Installation*. 27 July 2021 (AECOM, 2021).

- *Sampling Event Factual Report – October 2021. PFAS OMP – HMAS Cairns and Former WWII RAN Fuel Installation*. 1 March 2022 (AECOM, 2022b).
- *Sampling Event Factual Report, April 2022. PFAS OMP – HMAS Cairns and Former WWII RAN Fuel Installation.* 26 August 2022 (AECOM, 2022c).
- *Sampling Event Factual Report, September 2022. PFAS OMP – HMAS Cairns and Former WWII RAN Fuel Installation.* 1 December 2022 (AECOM, 2023a).
- *Sampling Event Factual Report, April 2023. PFAS OMP – HMAS Cairns and Former WWII RAN Fuel Installation*. 15 June 2023 (AECOM, 2023b).

AECOM also compared data presented in this report to the historical data set for HMAS Cairns and former WWII RAN Fuel Installation.

2.0 Site setting

2.1 Site description

The following table summarises the description of the Management Areas and environmental setting presented in the PMAP (Defence, 2020b).

Table 1 Site identification and setting summary

Element	Description
Base ID	0009
Base Location	HMAS Cairns is located approximately 2 km southeast of the Cairns Central Business District (CBD) and sits on the western shore of Trinity Inlet, within Cairns Regional Council local government area. HMAS Cairns comprises of three lots: HMAS Cairns: Lot 183 on SP207572 Draper Street Block: Lot 485 on NR4638 Seabed Area: a portion of Lot 16 on SP199206 The former WWII RAN Fuel Installation at Edge Hill is located approximately 3.5 km north-west of the Cairns central business district (CBD) and sits within Cairns Regional Council local government area. The WWII RAN Fuel Installation forms part of the Tanks Art Centre within the Cairns Botanical Garden. The Tank area covers approximately 2.35 hectares (ha), comprising three lots: WWII RAN Fuel Installation Tanks 1-2: Lot 346 on RP711610 WWII RAN Fuel Installation Tanks 3-5: Lot 349 on SP241305 WWII RAN Fuel Installation Former Fire Station and Foam Tank: Lot 1 on SP201233.
Regional Climate	Cairns has a tropical climate with a distinct wet season and dry season. Cairns generally has a hot and humid summer with most rainfall occurring between January and March. From December to March, the monsoon trough brings warm to hot, humid conditions with a high chance of thunderstorm. Cyclone season normally occurs between December to April, although exceptions occur. The dry season is characterised by milder and drier conditions in the cooler months, generally between May and November. The Bureau of Meteorology (BOM) Cairns Aero weather station (number 031011), located approximately 10 km north-east of HMAS Cairns, has recorded data since 1942 and presents a record of approximately 80 years. Review of the BOM data from 1942 to July 2023 indicate the following (BOM, 2023): Mean maximum temperatures vary from 25.8°C in July to 31.5°C in December and January. Mean rainfall is 1,999.6 mm per annum.
Topography, geology, and hydrogeology	Cairns was built upon low-lying Quaternary coastal and estuarine sediments (sand, silt, and mud). A large portion of the Cairns shoreline along Trinity Inlet has been reclaimed using a combination of dredged spoil and quarried material (Defence, 2020b). **HMAS Cairns** HMAS Cairns is predominantly flat with an elevation of approximately 2.0 m Australian Height Datum (AHD) (Defence, 2020b). Topography of the surrounding area to the north, south and west is similar in elevation to HMAS Cairns. Trinity Inlet to the east, is at a lower elevation. Beneath HMAS Cairns, groundwater flows east towards Trinity Inlet with a hydraulic gradient that varies across the Base with a shallow gradient in the northwest and

Element	Description
	south-west and a steep gradient (0.04) in the central east portion of the Base close to the shoreline (Defence, 2020b). The ground conditions below HMAS Cairns and its surrounds are highly modified through the addition of fill to raise ground levels and infilling of historical surface water bodies (creeks). It is likely that the shallow unconfined aquifer is influenced by subsurface features no longer present at the surface, including the former Alligator Creek to the north and west of the Base as well as possible paleochannels in the shallow alluvial and estuarine deposits and from areas of land reclamation to the east of the Base (Defence, 2020b). **WWII RAN Fuel Installation Management Area** The WWII RAN Fuel Installation area has an elevation between 2.0m and 30.0m AHD due to the off-Base area being on the foothills of Mount Whitfield. The elevation gently slopes from the WWII Ran Fuel Installation to the south and east towards Saltwater Creek (Defence, 2020b). The geology of the WWII RAN Fuel Installation area varies from coastal tidal flats, mangrove flats and grasslands of sand and mud to steep alluvial and colluvial fans of coarse boulder deposits and silty and clayey gravel (Defence, 2020b). Beneath the WWII RAN Fuel Installation area, groundwater is expected to flow to the south to south-east discharging to Centenary Lakes in the Cairns Botanic Gardens and to Saltwater Creek. Groundwater is expected to be seasonally influenced with rises expected during wet season and minor tidal fluctuations are possible in groundwater immediately adjacent to Saltwater Creek during high tides (Defence, 2020b). Multiple aquifers were found to underlie this area with strata descriptions indicating the presence of multiple clay layers ranging from 10m and up to 40m thick to form a confining layer to the aquifers. The clay confining layers will minimise the connection between the aquifers and restrict the vertical migration of potential contaminants (Defence 2020b).
Management Area Drainage	**HMAS Cairns** The majority of stormwater from HMAS Cairns is directed into an underground stormwater drainage system which discharges into Trinity Inlet through six stormwater outlets. Trinity Inlet is located immediately east of HMAS Cairns and is a tidal estuarine body of water that discharges north into Trinity Bay. Trinity Bay is located within the Great Barrier Reef; a World Heritage property, National Heritage place and marine park, protected matters listed as Matters of National Environmental Significance (MNES) and protected under the provisions of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act). The Great Barrier Reef Marine Park boundary starts at the mouth of Trinity Inlet, located approximately 1.8km north of HMAS Cairns. The mangroves on the opposite side of Trinity Inlet from HMAS Cairns are identified as an estuarine conservation zone under the Great Barrier Reef Marine Park. Alligator Creek was previously present along the northern boundary of HMAS Cairns and flowed from the west and discharged into Trinity Inlet. The creek was infilled between 1952 and 1965. **WWII RAN Fuel Installation Management Area** Stormwater runoff from the WWII RAN Fuel Installation will travel east, along the gutters in Collins Avenue, entering a drainage system which discharges into Saltwater Creek which is an estuarine creek that flows through residential suburbs of Cairns, past the Cairns Airport and into the Port of Cairns and the Great Barrier Reef.

Element	Description
Current and Previous land use (including AFFF use)	The main operations at HMAS Cairns include maintenance, logistics and administrative support for Cairns based fleet units while providing refit and training support for neighbouring Pacific Island Nations. The Base is connected to town water supply and bore water is not used for Defence operations (Defence, 2020b). At HMAS Cairns, legacy AFFF has been historically stored and used at the Defence Fuel Installation (DFI) and areas formerly used for firefighting training. These firefighting training areas are in the southern portion of HMAS Cairns, north of training ship (TS) Endeavour, and a previously grassed area just north of the boat ramp in the central eastern portion of the Base, shown on **Figure F2** in **Appendix A**. At the WWII RAN Fuel Installation, legacy AFFF was used at the former fire station and foam tank building south of Tank 2 and stored at the former foam tank building near the southern wall of Tank 4. Refer **Figure F3** in **Appendix A** for tank locations.
Surrounding land uses and potential alternative sources.	The locations of the Management Areas are shown in **Figure F1** in **Appendix A** with aerial imagery. At HMAS Cairns, surrounding land uses include industrial and commercial properties associated with the Far North Queensland Ports Corporation, the Queensland Sugar Terminal, the Origin LPG Distribution Facility, and other businesses. Trinity Inlet is located directly to the east. The following areas are considered potential off-Base sources of PFAS for HMAS Cairns: • Fuel depots to the immediate north and west. AFFF is commonly stored and used at fuel depots for fire suppression. • Queensland Fire and Rescue Station 700 m to the north where firefighting training potentially occurred. • The Cape York Hotel 800 m to the west, which caught fire in 1987 from a liquified petroleum gas explosion. AFFF was anecdotally used to extinguish the fire. • Southern wastewater treatment plant located more than 3.5 km upstream Trinity Inlet, which discharges to the inlet. At the WWII RAN Fuel Installation surrounding land uses include residential, recreational open space including the Cairns Botanical Gardens and low impact industry. Saltwater Creek is located to the east of Tank 1 and Tank 2. The Cairns Airport presents a potential alternative PFAS source, located 800m north of the WWII RAN Fuel Installation. The projected land uses within the Management Areas are not anticipated to materially change within the next 5 years.

2.2 Management areas

The HMAS Cairns Management Area is approximately 273 hectares and comprises HMAS Cairns situated down gradient and east of Trinity Inlet, south industrial areas and Chinaman Creek.

The former WWII RAN Fuel Installation Management Area is approximately 53 hectares and comprises the former WWII RAN Fuel Installation and adjacent areas including private residential properties as well as land down hydraulic gradient including publicly accessible Cairns Botanic Gardens.

The HMAS Cairns Management Area and the former WWII RAN Fuel Installation Management Area are shown on **Figure F1** in **Appendix A**.

2.3 Source areas

The primary and secondary source areas that were identified as PFAS source areas in the PMAP (Defence, 2020b) are outlined in **Table 2**.

Table 2 Identified source areas (adapted from PMAP) (Department of Defence, 2020b)

Source area	HMAS Cairns	Former WWII RAN fuel installation
Primary Source Area	Storage and use of AFFF on Base including at the DFI and areas formerly used for firefighting training as displayed on **Figure F2** in **Appendix A.**	• Storage and use of legacy AFFF at the former fire station and foam tank building south of Tank 2 and near the southern wall of Tank 4. The locality of tanks are displayed on **Figure F3** in **Appendix A.**
Secondary Source Area	• Impacted soil • Impacted surface water • Impacted groundwater.	• Impacted soil • Impacted groundwater.
Alternative sources outside the Management Areas	• Queensland Fire and Rescue Station 750 m north of the Base. • Off Base storage, use and spills of AFFF in the Cairns Industrial Area immediately to the north and west. • Discharge of treated effluent from wastewater treatment plants (>3.5 km upstream of Base) into Trinity Inlet.	• Historical and current storage and use of AFFF at Cairns Airport, 800 m to the north.

3.0 Sampling and analytical methodology

3.1 Sampling location rationale and methodology

The sampling methodology is presented in the SAQP (AECOM, 2022a). SAQP revisions have been issued since 2020 to capture site-specific changes and minor program changes.

The SAQP (AECOM, 2022a) outlined the proposed schedule and rationale for sampling, prescribing six-monthly groundwater, surface water and sediment sampling within the HMAS Cairns Management Area and the former WWII RAN Fuel Installation Management Area.

The SAQP provides the list of groundwater monitoring wells, surface water and sediment locations sampled during each sampling event, along with the sampling methodology for each of the media. The current SAQP has been included in **Appendix B**.

A summary of the monitoring works completed in accordance with the SAQP (AECOM, 2022a) between September 2020 and April 2023 is provided in **Table 3**

Table 3 Summary of monitoring works

Monitoring Event (Sampling dates)	Scope as per SAQP	Samples Collected	Analysis
September/October 2020 Groundwater, Surface Water and Sediment Sampling Event (AECOM, 2021b) (29 September – 1 October 2020)	**HMAS Cairns**		
	30 GW[1] samples collected from groundwater monitoring wells.	As described in the SAQP.	PFAS extended suite
	6 SW[1] and 6 SD[1] samples collected from the edge of Trinity inlet, targeting stormwater outfall from HMAS Cairns.		
	Former WWII RAN Fuel Installation		
	3 GW samples collected from groundwater monitoring wells.	As described in the SAQP.	PFAS extended suite
	3 SW and 3 SD samples collected from Saltwater Creek and Centenary Lakes.		
April 2021 Groundwater, Surface Water and Sediment Sampling Event (AECOM, 2021c) (7-9 April 2021)	**HMAS Cairns**		
	30 GW[1] samples collected from groundwater monitoring wells.	As described in the SAQP.	PFAS extended suite
	6 SW[1] and 6 SD[1] samples collected from the edge of Trinity inlet, targeting stormwater outfall from HMAS Cairns.		
	Former WWII RAN Fuel Installation		
	3 GW samples collected from groundwater monitoring wells.	As described in the SAQP.	PFAS extended suite
	3 SW and 3 SD samples collected from Saltwater Creek and Centenary Lakes.		
October 2021 Groundwater, Surface Water and Sediment Sampling Event (AECOM, 2021d)	**HMAS Cairns**		
	30 GW[1] samples collected from groundwater monitoring wells.	30 GW samples collected from groundwater monitoring wells. Additional four groundwater	PFAS extended suite

Monitoring Event (Sampling dates)	Scope as per SAQP	Samples Collected	Analysis
(26 – 28 October 2021 with additional sampling on 7 and 8 December 2021 to confirm results)		samples collected to verify results.	
	6 SW[1] samples collected from edge of Trinity inlet, targeting stormwater outfall from HMAS Cairns.	As described in the SAQP.	
	6 SD[1] samples collected from edge of Trinity inlet, targeting stormwater outfall from HMAS Cairns.		
	Former WWII RAN Fuel Installation		
	3 GW samples collected from groundwater monitoring wells.	2 GW samples collected from groundwater monitoring wells.1 location was dry.	
	3 SW and 3 SD samples collected from Saltwater Creek and Centenary Lakes	All SW samples collected.3 SD samples collected from Saltwater Creek and Centenary Lakes. One additional sediment sample collected at location SD036 to verify results.	PFAS extended suite
April 2022 Groundwater, Surface Water and Sediment Sampling Event (AECOM, 2022b) (25 March – 5 April 2022)	**HMAS Cairns**		
	30 GW[1] samples collected from groundwater monitoring wells.	As described in the SAQP.	PFAS extended suite
	6 SW[1] and 6 SD[1] samples collected from the edge of Trinity inlet, targeting stormwater outfall from HMAS Cairns.		
	Former WWII RAN Fuel Installation		
	3 GW samples collected from groundwater monitoring wells.	As described in the SAQP.	PFAS extended suite
	3 SW and 3 SD samples collected from Saltwater Creek and Centenary Lakes.		
September 2022 Groundwater, Surface Water and Sediment Sampling Event (AECOM, 2022c) (11 – 13 September 2022)	**HMAS Cairns**		
	30 GW[1] samples collected from groundwater monitoring wells.	As described in the SAQP.	PFAS extended suite
	6 SW[1] and 6 SD[1] samples collected from the edge of Trinity inlet, targeting stormwater outfall from HMAS Cairns.		
	Former WWII RAN Fuel Installation		
	3 GW samples collected from groundwater monitoring wells.	As described in the SAQP.	PFAS extended suite

Monitoring Event (Sampling dates)	Scope as per SAQP	Samples Collected	Analysis
	3 SW and 3 SD samples collected from Saltwater Creek and Centenary Lakes.		
April 2023 Groundwater, Surface Water and Sediment Sampling Event (AECOM, 2023b) (3- 5 April 2023)	**HMAS Cairns**		
	30 GW[1] samples collected from groundwater monitoring wells.	As described in the SAQP.	PFAS extended suite
	6 SW[1] and 6 SD[1] samples collected from the edge of Trinity inlet, targeting stormwater outfall from HMAS Cairns.		
	Former WWII RAN Fuel Installation		
	3 GW samples collected from groundwater monitoring wells.	As described in the SAQP.	PFAS extended suite
	3 SW and 3 SD samples collected from Saltwater Creek and Centenary Lakes.	All SW samples collected. All SD samples collected, although sample SD101 from Century Lakes was not laboratory analysed as the site conditions had changed and the sample was not considered representative.	

Notes: GW = groundwater; SW = surface water; SD = sediment

#1. 15 groundwater monitoring wells at HMAS Cairns were sampled at both high tide and low tide.

3.2 Deviations from SAQP Requirements

Deviations from the SAQP methodology during the monitoring period are summarised in **Table 4**.

Table 4 Deviations from SAQP

SAQP Requirement	Sampling Event Deviation	Impact of deviation on data set
September/October 2020		
The water quality meter will be calibrated each day prior to the commencement of field activities.	The water quality meter was calibrated at the beginning of the sampling event prior to mobilisation to Cairns from Townsville.	This is not considered to impact the objectives of the OMP as the water quality meter was calibrated prior to use on the monitoring program.
Groundwater samples will be collected from all monitoring wells using no-purge methodology HydraSleeve™.	Groundwater samples from MW031 and MW036 were collected using a bailer from the screened interval due to insufficient volume of water collected from the HydraSleeve™ as there was less than 0.4 m of water in these wells.	There is not expected to be an impact by using the bailer to collect the groundwater sample as this is an accepted method for groundwater sample collection in instances where low well volumes are present. The concentrations of PFAS reported in the samples from MW031 and MW036 were comparable to historical results (Aurecon, 2020) and subsequent results (AECOM, 2021c and 2022) at these locations, therefore the deviation is not considered to impact the reliability of the results.
October 2021		
Eighteen groundwater locations were identified to be sampled as part of this event.	Monitoring well MW036 was dry and therefore no sample was collected.	The purpose of gauging and sampling MW036 was to assess changes in PFAS concentrations over time downgradient of the Tanks 3 to 5 at the former WWII RAN Fuel Installation. This location is the most downgradient well located in the WWII RAN Fuel infrastructure Management Area and PFAS has historically been detected at this location. This well is often dry in the dry season sampling event indicating that groundwater levels fluctuate between wet and dry season conditions.
Thirty groundwater samples to be collected from groundwater monitoring wells at HMAS Cairns and three sediment samples to be collected at the WWII RAN Fuel Infrastructure Management Area.	Four additional groundwater samples (MW009, MW016, MW018, MW019) and one additional sediment sample (SD036) were collected following the main round of sampling to confirm results.	Potentially anomalous results were identified during the October 2021 sampling round and subsequent sampling was conducted to confirm the results.
December 2021		
Sampling in December 2021.	Resampling of locations MW009, MW016, MW018, MW019 and SD036 to confirm results from October 2021 dry season sampling event.	New detections of 6:2 Fluorotelomer Sulfonate (FTS) at MW009 and 6:2 FTS and Perfluorodecane sulfonic acid (PFDS) at MW018 in October 2021 were not confirmed by the resampling in December 2021. An increase in concentrations of 6:2 FTS at MW016 since the previous rounds was confirmed by the December 2021 sampling.

SAQP Requirement	Sampling Event Deviation	Impact of deviation on data set
		An increase in concentrations of 6:2 FTS at MW019 was not confirmed by the resampling in December 2021 with results reported at lower concentrations than the October 2021 sampling event. The detection of perfluorooctanoic acid (PFOA) at SD036 was confirmed by the December 2021 resampling.
April 2022		
Sampling location MW011 and MW018	Groundwater was sampled at these locations during low tide, however, an error by the laboratory resulted in no analytical data being available for these sample locations.	Results for the high tide sampling event were reported and therefore the impact of the laboratory error has been limited to two samples in the low tide sampling event.
Laboratory analysis to be completed at standard limit of reporting.	Laboratory limit of reporting (LOR) values were adjusted due to sample matrix interference or high analyte concentrations for the following samples: MW002_HT MW002_LT MW004_HT MW005_HT MW007_HT MW007_LT MW014_HT.	No impact to this sampling event as PFAS was reported for all samples and these concentrations were able to be compared to adopted guidelines.
September 2022		
Water quality parameters to be collected at each surface water location.	Water quality parameters were not taken at SW030 due to an insufficient volume of water at this location.	A potential data gap at this location for water quality parameters only. No additional impacts to dataset. Water quality parameters were collected for this location in the subsequent sampling round to close the data gaps.
Water quality parameters to be collected at each groundwater location.	Water quality parameters were not taken at MW002 due to insufficient water at this location.	A potential data gap at this location for water quality parameters only. No additional impacts to dataset. Water quality parameters were collected for this location in the subsequent sampling round.
April 2023		
Analysis of sediment sample at SD101	During sample collection it was observed to not be representative of sediment, rather gravel material that had been placed at this location.	This location is no longer able to be sampled as this location has been covered over with imported material.

SAQP Requirement	Sampling Event Deviation	Impact of deviation on data set
HydraSleeves™ installed within screened interval	HydraSleeves™ were installed based on measured well depth. Review of the provided ESdat well screen interval information indicates that there are discrepancies between documented well screen interval and the actual well depth. Therefore, it appears that the HydraSleeves™ may have been installed outside of the documented screened interval. The SAQP will be amended to include provision for addition of a top weight to shallow wells.	Review of the data and previous results for MW004, MW005, MW011 and MW035 indicates results are within the same order of magnitude and water is of similar or comparable condition to previous rounds and therefore considered to be representative of groundwater conditions at these locations.

No other changes to the monitoring locations were identified.

4.0 Quality Assurance and Quality Control

Data validation pertaining to the data in this report has been previously completed and discussed within the individual factual reports listed in **Section 1.2** and presented in **Appendix B**.

Data validation procedures employed in the assessment of the field and laboratory quality assurance/quality control (QA/QC) data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of the factual and interpretive reports.

5.0 Assessment criteria

Adopted screening criteria references national guidance in the form of PFAS National Environmental Management Plan (NEMP) (Heads of Environment Protection Authority Australia and New Zealand [HEPA], 2020), Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. At the time of preparing this report, a number of guidance documents were available in Australia including:

- PFAS NEMP 2.0, HEPA, 2020.
- Department of Health (DoH), 2019. *Health Based Guidance Values for PFAS for use in site investigations in Australia.* April 2017 [updated September 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 1999, Schedule B1*, as amended in 2013 (ASC NEPM, 2013).

The adopted PFAS screening criteria to assess the data generated as part of the monitoring are presented in **Table 5**.

Table 5 Summary of adopted human health and ecological screening criteria

Pathway	Compound	Criteria	Comment/reference
Human health receptors			
Recreational use – surface water	PFOS[1] + PFHxS[2]	2 µg/L	The values are from the PFAS NEMP (HEPA, 2020). *All surface water results have been compared to these criteria.*
	PFOA[3]	10 µg/L	
Ecological receptors			
Freshwater and marine water (95% species protection values)	PFOS	0.13 µg/L	The values are from the PFAS NEMP (HEPA, 2020). The 95% level of protection has been applied for slightly to moderately disturbed ecosystems per the OMP. *All groundwater and surface water results have been compared to these criteria.*
	PFOA	220 µg/L	

Note: PFOS= Perfluorooctane sulfonate, PFHxS = Perfluorohexane sulfonate and PFOA = Perfluorooctanoic acid

It is noted that at the time this report was prepared, no PFAS NEMP (HEPA, 2020) endorsed criteria were available for PFAS in sediment.

It is noted that for the purpose of presenting data within this report, AECOM has focussed on PFOA, PFOS and PFOS+PFHxS i.e., those PFAS for which there is either human health and/or ecological assessment criteria.

6.0 Contextual and ancillary information

6.1 Investigation projects

A recommended action under the PMAP (Defence, 2020b) was to undertake additional investigations to address uncertainties and data gaps in PFAS impacted groundwater and stormwater from HMAS Cairns prior to management option implementation (if required). These investigation works have been completed by the PMAP Delivery Lead Consultant. Investigation works, including groundwater and surface water monitoring, were used to inform a PFAS mass flux assessment (Aurecon, 2023). The outcomes of the mass flux study, in conjunction with ongoing monitoring, were considered adequate to establish a site-wide baseline of low PFAS mass flux with associated risk to receptors being generally low and acceptable.

6.2 Infrastructure projects on-Base

A summary of recent and planned infrastructure projects on Base was provided by the Environment and Sustainability Manager (ESM) for HMAS Cairns in May 2023.

The following infrastructure projects were completed within the monitoring period:

- Ship maintenance shed upgrades (2021)
- EST09130 – QSL Trestle Relieving Slab – (March 2023 to April 2023).

Upgrades to the ship maintenance shed in the centre of HMAS Cairns were underway during October and December 2021. The upgrades did not involve earthworks, at the time of sampling, and are considered unlikely to influence concentrations of PFAS or interpretation of these results.

Infrastructure project EST09130 Queensland Sugar Limited (QSL) Trestle Relieving Slab was undertaken on-Base in March and April 2023. This was confirmed by the Defence Estate Management and Planning Manager. Minor earthworks were conducted to replace the relieving slab to the entrance of the QSL wharf trestle. These minor earthworks are considered unlikely to impact concentrations or mobility of PFAS in the HMAS Cairns Management Area.

No other infrastructure activities were identified by Defence during the monitoring period.

6.3 Significant weather events

Climatic data for the region is recorded at the BOM Cairns Aero weather station (number 031011), (BOM, 2023), located approximately 7.7 km north-west of HMAS Cairns and 2.9 km north of WWII Ran Fuel Installation. No wet weather days (days with greater than 15 mm of rainfall) were experienced during sampling events within the monitoring period.

Plate A presents a summary of monthly rainfall with mean monthly rainfall data from 1942 to April 2023 (BOM, 2023).

For the September/October 2020 sampling event the total rainfall in the six months prior to September 2020 was below the mean monthly rainfall by 393 mm.

The wet 2021 season was characterised by above average rainfall. January 2021 and April 2021 recorded rainfall significantly above the average. In January 2021, the monthly rainfall total of 608 mm was above the average of 402 mm and in April 2021, the monthly rainfall total of 845 mm was above the average of 202 mm.

The total rainfall in the six months prior to October 2022 was above the mean monthly rainfall by 611 mm inclusive of the significant rainfall event in April 2022.

In the six months prior to the April 2022 sampling event, the total rainfall was 1,076 mm, below the total mean monthly rainfall of 1,574 mm for the same period. The rainfall total for April 2022 was 382 mm, which is above the long-term average of 202 mm. The above average rainfall recorded in April 2022 occurred between 22 and 26 April 2022, which was after the April 2022 sampling round which occurred between 25 March and 5 April 2022.

For both the September 2022 and April 2023 sampling events the total rainfall in the six months prior was above the mean monthly rainfall by 259 mm and 118 mm respectively.

Seasonal effects have been considered when interpreting the data within the two Management Areas.

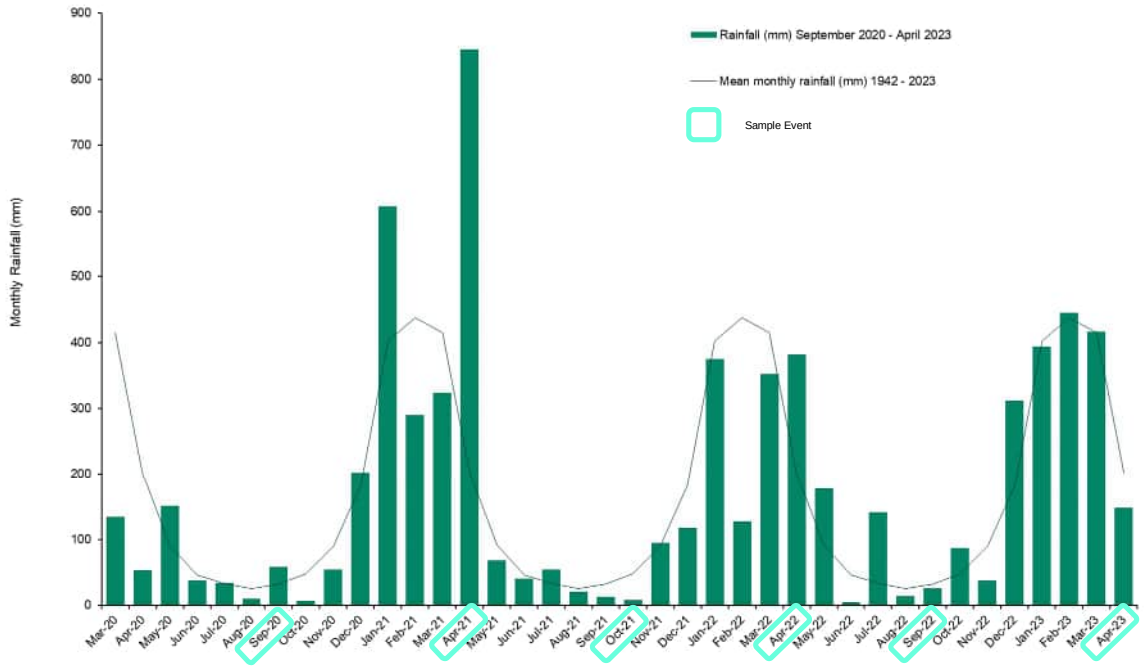

Plate A **Rainfall data from September 2020 to April 2023 and mean monthly rainfall for Cairns Area (station 031011) (BOM, 2023)**

7.0 Monitoring data summary

As part of the OMP, the following six monitoring events were completed by AECOM during the monitoring period:

- September/October 2020 Groundwater, Surface Water and Sediment Sampling Event, 29 September – 1 October 2020 (AECOM, 2020).
- April 2021 Groundwater, Surface Water and Sediment Sampling Event, 7 – 9 April 2021 (AECOM, 2021).
- October 2021 Groundwater, Surface Water and Sediment Sampling Event, 26 – 28 October 2021, with additional sampling on 7 – 8 December 2021 for confirmation of results (AECOM, 2022b).
- April 2022 Groundwater, Surface Water and Sediment Sampling Event, 25 March – 5 April 2022 (AECOM, 2022c).
- September 2022 Groundwater, Surface Water and Sediment Sampling Event, 11 – 13 September 2022 (AECOM, 2023a).
- April 2023 Groundwater, Surface Water and Sediment Sampling Event, 3 – 5 April 2023 (AECOM, 2023b).

The sample locations are shown on **Figure F2** and **F3** (**Appendix A**). **Figures F6** to **F53** (**Appendix A**) display PFAS analytical results for PFOS and PFHxS, and PFOA at each location and event of the monitoring period. The monitoring and analytical results are provided in **Tables T1** to **T6** in **Appendix C**.

In addition to the OMP data, AECOM also considered the historical data collected during the Stage 2 DSI (Aurecon, 2019 and 2020), available in the Defence database.

7.1 Groundwater results

7.1.1 Groundwater field observations

The field observations during groundwater sampling, including groundwater elevation (GWE) and parameters, are provided in **Table T1** in **Appendix C**.

7.1.2 Groundwater elevations

The standing water level (SWL) was measured in all the wells to calculate the GWE (to m AHD) prior to sampling. Ranges of GWE within the six monitoring events over the monitoring period are summarised in **Table 6** and **Table 7** below.

In the monitoring period the GWEs were within historical ranges, except for some wells in April 2023 which recorded new maximum SWLs (that is, the water level in the wells was higher than previous). The increases in GWEs of some wells may be associated with above average rainfall experienced in the 12 months prior to the April 2023 sample event as discussed in **Section 6.3**.

Table 6 Summary of GWE: HMAS Cairns

Gauging Event	No. Wells	Min. SWL (mbtoc)	Max. SWL (mbtoc)	Min. GWE (mAHD)	Max. GWE (mAHD)	Comment
September/ October 2020	High Tide					Within historical ranges
	15	0.703 (MW001)	2.294 (MW017)	0.204 (MW017)	1.950 (MW009)	
	Low Tide					
	15	0.699 (MW009)	3.145 (MW015)	-0.630 (MW015)	1.96 (MW009)	
April 2021	High Tide					Within historical ranges
	15	0.587 (MW009)	1.976 (MW018)	0.692 (MW018)	2.072 (MW009)	
	Low Tide					
	15	0.569 (MW009)	3.046 (MW017)	-0.548 (MW017)	2.090 (MW009)	
October 2021[2]	High Tide					Within historical ranges
	15	0.813 (MW001)	2.585 (MW011)	-0.209 (MW011)	1.748 (MW016)	
	Low Tide					
	15	0.880 (MW001)	2.807 (MW015)	-0.292 (MW015)	1.673 (MW009)	
April 2022	High Tide					Within historical ranges
	15	0.664 (MW009)	2.208 (MW005/15)	0.307 (MW015)	1.995 (MW009)	
	Low Tide					
	15	0.671 (MW001)	3.862 (MW015)	-1.347 (MW015)	1.915 (MW016)	
September 2022	High Tide					Within historical ranges
	15	0.716 (MW001)	2.113 (MW018)	0.495 (MW015)	1.92 (MW009)	
	Low Tide					
	15	0.665 (MW001)	3.343 (MW015)	-0.828 (MW015)	1.939 (MW009)	
April 2023	High Tide					Within historical ranges, except for new Max. GWE (m AHD) at MW001, MW003, MW009 and MW019
	15	0.536 (MW009)	2.024 (MW018)	0.644 (MW018)	2.123 (MW009)	
	Low Tide					
	15	0.556 (MW009)	3.166 (MW015)	-0.651 (MW015)	2.103 (MW009)	

Note: SWL = Standing Water level, GWE = Groundwater Elevation, m AHD = metres Australian Height Datum, m btoc = metres below top of casing, Min = Minimum, Max = Maximum

[2] The sampling event report includes the results of additional groundwater sampling conducted on 7 and 8 December 2021 to verify PFAS concentrations reported in four monitoring wells.

Table 7 Summary of GWE: Former WWII RAN Fuel Installation

Gauging Event	No. Wells	Min. SWL (mbtoc)	Max. SWL (mbtoc)	Min. GWE (mAHD)	Max. GWE (mAHD)	Comment
September / October 2020	3	1.781 (MW035)	5.121 (MW031)	0.645 (MW035)	1.939 (MW031)	Within historical ranges
April 2021	3	0.753 (MW035)	2.921 (MW031)	1.434 (MW036)	4.139 (MW031)	Within historical ranges
October 2021	2	2.223 (MW035)	4.813 (MW031)	0.203 (MW035)	2.247 (MW031)	Within historical ranges
April 2022	3	0.968 (MW035)	3.259 (MW031)	1.346 (MW036)	3.801 (MW031)	Within historical ranges
September 2022	3	1.402 (MW035)	3.926 (MW031)	1.024 (MW035)	3.134 (MW031)	Within historical ranges
April 2023	3	0.787 (MW035)	2.242 (MW031)	1.38 (MW036)	4.818 (MW031)	Within historical ranges, except for new Max. GWE (m AHD) MW031

7.1.3 Groundwater flow direction

Based on the SWL and survey data available for the monitoring wells, the interpolated groundwater contours for the most recent sampling event (April 2023) are presented on **Figures F4** and **F5** (in **Appendix A**). The contours are generally similar to the detailed site investigation (DSI) (Aurecon, 2019 and 2020) with the groundwater being inferred to flow predominantly in an easterly direction at HMAS Cairns towards Trinity Inlet, with some tidal influences observed between high and low tides.

At the former WWII RAN Fuel Installation the inferred groundwater flow direction is to the southeast towards Saltwater Creek.

7.1.4 Groundwater quality parameters

Groundwater quality parameters were measured prior to collecting groundwater samples and are presented in **Table T1** in **Appendix C** and summarised in **Table 8**.

Table 8 Summary of groundwater quality parameter results collected during the monitoring period

Sampling Event	Dissolved Oxygen (mg/L)		Electrical Conductivity (µS/cm)		pH		Corrected oxidation reduction potential (mV)		Temperature (°C)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
HMAS Cairns										
September/ October 2020	0.28 (MW019)	6.73 (MW015)	4260 (MW009)	69,883 (MW016)	6.38 (MW016, MW019)	7.49 (MW014)	99.8 (MW019)	290.7 (MW017)	24.2 (MW011)	29.6 (MW001)
April 2021	0.00 (MW001)	6.61 (MW017)	839 (MW011)	56,289 (MW016)	6.56 (MW017)	7.44 (MW015)	-133.1 (MW014)	429.3 (MW017)	27.4 (MW004)	33.6 (MW016)
October/ December 2021	0.09 (MW004)	2.81 (MW015)	7653 (MW007)	92,467 (MW016)	6.61 (MW019)	7.79 (MW014)	-163.3 (MW019)	187.1 (MW015)	27.4 (MW014)	32.9 (MW001)
April 2022	0.24 (MW019)	5.43 (MW015)	1006 (MW011)	86,854 (MW016)	6.51 (MW019)	7.86 (MW011)	-126.1 (MW019)	178.50 (MW017)	29.0 (MW015)	34.3 (MW001)
September 2022	0.11 (MW019)	4.62 (MW015)	4981 (MW011)	89,325 (MW016)	6.33 (MW016)	9.56 (MW004)	-234.0 (MW004)	81.1 (MW016)	24.9 (MW011)	30.9 (MW016)
April 2023	0.02 (MW014)	6.49 (MW017)	185.5 (MW005)	50,176 (MW016)	6.52 (MW019)	7.78 (MW015)	-93.5 (MW014)	214.3 (MW015)	27.4 (MW009)	34.2 (MW016)
Former WWII RAN Fuel Installation										
September/ October 2020	2.51 (MW035)	3.30 (MW031)	410 (MW036)	629 (MW035)	6.02 (MW031)	6.07 (MW035, MW036)	261.2 (MW036)	318.2 (MW035)	21.9 (MW035)	22.9 (MW031)
April 2021	2.81 (MW031)	3.53 (MW036)	382 (MW031)	918 (MW035)	5.89 (MW035)	6.46 (MW031)	185.9 (MW031)	248.1 (MW035)	25.2 (MW031)	26.3 (MW036)
October/ December 2021	2.04 (MW031)	2.31 (MW035)	824 (MW035)	1028 (MW031)	6.63 (MW031)	6.66 (MW035)	162.8 (MW031)	260.8 (MW035)	25.0 (MW035)	26.2 (MW031)
April 2022	2.68 (MW031)	4.54 (MW036)	555 (MW031)	1177 (MW035)	5.96 (MW035)	6.61 (MW031)	171.2 (MW031)	231.6 (MW035)	25.9 (MW036)	27.5 (MW031)

Sampling Event	Dissolved Oxygen (mg/L)		Electrical Conductivity (µS/cm)		pH		Corrected oxidation reduction potential (mV)		Temperature (ºC)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
September 2022	0.61 (MW031)	1.53 (MW036)	509 (MW031)	1,197 (MW036)	5.48 (MW031)	5.92 (MW036)	-21.7 (MW035)	87.3 (MW036)	22.8 (MW035)	25.3 (MW031)
April 2023	2.71 (MW036)	4.04 (MW031)	906 (MW036)	1317 (MW031)	5.69 (MW036)	6.13 (MW031)	161.2 (MW036)	341.8 (MW031)	26.3 (MW036)	27.5 (MW031)

The readings presented in **Table 8** indicate:

- Poorly to well oxygenated conditions.
- Fresh to saline groundwater conditions, with saline conditions generally observed in wells closest to Trinity Inlet.
- Slightly acidic to slightly alkaline conditions.
- Moderately to strongly reducing conditions.

The increased upper range of pH observed in the September 2022 monitoring event at MW004 is likely due to increased rainfall infiltration through potentially high pH soils as this is also accompanied by lower-than-normal EC at this location (**Table T1**, **Appendix C**). Decreased EC is evident in groundwater samples collected following periods of above average rainfall, for example in MW06 in the April 2023 monitoring event (**Table 8**). This is to be expected with higher rates of rainfall infiltration in the area.

From September 2020 to October 2021 the groundwater observations range from clear to black (MW011, MW013, MW019) with turbidity predominantly low to medium. Turbid conditions were observed at select monitoring wells at HMAS Cairns (MW011 and MW018) and the three monitoring wells located at the former WWII RAN Fuel Installation (MW031, MW035 and MW036). No sheen was observed, and a sulfurous odour was noted at the following wells MW001, MW002, MW004, MW007, MW011, MW013, MW014, MW018, MW019 and MW031.

During the April 2022, September 2022, and April 2023 sampling events the groundwater observations range from clear to brown with turbidity predominantly being low to medium. Turbid conditions were observed at select monitoring wells at HMAS Cairns (MW007, MW015 and MW017). Sulfurous odours were noted at MW001, MW002, MW003, MW004, MW005, MW007, MW011, MW013, MW014, MW015, MW016, MW019 and MW036. No other visible or olfactory indications of contamination were observed during the sampling events.

7.1.5 Groundwater analytical results

Historical groundwater analytical results are presented in **Table T2** in **Appendix C** and monitoring activities are summarised in the OMP Sampling Event Factual Reports provided in **Appendix B**. Groundwater sample results are presented in **Figures F6** to **F29** (in **Appendix A**).

The interpretive assessment of these results is discussed in **Section 8.2**.

A summary of the PFAS analytical results from the sampling events within the monitoring period is provided in **Table 9**.

Table 9 Summary of PFOS+PFHxS, PFOS and PFOA concentrations in groundwater

Sampling Event	No. Samples Analysed	Compound	Concentration Range µg/L (location)	No. of Sample Locations with Concentrations > LOR	No. of Sample Locations with Concentrations exceeding Freshwater and Marine 95% Species Protection Guideline (HEPA, 2020)
HMAS Cairns					
September/ October 2020	30	PFOS	0.04 (MW018 – low tide) – 120 (MW014 – high tide)	30	26
	30	PFOA	<0.01 – 3.63 (MW002 – high tide)	22	0
	30	PFOS+PFHxS	0.04 (MW018 – low tide) – 128 (MW014 – high tide)	30	NA[1]
April 2021	30	PFOS	0.02 (MW018 – high tide) – 85.1 (MW002 – low tide)	30	26
	30	PFOA	<0.01 – 2.40 (MW002 – low tide)	26	0
	30	PFOS+PFHxS	0.02 (MW018 – high tide) – 103.0 (MW002 – low tide)	30	NA[1]
October/ December 2021	34	PFOS	0.01 (MW018 – low tide) – 94.6 (MW007 – high tide)	33	28
	34	PFOA	<0.01 – 3.57 (MW002 – high tide)	29	0
	34	PFOS+PFHxS	<0.01 (MW018 – low tide) – 114 (MW002 – low tide)	33	NA[1]

Sampling Event	No. Samples Analysed	Compound	Concentration Range µg/L (location)	No. of Sample Locations with Concentrations > LOR	No. of Sample Locations with Concentrations exceeding Freshwater and Marine 95% Species Protection Guideline (HEPA, 2020)
April 2022	28	PFOS	<0.01 (MW018 – high tide) – 86.4 (MW007 – low tide)	27	22
	28	PFOA	<0.01 – 3.14 (MW002 – high tide)	23	0
	28	PFOS+PFHxS	<0.01 (MW018 – high tide) – 110 (MW002 – low tide)	27	NA[1]
September 2022	30	PFOS	0.02 (MW018 – low tide) – 100 (MW014 – high tide)	30	23
	30	PFOA	<0.01 – 3.12 (MW002 – high tide)	25	0
	30	PFOS+PFHxS	0.02 (MW018 – low tide) – 106 (MW014 – high tide)	30	NA[1]
April 2023	30	PFOS	0.02 (MW018 – low tide) – 80.4 (MW007 – high tide)	30	25
	30	PFOA	<0.01 – 1.91 (MW002 – high tide)	25	0
	30	PFOS+PFHxS	0.02 (MW018 – low tide) – 93.9 (MW002 – high tide)	30	NA[1]
Former WWII RAN Fuel Installation					
September/ October 2020	3	PFOS	0.05 (MW035) – 0.29 (MW036)	3	2
	3	PFOA	<0.01	0	0
	3	PFOS+PFHxS	0.1 (MW035) – 0.4 (MW036)	3	NA[1]
April 2021	3	PFOS	0.13 (MW035) – 0.29 (MW036)	3	2
	3	PFOA	<0.01 – 0.01 (MW036)	1	0
	3	PFOS+PFHxS	0.30 (MW031) – 0.63 (MW035)	3	NA[1]
October/ December2021	2	PFOS	0.02 (MW035) – 0.12 (MW031)	2	0
	2	PFOA	<0.01	0	0
	2	PFOS+PFHxS	0.02 (MW035) – 0.14 (MW031)	2	NA[1]
April 2022	3	PFOS	0.2 (MW035) – 0.33 (MW031)	3	3

Sampling Event	No. Samples Analysed	Compound	Concentration Range µg/L (location)	No. of Sample Locations with Concentrations > LOR	No. of Sample Locations with Concentrations exceeding Freshwater and Marine 95% Species Protection Guideline (HEPA, 2020)
	3	PFOA	<0.01	0	0
	3	PFOS+PFHxS	0.39 (MW036) – 0.62 (MW035)	3	NA[1]
September 2022	3	PFOS	0.08 (MW035) – 0.22 (MW031 & MW036)	3	2
	3	PFOA	<0.01	0	0
	3	PFOS+PFHxS	0.26 (MW031 & MW035) – 0.34 (MW036)	3	NA[1]
April 2023	3	PFOS	0.12 (MW035) – 0.44 (MW031)	3	2
	3	PFOA	<0.01	0	0
	3	PFOS+PFHxS	0.2 (MW035) – 0.52 (MW031)	3	NA[1]

NA = Not applicable

[1] There is no applicable ecological guideline for PFOS+PFHxS in groundwater for the current scenario.

Table 10 presents details of the first-time detections of PFOS+PFHxS, PFOS and PFOA, new exceedance of groundwater guidelines and new historical minimum and maximums at HMAS Cairns during the monitoring period.

Table 10 Summary of first-time detections, new exceedance of guidelines, and new historical minimums and maximums for PFOS+PFHxS, PFOS and PFOA in groundwater at HMAS Cairns

Sampling Event	Compound	First-time detection	New exceedance of guideline	New historical minimum	New historical maximum[1]
September/ October 2020	PFOS+PFHxS	None	None	None	MW001_LT (2.28 µg/L) MW002_HT (110 µg/L) MW016_HT (3.27 µg/L)
	PFOS		MW001_HT (0.16 µg/L)[2] MW001_LT (0.26 µg/L)[2]	MW016_HT (0.07 µg/L)	MW011_HT (0.35 µg/L) MW002_HT (77.5 µg/L)
	PFOA		None	MW002_LT (3.35 µg/L) MW015_LT (<0.02 µg/L)	MW001_LT (0.17 µg/L) MW011_LT (0.38 µg/L)
April 2021	PFOS+PFHxS	None	None	MW014_HT (50 µg/L)	MW019_LT (12.6 µg/L)
	PFOS			MW014_HT (42 µg/L)	MW002_LT (85.1 µg/L) MW019_LT (11.7 µg/L)
	PFOA			MW002_HT (2.25 µg/L) MW011_LT (0.07 µg/L)	None
October/ December 2021	PFOS+PFHxS	None	None	MW011_HT (0.04 µg/L) MW015_LT (1.2 µg/L) MW016_HT (1.35 µg/L) MW018 (<0.01 µg/L)	MW002_LT (114 µg/L) MW013_HT (6.16 µg/L) MW017_HT (2.72 µg/L)
	PFOS			MW011_HT (0.03 µg/L) MW014_LT (41.9 µg/L) MW015_LT (0.97 µg/L) MW018 (<0.03 µg/L)	MW001_LT (0.36 µg/L) MW013_LT (4.19 µg/L) MW017_LT (2.25 µg/L)
	PFOA			MW004_HT (0.41 µg/L) MW014_LT (0.65 µg/L) MW016_HT (<0.01 µg/L) MW018 (<0.01 µg/L) MW019_HT (0.06 µg/L)	MW013_HT (0.21 µg/L) MW017_HT (0.06 µg/L)

Sampling Event	Compound	First-time detection	New exceedance of guideline	New historical minimum	New historical maximum[1]
April 2022	PFOS+PFHxS	None	None	MW001_LT (0.21 µg/L) MW014_LT (19.3 µg/L) MW016_HT (1.25 µg/L) MW017_LT (0.03 µg/L) MW018_HT (<0.01 µg/L)	MW003_HT (13.2 µg/L)
	PFOS			MW001_HT (<0.06 µg/L) MW014_LT (11.2 µg/L) MW017_LT (0.03 µg/L) MW018_HT (<0.01 µg/L)	MW015_HT (3.04 µg/L)
	PFOA			MW001_LT (<0.01 µg/L) MW013_LT (0.07 µg/L) MW014_LT (0.38 µg/L) MW017_LT (<0.01 µg/L)	MW003_LT (0.81 µg/L)
September 2022	PFOS+PFHxS	None	None	MW001_HT (0.11 µg/L) MW013_LT (2.39 µg/L)	MW003_LT (33.6 µg/L) MW015_HT (3.78 µg/L)
	PFOS			None	MW003_LT (26.7 µg/L) MW015_HT (3.38 µg/L)
	PFOA			MW013_HT (0.04 µg/L)	MW003_HT (0.85 µg/L) MW015_HT (0.05 µg/L)
April 2023	PFOS+PFHxS	None	None	MW001_HT (0.10 µg/L)	MW004_HT (45.9 µg/L) MW005_HT (68.8 µg/L)
	PFOS			None	MW004_HT (39.6 µg/L) MW005_HT (60.7 µg/L)
	PFOA			MW001_LT (<0.01 µg/L) MW002_LT (1.88 µg/L)	None

Note:
1. New historical maximum does not include first-time detections or first-time exceedance of guideline as these are captured in the preceding columns.
2. Freshwater and marine water (95% species protection values) exceeded.

There were no first-time detections or new exceedances of guideline values for PFHxS, PFOS and PFOA detected in groundwater at HMAS Cairns during the monitoring period, with the exception of PFOS concentrations in two samples (MW001_HT and MW001_LT) that exceeded the adopted ecological guideline value during the September/October 2020 sampling event. MW001 is located on the western boundary of HMAS Cairns, which is upgradient (the opposite of groundwater flow direction) and may indicate off-Base sources of PFAS. PFOS concentrations at this location decreased to below the ecological guideline value in the subsequent sampling events, except for the low tide sampling events in April 2021 and October 2021 when the ecological guideline was exceeded.

Following a review of the full PFAS suite results for October 2021, new detections and increases in concentrations of other PFAS compounds were identified and resampling was scheduled to confirm the results for MW009, MW016, MW018 and MW019. An increase in concentrations of 6:2 FTS at MW016 was confirmed by the December 2021 sampling when compared against historical results. There are no assessment criteria for 6:2 FTS. New detections of 6:2 FTS at MW009 and 6:2 FTS and PFDS at MW018 in October 2021 were not confirmed by the resampling in December 2021 and therefore the October 2021 result was deemed to be an anomaly. An increase in concentrations of 6:2 FTS at MW019 was not confirmed by the resampling in December 2021 with results reported at lower concentrations than the October 2021 sampling event.

New historical minimums and maximums are discussed further in **Section 8.3**.

There were no first-time detections or new exceedances of guidelines in groundwater at the WWII RAN Fuel Installation. A summary of new historical minimum and maximum concentrations is provided in **Table 11.**

Table 11 Summary of new historical minimums and maximums for PFOS+PFHxS, PFOS and PFOA in groundwater at WWII RAN Fuel Installation

Sampling Event	Compound	New historical minimum	New historical maximum
September/ October 2020	PFOS+PFHxS	None	None
	PFOS		MW036 (0.29 µg/L)
	PFOA		None
April 2021	PFOS+PFHxS	None	MW036 (0.54 µg/L)
	PFOS		None
	PFOA		
October/ December 2021	PFOS+PFHxS	MW031 (0.14 µg/L), MW035 (0.02 µg/L)	None
	PFOS	MW031 (0.12 µg/L), MW035 (0.02 µg/L)	
	PFOA	None	
April 2022	PFOS+PFHxS	None	MW031 (0.42 µg/L)
	PFOS		MW031 (0.33 µg/L)
	PFOA		None
September 2022	PFOS+PFHxS	MW036 (0.34 µg/L)	None
	PFOS	None	
	PFOA		
April 2023	PFOS+PFHxS	None	MW031 (0.52µg/L)
	PFOS	None	MW031 (0.44 µg/L)
	PFOA	None	None

New historical maximums were reported for MW036 in the September/October 2020 and April 2021 sampling events and MW031 in the April 2022 and April 2023 sampling events. Concentrations were within the same order of magnitude to previous rounds. MW031 recorded a new historical minimum for PFOS+PFHxS concentrations in September 2022, although within the same order of magnitude as historical results.

7.2 Surface water results

7.2.1 Surface water quality parameters

Surface water quality parameters were measured prior to collecting surface water samples and are presented in **Table T3** in **Appendix C** and summarised below in **Table 12**.

Table 12 Summary of surface water quality parameter results collected during the monitoring period

Sampling Event	Dissolved Oxygen (mg/L)		Electrical Conductivity (µS/cm)		pH		Corrected oxidation reduction potential (mV)		Temperature (°C)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
HMAS Cairns										
September/ October 2020	5.61 (SW033)	6.66 (SW030)	51,886 (SW035)	63,387 (SW031)	7.68 (SW033)	8.36 (SW032)	248.3 (SW032)	284.4 (SW035)	26.8 (SW032)	30.4 (SW030)
April 2021	1.85 (SW033)	4.06 (SW032)	36,172 (SW034)	51,516 (SW030)	6.92 (SW034)	7.88 (SW032)	290.5 (SW033)	426.4 (SW034)	27.8 (SW034)	32.2 (SW030)
October/ December 2021	3.73 (SW033)	5.9 (SW032)	35,923 (SW033)	74,160 (SW031)	6.91 (SW032)	8.00 (SW034)	258.9 (SW031)	400.0 (SW032)	27.1 (SW033)	32.2 (SW031)
April 2022	5.90 (SW035)	6.51 (SW034)	52,349 (SW035)	54,642 (SW033)	7.20 (SW031)	7.64 (SW032)	269.0 (SW031)	305.1 (SW033)	29.9 (SW030)	34.8 (SW035)
September 2022	2.30 (SW035)	5.70 (SW031)	50,196 (SW031)	55,410 (SW033)	7.67 (SW032)	9.03 (SW035)	-20.8 (SW035)	61.9 (SW031)	25.8 (SW032)	31.5 (SW034 & MW035)
April 2023	5.19 (SW033)	7.02 (SW031)	29,288 (SW031)	56,681 (SW030)	7.17 (SW033)	7.86 (SW031)	228.9 (SW033)	277.2 (SW031)	29.6 (SW033)	32.6 (SW031)

Sampling Event	Dissolved Oxygen (mg/L)		Electrical Conductivity (µS/cm)		pH		Corrected oxidation reduction potential (mV)		Temperature (°C)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Former WWII RAN fuel installation										
September/ October 2020	3.71 (SW101)	5.34 (SW036)	1,243 (SW101)	55,941 (SW100)	6.98 (SW100)	7.53 (SW036)	272.0 (SW101)	355.5 (SW036)	22.5 (SW101)	24.3 (SW036)
April 2021	3.65 (SW101)	6.07 (SW100)	1,568 (SW101)	42,157 (SW100)	6.84 (SW036)	8.04 (SW101)	303.6 (SW101)	457.7 (SW036)	26.4 (SW101)	27.8 (SW100)
October/ December 2021	4.87 (SW101)	5.65 (SW100)	2,075 (SW101)	41,022 (SW036)	7.39 (SW036)	7.93 (SW1010)	236.6 (SW101)	404.3 (SW036)	25.6 (SW101)	27.5 (SW100)
April 2022	1.72 (SW101)	6.67 (SW100)	1,026 (SW101)	21,326 (SW036)	6.73 (SW036)	7.27 (SW101)	169.0 (SW101)	427.5 (SW036)	25.2 (SW101)	27.5 (SW100)
September 2022	2.67 (SW036)	3.22 (SW100)	467.4 (SW101)	52,384 (SW036)	6.44 (SW101)	8.1 (SW036)	-6.9 (SW036)	161.4 (SW101)	24.9 (SW101)	36.4 (SW100)
April 2023	3.40 (SW101)	5.60 (SW100)	1,427 (SW101)	37,040 (SW036)	6.39 (SW101)	7.16 (SW036)	239.0 (SW100)	426.9 (SW036)	27.3 (SW101)	30.0 (SW036)

The readings for HMAS Cairns for the monitoring period presented in **Table 12** indicate:

- Moderately to well oxygenated conditions.
- Saline surface water conditions.
- Near neutral to alkaline conditions.
- Oxidising to reducing conditions.

The increased EC in surface water observed at SW031 in October 2021 (**Table 12**) appears to be associated with the incoming tide. Decreased EC in surface water at SW031 in April 2023 (**Table 12**) is likely a result of the above average rainfall volume experienced in the six months preceding the sampling event and sampling on the outgoing tide.

The surface water observations at HMAS Cairns in the monitoring period range from clear to brown with low to medium turbidity. No odours or sheen were observed.

The readings for former WWII RAN Fuel Installation for the monitoring period presented in **Table 12** indicate:

- Moderately to well oxygenated conditions.
- Fresh to saline surface water conditions.
- Near neutral conditions.
- Oxidising to reducing conditions.

The surface water observations at former WWII RAN Fuel Installation in the monitoring period range from clear to brown with low to high turbidity. No odours or sheen were observed with the exception of the observations below:

- Slight oil sheen at SW036 (October 2021).
- Biosheen appearance at SW100 (September/October 2020).

7.2.2 Surface water analytical results

Historical surface water analytical results are presented in **Table T4** in **Appendix C** and monitoring activities are summarised in the OMP Factual Reports provided in **Appendix B**. Surface water sample results for all sampling events within the monitoring period are presented in **Figures F30** to **F53** (in **Appendix A**.

The interpretive assessment is provided in **Section 8.4**.

A summary of analytical results is provided in **Table 13** below.

Table 13 Summary of PFOS, PFOA and PFOS+PFHxS concentrations in surface water

Sampling Event	No. Sample Analysed	Compound	Concentration Range, µg/L (location)	No. of Sample Locations with Concentrations > LOR	No. of Sample Locations with Concentrations exceeding the recreation guideline (HEPA, 2020)	No. of Sample Locations with Concentrations exceeding Freshwater and Marine 95% Species Protection Guideline (HEPA, 2020)
HMAS Cairns						
September/ October 2020	6	PFOS	<0.01 – 1.24 (SW030)	4	NA[1]	1
	6	PFOA	<0.01 – 0.04 (SW030)	1	0	0
	6	PFOS+PFHxS	<0.01 – 1.54 (SW030)	4	0	NA[2]
April 2021	6	PFOS	<0.01 – 0.15 (SW030)	5	NA[1]	1
	6	PFOA	<0.01	0	0	0
	6	PFOS+PFHxS	<0.01 – 0.20 (SW030)	5	0	NA[2]
October/ December 2021	6	PFOS	<0.01 – 0.02 (SW030)	2	NA[1]	0
	6	PFOA	<0.01	0	0	0
	6	PFOS+PFHxS	<0.01 – 0.02 (SW030)	2	0	NA[2]
April 2022	6	PFOS	<0.01 – 0.07 (SW035)	3	NA	0
	6	PFOA	<0.01	0	0	0
	6	PFOS+PFHxS	<0.01 – 0.11 (SW035)	3	0	NA
September 2022	6	PFOS	<0.01 – 2.29 (SW030)	3	NA	1
	6	PFOA	<0.01 – 0.09 (SW030)	1	0	0
	6	PFOS+PFHxS	<0.01 – 3.05 (SW030)	3	1	NA

Sampling Event	No. Sample Analysed	Compound	Concentration Range, µg/L (location)	No. of Sample Locations with Concentrations > LOR	No. of Sample Locations with Concentrations exceeding the recreation guideline (HEPA, 2020)	No. of Sample Locations with Concentrations exceeding Freshwater and Marine 95% Species Protection Guideline (HEPA, 2020)
April 2023	6	PFOS	<0.01 – 0.26 (SW030)	5	NA	4
	6	PFOA	<0.01	0	0	0
	6	PFOS+PFHxS	<0.01 – 0.33 (SW030)	5	0	NA
Former WWII RAN Fuel Installation						
September/ October 2020	3	PFOS	<0.01	0	NA[1]	0
	3	PFOA	<0.01	0	0	0
	3	PFOS+PFHxS	<0.02	0	0	NA[2]
April 2021	3	PFOS	<0.01	0	NA[1]	0
	3	PFOA	<0.01	0	0	0
	3	PFOS+PFHxS	<0.01	0	0	NA[2]
October/ December 2021	3	PFOS	<0.01 – 0.01 (SW100 and SW101)	2	NA[1]	0
	3	PFOA	<0.01	0	0	0
	3	PFOS+PFHxS	<0.01 – 0.01 (SW100 and SW101)	2	0	NA[2]
April 2022	3	PFOS	<0.01	0	NA	0
	3	PFOA	<0.01	0	0	0
	3	PFOS+PFHxS	<0.01	0	0	NA
September 2022	3	PFOS	<0.01	0	NA	0
	3	PFOA	<0.01	0	0	0
	3	PFOS+PFHxS	<0.01	0	0	NA

Sampling Event	No. Sample Analysed	Compound	Concentration Range, µg/L (location)	No. of Sample Locations with Concentrations > LOR	No. of Sample Locations with Concentrations exceeding the recreation guideline (HEPA, 2020)	No. of Sample Locations with Concentrations exceeding Freshwater and Marine 95% Species Protection Guideline (HEPA, 2020)
April 2023	3	PFOS	<0.01	0	N	0
	3	PFOA	<0.01	0	0	0
	3	PFOS+PFHxS	<0.01	0	0	NA

1. There is no applicable guideline for PFOS in surface water for the current scenario.
2. There is no applicable guideline for PFOS+PFHxS in surface water for the current scenario.

New exceedance of guidelines and new historical maximums are summarised in **Table 14** below.

Table 14 Summary of new exceedance of guidelines and new historical maximums for PFOA, PFOS and PFOS+PFHxS in surface water

Sampling Event	Compound	New exceedance of guidelines	New historical maximum
HMAS Cairns			
September/ October 2020	PFOS+PFHxS	None	SW030 (1.54 µg/L)
	PFOS		SW030 (1.24 µg/L)
	PFOA		SW030 (0.04 µg/L)
April 2021, October/ December 2021 and April 2022	PFOS+PFHxS	None	None
	PFOS		
	PFOA		
September 2022	PFOS+PFHxS	SW030 (3.05 µg/L) (Human health recreational guideline value)	SW030 (3.05 µg/L) SW031 (0.06 µg/L)
	PFOS	None	SW030 (2.29 µg/L) SW031 (0.06 µg/L)
	PFOA		SW030 (0.09 µg/L)
April 2023	PFOS+PFHxS	None	SW031 (0.17 µg/L)
	PFOS		SW031 (0.14 µg/L)
	PFOA		None
Former WWII RAN fuel installation			
September/ October 2020, April 2021	PFOS+PFHxS	None	None
	PFOS		
	PFOA		
October/ December 2021	PFOS+PFHxS	None	SW100 (0.01 µg/L) SW101 (0.01 µg/L)
	PFOS		SW100 (0.01 µg/L) SW101 (0.01 µg/L)
	PFOA		None
April 2022, September 2022, April 2023	PFOS+PFHxS	None	None
	PFOS		
	PFOA		

There was one new exceedance of guideline values and no first-time detections in surface water during the monitoring period. The PFOS+PFHxS concentrations at SW030 exceeded the human health recreational guideline values in September 2022. SW030 is located near the outlet of the drain that collects surface water runoff from the DFI source area.

Locations SW100 and SW101 are located down gradient of the former WWII RAN Fuel Installation source area. New historical maximums were recorded at these locations in the October 2021 sampling round at the laboratory LOR and by the following round in April 2022, the results were back within the historical range.

7.3 Sediment results

Sediment samples were co-located and collected with surface water samples. Sediment analytical results, including historical data, are presented in **Table T6** in **Appendix C** and monitoring activities are summarised in the OMP Factual Reports provided in **Appendix B**.

7.3.1 Sediment field observations

The sediment observations presented in **Table T5** in **Appendix C** during the monitoring period generally comprised silty and/or sandy clay, silty sand, gravelly clayey sand, or sandy gravel. The sediment was predominately brown with organics in the form of leaves and roots.

7.3.2 Sediment analytical results

Sediment samples were co-located and collected with surface water samples. Sediment analytical results, including historical OMP results, are presented in **Table T6** in **Appendix C** and monitoring activities are summarised in the OMP Factual Reports provided in **Appendix B**. A summary of analytical results is provided in **Table 15** below.

Table 15 Summary of PFAS concentrations in sediment

Sampling Event	No. Sample Locations Analysed	Compound	Concentration Range, mg/kg (location)	No. of Sample Locations with Concentrations > LOR
HMAS Cairns				
September/ October 2020	6	PFOS+PFHxS	0.0005 (SD033) – 0.003 (SD030)	6
	6	PFOS	0.0005 (SD033) – 0.0026 (SD030)	6
	6	PFOA	<0.0002	0
April 2021	6	PFOS+PFHxS	0.0005 (SD033) – 0.0121 (SD030)	6
	6	PFOS	0.0005 (SD033) – 0.0115 (SD030)	6
	6	PFOA	<0.0002	0
October/ December 2021	6	PFOS+PFHxS	<0.0002 (SD032) – 0.0047 (SD030)	5
	6	PFOS	<0.0002 (SD032) – 0.0047 (SD030)	5
	6	PFOA	<0.0002	0
April 2022	6	PFOS+PFHxS	0.0006 (SD033) – 0.0247 (SD031)	6
	6	PFOS	0.0006 (SD033) - 0.002 (SD034)	6
	6	PFOA	<0.0002 – 0.0002 (SD034)	1

Sampling Event	No. Sample Locations Analysed	Compound	Concentration Range, mg/kg (location)	No. of Sample Locations with Concentrations > LOR
September 2022	6	PFOS+PFHxS	0.0004 (SD033) – 0.0049 (SD031)	6
	6	PFOS	0.0004 (SD033)- 0.0039 (SD030)	6
	6	PFOA	<0.0002	0
April 2023	6	PFOS+PFHxS	0.0009 (SD035) – 0.0049 (SD031)	6
	6	PFOS	0.0009 (SD035) – 0.0046 (SD031)	6
	6	PFOA	<0.0002	0
Former WWII RAN Fuel Installation				
September/ October 2020	3	PFOS+PFHxS	<0.0002	0
	3	PFOS	<0.0002	0
	3	PFOA	<0.0002	0
April 2021	3	PFOS+PFHxS	<0.0002 – 0.0003 (SD100)	1
	3	PFOS	<0.0002 – 0.0003 (SD100)	1
	3	PFOA	<0.0002	0
October/ December 2021	3	PFOS+PFHxS	<0.0002 – 0.0006 (SD036 and SD100)	2
	3	PFOS	<0.0002 (SD101) – 0.0007 (SD036)	2
	3	PFOA	<0.0002 – 0.0002 (SD036)	1
April 2022	3	PFOS+PFHxS	<0.0002 – 0.0008 (SD036)	2
		PFOS	<0.0002 – 0.0008 (SD036)	2
		PFOA	<0.0002 – 0.0003 (SD036)	2

Sampling Event	No. Sample Locations Analysed	Compound	Concentration Range, mg/kg (location)	No. of Sample Locations with Concentrations > LOR
September 2022	3	PFOS+PFHxS	<0.0002 – 0.0007 (SD100)	2
		PFOS	<0.0004- 0.0007 (SD100)	2
		PFOA	<0.0002 – 0.0002 (SD100)	1
April 2023	2	PFOS+PFHxS	0.0007 (SD036) – 0.0010 (SD100)	2
		PFOS	0.0007 (SD036) – 0.0010 (SD100)	2
		PFOA	0.0002 (SD036) – 0.0003 (SD100)	2

The first-time detection of PFOA and PFOS+PFHxS at SD036, in October 2021, was confirmed by the December 2021 resampling.

A summary of first-time detections and new historical maximum concentrations is provided in **Table 16.**

Table 16 Summary of first-time detections and new historical maximums of PFOS+PFHxS, PFOS and PFOA in sediment

Sampling Event	Compound	First-time Detection	New historical maximum
HMAS Cairns			
September/ October 2020	PFOS+PFHxS	SD032 (formerly SD019; 0.0006 mg/kg)	SD034 (0.0006 mg/kg)
	PFOS	SD032 (formerly SD019; 0.0006 mg/kg)	SD034 (0.0006 mg/kg)
	PFOA	None	None
April 2021	PFOS+PFHxS	None	SD032 (0.0024 mg/kg) SD034 (0.0012 mg/kg) SD035 (0.0009 mg/kg)
	PFOS	None	SD032 (0.0024 mg/kg) SD034 (0.0012 mg/kg) SD035 (0.0009 mg/kg)
	PFOA	None	None
October/ December 2021	PFOS+PFHxS	None	None
	PFOS	None	None
	PFOA	None	None
April 2022	PFOS+PFHxS	None	SD031 (0.0247 mg/kg) SD033 (0.0006 mg/kg) SD034 (0.002 mg/kg) SD035 (0.0016 mg/kg)

Sampling Event	Compound	First-time Detection	New historical maximum
	PFOS	None	SD031 (0.0243 mg/kg) SD033 (0.0006 mg/kg) SD034 (0.002 mg/kg) SD035 (0.0016 mg/kg)
	PFOA	SD034 (0.0002 mg/kg)	SD034 (0.0002 mg/kg)
September 2022	PFOS+PFHxS	None	SD035 (0.0019 mg/kg)
	PFOS		SD035 (0.0019 mg/kg)
	PFOA		None
April 2023	PFOS+PFHxS	None	SD033 (0.0008 mg/kg)
	PFOS		SD033 (0.0008 mg/kg)
	PFOA		None
Former WWII RAN fuel installation			
September/ October 2020	PFOS+PFHxS	None	None
	PFOS	None	None
	PFOA	None	None
April 2021	PFOS+PFHxS	SD100 (0.0003 mg/kg)	SD100 (0.0003 mg/kg)
	PFOS	SD100 (0.0003 mg/kg)	SD100 (0.0003 mg/kg)
	PFOA	None	None
October/ December 2021	PFOS+PFHxS	SD036 (0.0006 mg/kg)	SD036 (0.0006 mg/kg) SD100 (0.0006 mg/kg)
	PFOS		
	PFOA	SD036 (0.0002 mg/kg)	SD036 (0.0002 mg/kg)
April 2022	PFOS+PFHxS	None	SD036 (0.0008 mg/kg) SD100 (0.0007 mg/kg)
	PFOS	None	SD036 (0.0008 mg/kg) SD100 (0.0007 mg/kg)
	PFOA	SD100 (0.0002 mg/kg)	SD036 (0.0002 mg/kg)
September 2022	PFOS+PFHxS	None	None
	PFOS		
	PFOA		
April 2023	PFOS+PFHxS	None	SD100 (0.0010 mg/kg)
	PFOS		SD100 (0.0010 mg/kg)
	PFOA		SD100 (0.0003 mg/kg)

The first-time detection of PFOA and PFOS+PFHxS at SD100 in April 2021 and April 2022 and SD036, in October and December 2021 has been replicated in subsequent monitoring at these locations. Concentrations have continued to fluctuate over the monitoring period to April 2023.

8.0 Interpretive analysis

The following sections consider all data collected during the monitoring period at HMAS Cairns and the former WWII RAN Fuel Installation and provide an interpretive analysis to assess changes to the risk profile across the Management Areas.

8.1 Hydrogeology

The SWLs were measured in the groundwater monitoring wells to evaluate the GWEs (m AHD). Depth to groundwater measurements collected during the current monitoring period are presented in **Table T1** (in **Appendix C**) and the interpolated contours for the most recent sampling event are presented on **Figures F4** and **F5** (**Appendix A**).

8.1.1 HMAS Cairns

The groundwater SWLs were measured at the monitoring wells at HMAS Cairns at both high and low tide during each monitoring round. The saturated zone is located close to the surface indicated by average depths to groundwater for each monitoring event ranging from 1.2 mbtoc at high tide up to 1.6 mbtoc at low tide. The difference in GWE between high and low tide varied across the Base. At select locations along the eastern boundary (MW015 and MW017) the range in groundwater level due to tidal fluctuation has been measured at up to 1.96 m AHD. The wells located closest to Trinity Inlet showed a greater difference in SWL between high tide and low tide than those located further inland. This indicates groundwater is closely coupled and in connectivity with the estuarine waters of Trinity Inlet.

When comparing the GWEs between sampling events in the monitoring period, it is evident that select monitoring wells at HMAS Cairns located further from the shoreline have a limited response to tidal changes. These wells were more heavily influenced by above average rainfall periods due the shallowness of the groundwater table in a coastal setting and groundwaters discharging to Trinity Inlet. The two monitoring wells with the greatest difference in SWL (up to 0.24 m) between the post-wet season sampling and the post dry-season sampling are in the western portion of HMAS Cairns (MW003 and MW009).

At HMAS Cairns, groundwater is inferred to flow from west to east towards Trinity Inlet with some tidal influence observed between high and low tides in line with historical findings (Aurecon, 2019 and 2020).

8.1.2 WWII RAN Fuel Installation

When comparing the GWEs at the former WWII RAN Fuel Installation between sampling in September 2020 and April 2021, GWE was up to 2.2 metres higher (at MW031) in April 2021 compared to September 2020. Conversely the groundwater level in the same well dropped by up to 1.9 m in October 2021, demonstrating the effect of high rainfall on groundwater levels at the former WWII RAN Fuel Installation.

Similarly, the above average rainfall conditions in 2022 and 2023 resulted in shallow groundwater being recorded closer to the ground surface, resulting in higher GWEs. When comparing the GWEs between sampling in September 2022 and sampling in April 2023, GWE was up to 1.68 metres higher (MW031) in April 2023 likely associated with generally above average rainfall through the 2022 dry season and late 2022 to early 2023 wet season.

Inferred groundwater flow directions in sampling events over the monitoring period, and historically (Aurecon, 2019 and 2020), were consistent, inferred to flow to the south-east towards Saltwater Creek.

The water quality parameters recorded within the monitoring period were generally within previous data ranges (Aurecon, 2019 and 2020) for both Management Areas.

8.2 Groundwater results

The groundwater analytical results for PFOS+PFHxS and PFOA are provided in **Figures F6** to **F29** in **Appendix A**.

8.2.1 HMAS Cairns

PFOS+PFHxS and PFOA concentrations are generally consistent and within the same order of magnitude as results presented in the DSI (Aurecon, 2019 and 2020) and where new historical maximums were reported at MW001, MW002, MW003, MW004, MW005, MW011, MW013, MW016, MW017 and MW019 during the monitoring period, the results were generally within the historical range of results at each location by April 2023.

The highest PFAS concentrations were detected within the Defence Fuel Installation (DFI) and at the former fire training area at HMAS Cairns with PFOS+PFHxS concentrations reported at new historical maximums as summarised below for the monitoring period within these source areas:

- DFI
  - September 2020: MW001_LT (2.28 µg/L) and MW002_HT (110 µg/L)
  - October/ December 2021: MW002_LT (114 µg/L) and MW013_HT (6.16 µg/L)
  - April 2022: MW003_HT (13.2 µg/L)
  - September 2022: MW003_LT (33.6 µg/L)
  - April 2023: MW004_HT (45.9 µg/L) and MW005_HT (60.7 µg/L)
- Northern Former Fire Fighting Training Area
  - October/ December 2021: MW017_HT (2.72 µg/L)
  - September 2022: MW015_HT (3.78 µg/L)
- Southern Former Fire Fighting Training Area
  - April 2021 - MW019_LT (12.6 µg/L)

Concentrations of PFOS+PFHxS were highest at the western end of the Base at MW002 in September 2020 and remaining steady for the monitoring period. MW002 is located on the western boundary of the Base and representative of groundwater moving from west to east through the Base towards Trinity Inlet. The highest concentrations at the eastern end of the DFI at locations MW004 and MW005 were reported in April 2023, demonstrating potential migration of PFAS through the northern end of the Base and indicating a potential off-Base source to the west. This is consistent with the CSM presented in the DSI which identified surrounding fuel depots, a fire and rescue station and a historical fire at The Cape York Hotel as potential off-Base sources to the west (Aurecon, 2019 and 2020). These concentrations also exceed the adopted 95% species protection ecological guideline value which is consistent with previous data from the DSI monitoring which commenced in 2019 (Aurecon, 2019 and 2020).

MW011 is located on the eastern side of the central portion of the Base and down-gradient of on-Base and off-Base source areas. New maximum concentrations at this location are similar to historical results indicating stable concentrations considered representative of groundwater moving through the Base towards Trinity Inlet.

MW013 is located in the northeastern corner of the DFI and reported new historical maximums of PFOS in October 2021 at low tide. Resampling confirmed new historical maximum PFOS concentrations at this location in December 2021. Since new maximum concentrations were not recorded for PFOA or PFOS+PFHxS, this indicates that PFAS concentrations are stable.

MW016 is located west of the former firefighting training area. New historical maximum concentrations were reported at high tide in September 2020 with subsequent sampling indicating that concentrations are stable.

MW017 is located on the southeastern of the former firefighting training area. A new historical maximum for was reported in this well in October 2021 for PFOA and sum of PFOS+PFHxS with subsequent

sampling resulting in new maximum concentrations for PFOS only. Concentrations at this location appear to be stable.

MW019 is located east of the southern former firefighting training area. New historical maximum concentrations of PFOS and sum of PFOS+PFHxS were reported at low tide in April 2021 with subsequent rounds of sampling indicating that concentrations had decreased.

PFOS+PFHxS, PFOS and PFOA concentrations varied slightly between high tide and low tide samples collected from the same locations, but in general showed the same potential trends with concentrations being within the same order of magnitude.

8.2.2 WWII RAN Fuel Installation

At the former WWII RAN Fuel Installation, PFOS+PFHxS, PFOS and PFOA concentrations in the monitoring period were within the same order of magnitude as historical ranges (refer **Table 11**).

New historical maximum concentrations of PFOS+PFHxS were reported at MW036 (0.54 µg/L) in April 2021. MW036 is located south of Tank 4 and Collins Avenue, and north of Saltwater Creek. This well was dry in the October 2021 sampling round and was therefore unable to be sampled.

New historical maximum concentrations of PFOS and PFOS+PFHxS were reported in groundwater at the WWII RAN Fuel Installation at MW031 in April 2022 and April 2023. MW031 is located south of Tank 5 and north of Collins Avenue and Saltwater Creek. New historical maximums detected at MW031 in the monitoring period for PFOS+PFHxS (of 0.44 µg/L) and PFOS (of 0.52 µg/L) were slightly above previous maximum concentrations (0.346 µg/L for PFOS+PFHxS and 0.31 µg/L for PFOS).

8.3 Groundwater temporal trends

Historical groundwater concentrations of PFOS+PFHxS, PFOS and PFOA have been displayed graphically on temporal trend graphs in **Appendix D** as listed in **Table 17** below and concentrations are presented in **Figures F6** to **F29** (**Appendix A**).

Table 17 Temporal groundwater trend graphs for source areas/areas of interest

Graph ID	Area	Groundwater locations
1-3	HMAS Cairns – DFI	MW001, MW002, MW003, MW004, MW005, and MW013
4-6	HMAS Cairns – Northern Former Fire Fighting Training Area	MW007, MW014 MW015, MW016 and MW017
7-9	HMAS Cairns – Southern Former Fire Fighting Training Area	MW009, MW011, MW018 and MW019
10-12	Former WWII RAN Fuel Installation	MW031, MW035 and MW036

The Mann Kendall analysis presented in **Appendix E** was used to assess the trends in the concentrations in groundwater and whether they have a monotonic upward or downward trend. Variables such as tidal influence and GWE in response to rainfall, which influence PFAS concentrations were not factored into the analysis. GWE is noted to be seasonally affected at both management areas, thus any trends determined by the analysis are considered potential trends as described.

The significance of these trends is determined by the confidence factor, or p value, of the analysis, as follows.

- A confidence factor over 95% indicates that there is an increasing or decreasing trend.
- A confidence factor over 90% indicates the there is a ‘probably increasing’ or ‘probably decreasing’ trend.
- A confidence factor less than 90% indicates ‘Stable’ or ‘No Change’.

Trend analysis was completed by source area and only undertaken for locations which were sampled in the current monitoring period where sufficient historical data are available (at least eight results per location) and for locations which were consistently greater than the LOR. Where sample results were less than the LOR, half the LOR was adopted for the Mann Kendall analysis. For HMAS Cairns both high and low tide results were included in the Mann Kendall analysis.

A summary of PFOS+PFHxS and PFOA concentrations for the select locations (including historical ranges and concentrations from the OMP events during the monitoring period) and trend analysis results are tabulated in **Table 18** and discussed in the following sections.

Table 18 Mann Kendall Analysis Results

Location ID	Analyte	Historical range	OMP events (current period)	Mann-Kendall Trend	
		Min – Max (µg/L)	Min – Max (µg/L)	Trend	Confidence factor
HMAS Cairns – DFI					
MW001	PFOS+PFHxS	0.288 – 0.735	0.1 – 2.28	*Decreasing*	*99.9%*
	PFOA	0.016 – 0.067	<LOR – 0.17	*Decreasing*	*100.0%*
MW002	PFOS+PFHxS	73 - 86	66.3 – 14	No trend	70.3%
	PFOA	3.7 - 4.1	1.88 - 3.65	Decreasing	99.9%
MW003	PFOS+PFHxS	7.5 – 11.3	8.74 – 33.6	Increasing	99.9%
	PFOA	0.23 - 0.62	0.72 - 0.85	*Increasing*	*99.9%*
MW004	PFOS+PFHxS	12.2 – 13	12.4 – 45.9	Increasing	99.5%
	PFOA	0.47 – 0.65	0.54 – 1.51	*Probably Increasing*	*91.0%*
MW005	PFOS+PFHxS	17.6 – 34.8	22.2 – 68.8	Increasing	99.6%
	PFOA	0.43 – 0.67	0.52 – 1.08	*Increasing*	*97.7%*
MW013	PFOS+PFHxS	2.8 – 4.97	1.93 – 6.16	Decreasing	96.8%
	PFOA	0.071 – 0.14	0.03 – 0.21	*Decreasing*	*96.8%*
HMAS Cairns –Northern Former Fire Fighting Training Area					
MW007	PFOS+PFHxS	32 – 119.9	37.2 – 101	No Trend	82.5%
	PFOA	0.24 – 0.99	0.5 – 0.92	*No Trend*	*71.8%*
MW014	PFOS+PFHxS	–73.9 - 138	19.3 - 128	Stable	84.7%
	PFOA	0.69 – 1.3	0.38 – 0.93	*Decreasing*	*95.7%*
MW015	PFOS+PFHxS	1.25 – 3.33	1.71 – 3.78	Stable	48.2%
	PFOA	0.021 – 0.05	<LOR – 0.05	*No Trend*	*76.1%*
MW016	PFOS+PFHxS	1.67 – 3.10	1.38 – 2.86	Stable	78.8%
	PFOA	0.024 – 0.067	<LOR – 0.02	*Decreasing*	*99.1%*
MW017	PFOS+PFHxS	0.54 – 1.80	0.03 – 2.72	No Trend	62.2%
	PFOA	0.013 – 0.041	<LOR – 0.06	Stable	70.3%
HMAS Cairns – Southern Former Fire Fighting Training Area					
MW009	PFOS+PFHxS	0.092 – 2.32	0.2 – 1.14	No Trend	51.8%
	PFOA	0.002 – 0.12	<LOR – 0.05	*No Trend*	*63.9%*
MW011	PFOS+PFHxS	0.053 – 0.206	0.04 – 0.41	Stable	48.0%
	PFOA	0.12 – 0.32	0.01 – 0.38	*Stable*	*89.0%*

Location ID	Analyte	Historical range	OMP events (current period)	Mann-Kendall Trend	
		Min – Max (µg/L)	Min – Max (µg/L)	Trend	Confidence factor
MW018	PFOS+PFHxS	0.17 – 0.082	<LOR – 0.08	Stable	76.7%
	PFOA	0.009 – 0.016	<LOR	*Decreasing*	*99.3%*
MW019	PFOS+PFHxS	1.74 – 9.5	2.34 – 12.6	No Trend	62.2%
	PFOA	0.1 – 0.38	0.1 – 0.26	*Stable*	*76.1%*
Former WWII RAN fuel installation					
MW031	PFOS+PFHxS	0.26– 0.346	0.26 – 0.52	*Stable*	*45.2%*
	PFOA	<LOR – 0.002	<LOR	*No Trend*	*88.7%*
MW035	PFOS+PFHxS	0.897 – 1.04	0.1 – 0.62	*Probably Decreasing*	*91.1%*
	PFOA	0.009 – 0.01	<LOR	*Stable*	*88.7%*

n/s - not sampled
italics - indicate low confidence in the Mann-Kendal trend analysis given concentrations are within 1 to 2 orders of magnitude of the LOR

8.3.1 HMAS Cairns

At HMAS Cairns, PFOS+PFHxS, PFOS and PFOA concentrations were generally within the same order of magnitude as previous data from the DSI (Aurecon, 2019 and 2020). It is also noted that there is no consistent pattern in PFAS concentration related to seasonal SWL fluctuations in response to rainfall.

Review of potential trends at locations with new historical concentrations is as follows:

- MW003, located on the northern Base boundary within the DFI, reported new historical maximum concentrations of PFOS+PFHxS (33.6 µg/L), PFOS (26.7 µg/L) and PFOA (0.85 µg/L) in September 2022. These new historical maximum concentrations were within the same order of magnitude as previous maximum concentrations of PFOS+PFHxS (13.0 µg/L), PFOS (7.8 µg/L) and PFOA (0.78 µg/L) (refer to **Graph 1-3** in **Appendix D**). Mann Kendall trend analysis (refer to **Table 18** and **Appendix E**) indicates MW003 presents an 'increasing trend' for PFOS+PFHxS concentrations. PFOA concentrations at MW003 also present an 'increasing trend', although there is low confidence in the statistical analysis as the concentrations are within one to two orders of magnitude of the laboratory LOR. MW003 is within the DFI which is a PFAS source area identified by the DSI (Aurecon, 2019 and 2020), although it is also located on the upgradient northern boundary of HMAS Cairns. The potential increasing trend of PFOS+PFHxS concentrations at MW003 should be interpreted with caution as it may be representative of fluctuations in concentrations associated with off-Base upgradient sources of PFAS identified by the DSI (Aurecon, 2019 and 2020).
- MW004 and MW005, located on the eastern Base boundary within and down-gradient of the DFI, reported new historical maximum concentrations of PFOS+PFHxS and PFOS in the monitoring period (refer to **Graph 1-3** in **Appendix D**). MW004 maximum concentrations in April 2023 of 45.9 µg/L PFOS+PFHxS and 39.6 µg/L PFOS were within the same order of magnitude as previous maximums of 39.9 µg/L and 31.5 µg/L respectively. Similarly, MW005 maximum concentrations in April 2023 of 68.8 µg/L of PFOS+PFHxS were within the same order of magnitude as previous maximum of 54.2 µg/L. Mann Kendall trend analysis (refer to **Table 18** and **Appendix E**) indicates MW004 and MW005 present an 'increasing trend' for PFOS+PFHxS concentrations; however, this potential trend is not reflected in all wells within this source area and therefore, the concentrations of PFAS within this source area do not show clear trends. Off-Base upgradient sources of PFAS identified by the DSI (Aurecon, 2019 and 2020) may be contributing to fluctuations in concentrations at MW004 and MW005
- During the September 2022 monitoring event, MW015 reported a new historical maximum concentration of PFOS+PFHxS (3.78 µg/L), PFOS (3.38 µg/L) and PFOA (0.05 µg/L).

Groundwater well MW015 is located on the eastern Base boundary to the north of building 016 and down-gradient of a former firefighting training area identified by the DSI (Aurecon, 2019 and 2020). The new maximums are within the same order of magnitude as previous maximums concentrations of PFOS+PFHxS (3.33 µg/L), PFOS (3.04 µg/L) and PFOA (0.034 µg/L) (refer to **Graph 4-6** in **Appendix D)** and in some cases, the results for other PFAS, are identical. Mann Kendall trend analysis indicates MW015 presents a 'stable trend' for PFOS+PFHxS concentration (refer to **Table 18** and **Appendix E**).

- Mann Kendall analysis (refer **Appendix E**) indicates remaining locations have either a decreasing, stable or no trend for PFOA and PFOS+PFHxS concentrations. Noting some concentrations are within one to two orders of magnitude of laboratory LOR, there is low confidence in the analysis, and it was not considered further.

Whilst the Mann Kendall trend analysis indicates MW003, MW004 and MW005 present a potential 'increasing trend', it is noted that variables which influence PFAS concentrations such as seasonal fluctuations in GWEs and tidal influence are not factored into the analysis. Furthermore, the concentrations in the monitoring period are within the same order of magnitude as previous data.

8.3.2 WWII RAN Fuel Installation

At the former WWII RAN Fuel Installation, PFOS+PFHxS, PFOS and PFOA concentrations in the monitoring period were within the same order of magnitude as historical ranges presented in the DSI (Aurecon, 2019 and 2020). There does not appear to be any clear trend in the reported concentrations as demonstrated in the temporal graphs (refer to **Graph 10-12** in **Appendix D**).

There is insufficient data (at least eight monitoring event results are required per location) to allow statistical analysis of results for MW036. Locations MW031 and MW035 had sufficient data to conduct Mann Kendall trend analysis (refer **Appendix E**), although as the concentrations are within one to two orders of magnitude of laboratory LOR, there is low confidence in the analysis, and it was not considered further.

8.3.3 Summary

The groundwater monitoring results associated with the Management Areas indicate the relative stability of concentrations compared to the historical results, which were within the same order of magnitude. The Mann-Kendall analysis did not identify any clear trends in the data.

8.4 Surface water results

The surface water results for PFOS+PFHxS and PFOA are provided in **Figures F30** to **F53** in **Appendix A**.

Mann Kendall statistical analysis was not undertaken for surface water locations due to the variable nature of the results being unsuitable for making monotonic trend assessments. Variables such as rainfall, and tides within the Trinity Inlet and influences on Saltwater Creek which influence PFAS concentrations are not factored into the analysis.

Temporal trend graphs were created for PFOS+PFHxS, PFOS and PFOA concentrations in surface water associated with Management Areas in **Appendix D** as listed in **Table 19** below.

Table 19 Temporal surface water trend graphs by area

Graph ID	Area	Surface water locations
13-15	HMAS Cairns	SW030, SW031, SW032, SW033, SW034, SW035
16-18	Former WWII RAN Fuel Installation	SW036, SW100, SW101

A summary of surface water PFOS+PFHxS, PFOS and PFOA concentrations for the select locations (including historical ranges and concentrations from the OMP events during the monitoring period) are discussed through temporal trend reviews within the two Management Areas in the following sub-sections.

8.4.1 HMAS Cairns

PFAS concentrations are generally consistent within historical ranges of previous data presented in the DSI (Aurecon, 2019 and 2020) except for surface water locations SW030 and SW031 (refer to **Table 14**) as discussed below:

- SW030, located on the eastern Base boundary adjacent to the DFI, reported new historical maximum concentrations for PFOS, PFOS+PFHxS and PFOA (2.29 µg/L, 3.05 µg/L and 0.09 µg/L, respectively) in the September 2022 sampling event. These results were within the same order of magnitude as the previous historical maximum in September 2020 (1.24 µg/L PFOS, 1.54 µg/L PFOS+PFHxS and 0.04 µg/L PFOA). The new maximum concentrations in the monitoring period are within the same order of magnitude or below concentrations of nearby groundwater wells within or adjacent the DFI. The PFOS+PFHxS concentration in September 2022 at SW030 represent a new exceedance of the adopted human health recreational use guideline. This is the only exceedance of the adopted human health recreational use guideline for surface water monitoring within the HMAS Cairns monitoring area presented in this report.

  Concentrations in the subsequent monitoring event of April 2023 decreased by at least an order of magnitude with PFOS+PFHxS concentrations below the adopted human health recreational use guideline. This is further discussed in Section 10.1.

- SW031, located on the eastern Base boundary adjacent the DFI and former fire training area, reported a new maximum concentration for PFOS and PFOS+PFHxS in September 2022 (0.06 µg/L for both analytes) and the concentrations further increased in the April 2023 (0.14 µg/L PFOS and 0.17 µg/L PFOS+PFHxS) event being an order of magnitude above historical results (0.01 µg/L). Although concentrations at SW031 for both September 2022 and April 2023 events were within the same order of magnitude or below concentrations of adjacent surface water location SW030 and nearby groundwater wells.

The new maximum concentration at surface water locations SW030 and SW031 in the monitoring period is potentially associated with above average rainfall through the 2022 dry season and 2022/20223 wet season which may have resulted in increased surface water runoff and/or infiltration at source areas on-Base and off-Base and groundwater discharge to Trinity Inlet resulting in the observed PFAS concentrations in surface water.

8.4.2 WWII RAN Fuel Installation

Concentrations of PFOS+PFHxS, PFOS and PFOA in surface water at the WWII RAN Fuel Installation Management Area were detected at or below the laboratory LOR (0.01 µg/L) in all three sampling events. This is consistent with previous data presented in the DSI (Aurecon, 2019 and 2020) which had low concentrations detected slightly above and below the laboratory LOR.

8.4.3 Summary

PFAS concentrations at surface water sample locations were generally similar to historical results, and with one exception on one occasion, did not exceed the adopted recreational assessment criteria.

8.5 Sediment

The sediment results for PFOS are provided in **Figures F30** to **F53** in **Appendix A**.

8.5.1 HMAS Cairns

PFAS in sediment concentrations in the monitoring period are generally within the same order of magnitude as the historical data set.

The maximum concentration of PFOS+PFHxS during the monitoring period was at SD031 (0.0247 mg/kg) from the April 2022 sampling event where PFOS+PFHxS has historically been detected in the co-located surface water samples (SW030 & SW031) located on the eastern boundary adjacent of HMAS Cairns adjacent to the DFI.

PFOS was reported above the historical maximum at SD034 (0.002 mg/kg) and SD035 (0.0019 mg/kg) during the April 2022 sampling event. There was also a first-time detection of PFOA reported at SD034

(0.0002 mg/kg) during the April 2022 sampling event, however reported below LOR in September 2022. These results are not considered significant as they fluctuate close to the detection limit.

8.5.2 WWII RAN Fuel Installation

At WWII RAN Fuel Installation, both PFOS+PFHxS, PFOS and PFOA concentrations are generally within historical ranges with the following exceptions:

- First-time detections of PFOS+PFHxS, PFOS and PFOA, at SD036, were reported in October 2021 and recorded new historical maximums during the April 2022 sampling events slightly above historical values previously detected.
- First-time detections of PFOS in April 2021 and PFOA in April 2022 were reported at SD100. Following the first-time detections, all subsequent events within the monitoring period were at concentrations equal to or slightly above the LOR (of 0.0002 mg/kg). SD100 is located on the bank of Saltwater Creek under the pedestrian bridge in the WWII RAN Fuel Installation Management Area.

Concentrations at both of these locations have continued to fluctuate over the monitoring period to April 2023. PFAS have not been detected at SD101.

8.5.3 Summary

New historical maximums and first-time detections in sediment in the monitoring period are at concentrations close to the laboratory LOR and this data variability is expected at lower concentrations. Overall, the sediment monitoring results are similar to the historical results and the new detections are within the Management Area which was designed to monitor the presence of PFAS.

9.0 Conceptual Site Model

The CSM was developed during the investigation stages (Aurecon, 2019 and Aurecon, 2020) and summarised in the OMP (Defence, 2020a). The CSM summaries the linkages between sources, exposure pathways and receptors.

The monitoring data generated during the monitoring period (September 2020 to April 2023) has provided additional data to further understand the changing conditions of the PFAS concentrations in groundwater, surface water and sediment. Comparisons to the available historical dataset indicate that PFAS concentrations in groundwater, surface water and sediment are relatively stable since the CSM was developed in the DSI (Aurecon, 2019 and 2020) and the plume extent has not changed. The concentration ranges for groundwater, surface water and sediment monitoring locations, recorded during the OMP monitoring period are shown in **Figure F6 to Figure F53** (**Appendix A**).

Continued monitoring is required at key monitoring well and surface water locations including boundary locations and locations within the off-Base Management Area. Increased concentrations at some locations and first-time exceedances of adopted guidelines were reported for scenarios and areas which are currently considered in the CSM, resulting in no change to the risk profile.

The pathways for PFAS exposure and risks to human health and ecological receptors presented in the HHERA (EnRisks, 2020a) and HHERA Addendum (EnRisks, 2020b) are considered to remain relevant, and data presented in this report does not suggest any significant changes to these mechanisms or risks.

The data presented in this report do not suggest any changes to the sources, pathways and receptors and there is no change in the understanding of the CSM for both HMAS Cairns and the former WWII RAN Fuel Installation. Future monitoring will continue to contribute to an evaluation of any potential changes to the CSM understanding and potential effects of potential seasonal trends on PFAS concentrations.

10.0 Discussion

10.1 Risk profile

The HHERA (EnRisks, 2020a) and HHERA Addendum (EnRisks, 2020b) identified the following potential risks associated with PFAS including:

- At HMAS Cairns:
  - Consumption of fish caught from Trinity Inlet above the recommended dietary intake for fish / crustacea.
  - Potential bioaccumulation of PFAS in the aquatic ecosystem of Trinity Inlet and effects on the higher order consumers in this ecosystem.
- At the former WWII RAN Fuel Installation:
  - Potential bioaccumulation of PFAS in the aquatic ecosystem of Saltwater Creek and downstream to Trinity Inlet and effects on the higher order consumers in this ecosystem.

The data collected over the monitoring period suggest that the risk profile to human health and ecological receptors within the HMAS Cairns Management Area and the former WWII RAN Fuel Installation Management Area is overall unchanged, based on the following conclusions of the data assessment:

- Groundwater PFAS concentrations are relatively stable.
- The overall PFAS plume extent has not changed significantly compared to historical results.
- PFAS concentrations in surface water sample locations were generally similar to historical results. In September 2022 location SW030 recorded a new exceedance of the adopted human health recreational use guideline, although the concentrations were below this guideline in the subsequent monitoring event of April 2023. Direct contact exposures may occur during recreational use of Trinity Inlet. Swimming in Trinity Inlet is theoretically possible but understood to be not recommended due to its use for shipping and presence of crocodiles and seasonal marine stingers.
- PFAS concentrations in sediment sample locations were generally similar to historical results. Where first-time detections of PFAS were identified, the concentrations were close to the laboratory LOR and were from locations where PFAS has previously been detected in the co-located surface water samples. Therefore, the distribution of PFAS in sediment within the Management Areas is considered similar to historical results and the risk profile is unchanged.

Further monitoring is required to further assess potential seasonal trends and to confirm the presence of PFAS in sediments within the former WWII RAN Fuel Installation Management Area.

Based on the data, AECOM considers that the conclusions made in the HHERA (EnRisks, 2020a) and HHERA Addendum (EnRisks, 2020b) still apply, and the risk profile presented in the PMAP is unchanged.

10.2 Triggers for OMP Review

Following a review of the data collected during the current monitoring period, there have been no changes to the understanding of risks associated with PFAS in the HMAS Cairns Management Area and the former WII RAN Fuel Installation Management Area. As a result of this investigation, there have been no changes to the understanding of risks spatial distribution of PFAS and the need for monitoring additional media. Based on this, there are currently no triggers for review of the OMP.

11.0 Conclusions

Groundwater, surface water and sediment sampling were completed between September 2020 and April 2023 in accordance with SAQP (AECOM, 2022a) and to meet the objectives of the OMP (Defence, 2020a). Data from the DSI (Aurecon, 2019 and 2020) were included in this report to assess changes from historical conditions.

The data collected has met the objectives of the OMP (Defence, 2020a) and SAQP (AECOM, 2022a).

Groundwater PFAS concentrations are relatively stable and overall, the data indicate the nature and extent of PFAS in groundwater within the HMAS Cairns Management Area and the former WWII RAN Fuel Installation Management Area has not changed from the understanding presented in the investigation phase and the PMAP (Defence, 2020b).

PFAS concentrations at surface water sample locations were generally similar to historical results and with one exception on one occasion, did not exceed the adopted recreational assessment criteria. PFAS concentrations at sediment sample locations were generally consistent with historical results, with first-time detections of PFOA within the HMAS Cairns Management Area and the former WWII RAN Fuel Installation Management Area reported at concentrations close to the laboratory LOR.

Continued monitoring under the OMP is required to further assess potential seasonal trends across all environmental media and to further assess key groundwater and surface water locations on the Base boundary and off-Base locations which recorded historical maximum concentrations.

The CSM was reviewed, and based on the results presented in this report, no changes were identified to source, pathway or receptors within the HMAS Cairns Management Area, or the former WWII RAN Fuel Installation Management Area.

Based on the data reviewed, no changes to the risk profile are recommended and there are no triggers to review the OMP. AECOM considers that the conclusions made in the HHERA (EnRisks, 2020a) and HHERA Addendum (EnRisks, 2020b) still apply. The objectives of the SAQP and OMP have been met.

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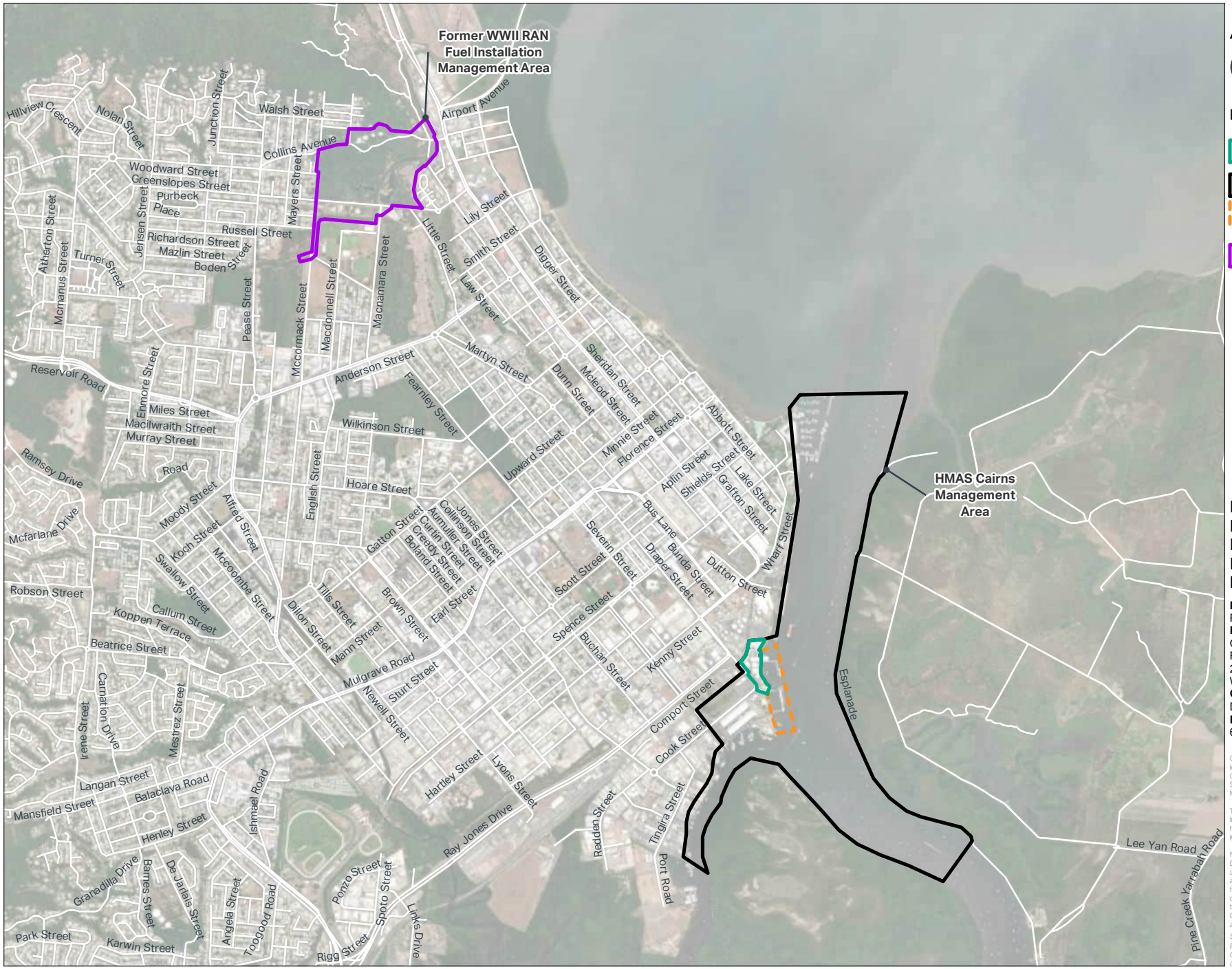
Appendix A

Figures



AECOM

N

0 500 1,000 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area
- Former WWII RAN Fuel Installation Management Area

FIGURE F1: HMAS CAIRNS AND FORMER WWII RAN FUEL INSTALLATION LOCATION PLAN

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

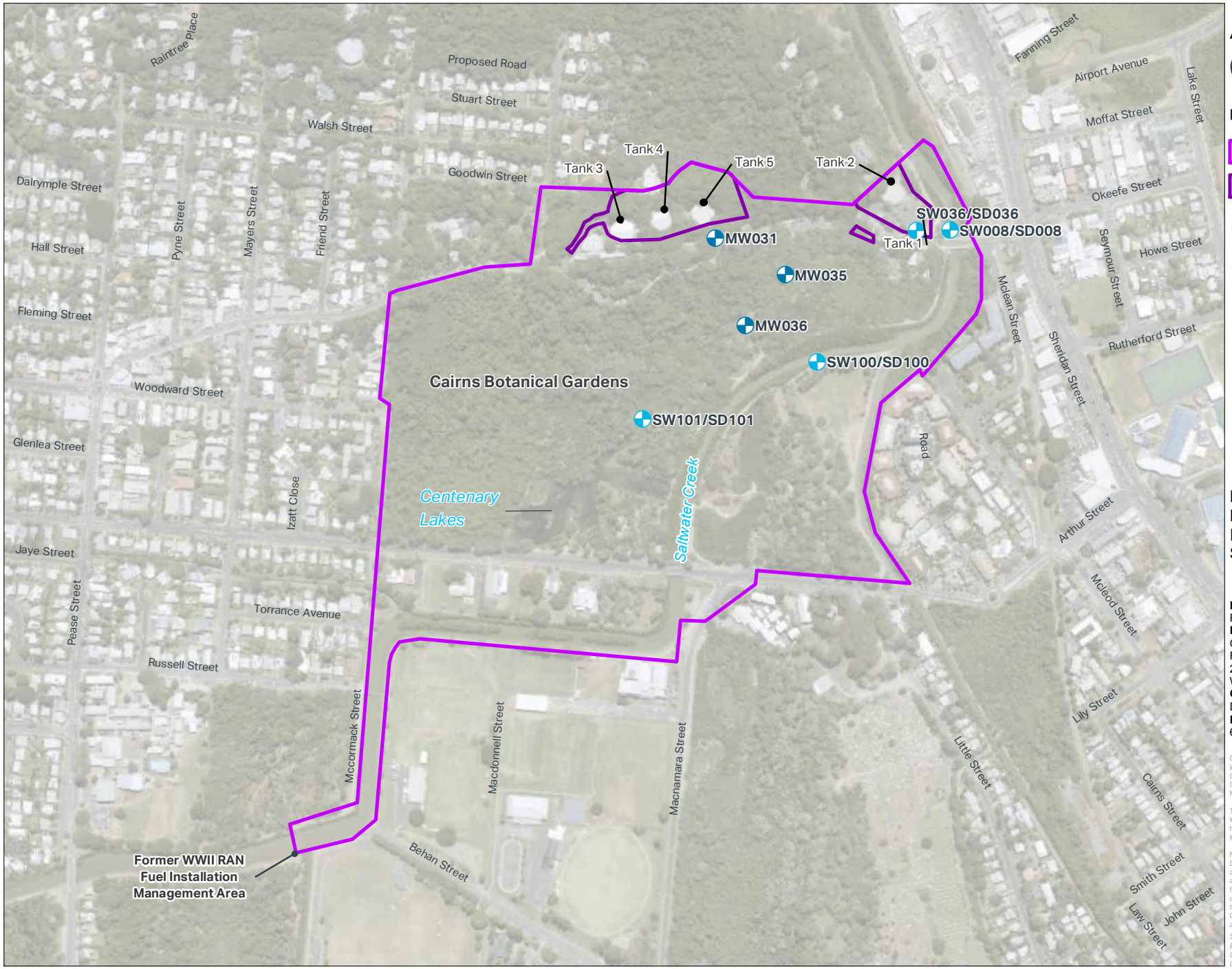
- HMAS Cairns Management Area
- Seabed Area
- Source Areas
- Groundwater Monitoring Location
- Combined Surface and Sediment Location

FIGURE F2:
HMAS CAIRNS - SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Following issue of the factual reports a location error was identified for MW019. The position of MW019 has been rectified in this figure.



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Surface Water and Sediment Location

FIGURE F3: FORMER WWII RAN FUEL INSTALLATION – SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns
- Management Area
- Seabed Area
- Inferred Groundwater Flow Direction
- Groundwater Contours at High Tide (mAHD)
- Groundwater Contours at Low Tide (mAHD)
- Groundwater Monitoring Location

1.102 Low Tide Groundwater Elevation (mAHD)
0.247 High tide Groundwater Elevation (mAHD)

FIGURE F4:
HMAS CAIRNS - APRIL 2023 - GROUNDWATER ELEVATION AND INFERRED GROUNDWATER FLOW DIRECTION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Following issue of the factual reports a location error was identified for MW019. The position of MW019 has been rectified in this figure.

AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Groundwater Contours (mAHD)
- Inferred Groundwater Flow Direction

FIGURE F5: FORMER WWII RAN FUEL - APRIL 2023 - GROUNDWATER ELEVATION AND INFERRED GROUNDWATER FLOW DIRECTION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area

Groundwater - PFOS +PFHxS (µg/L)

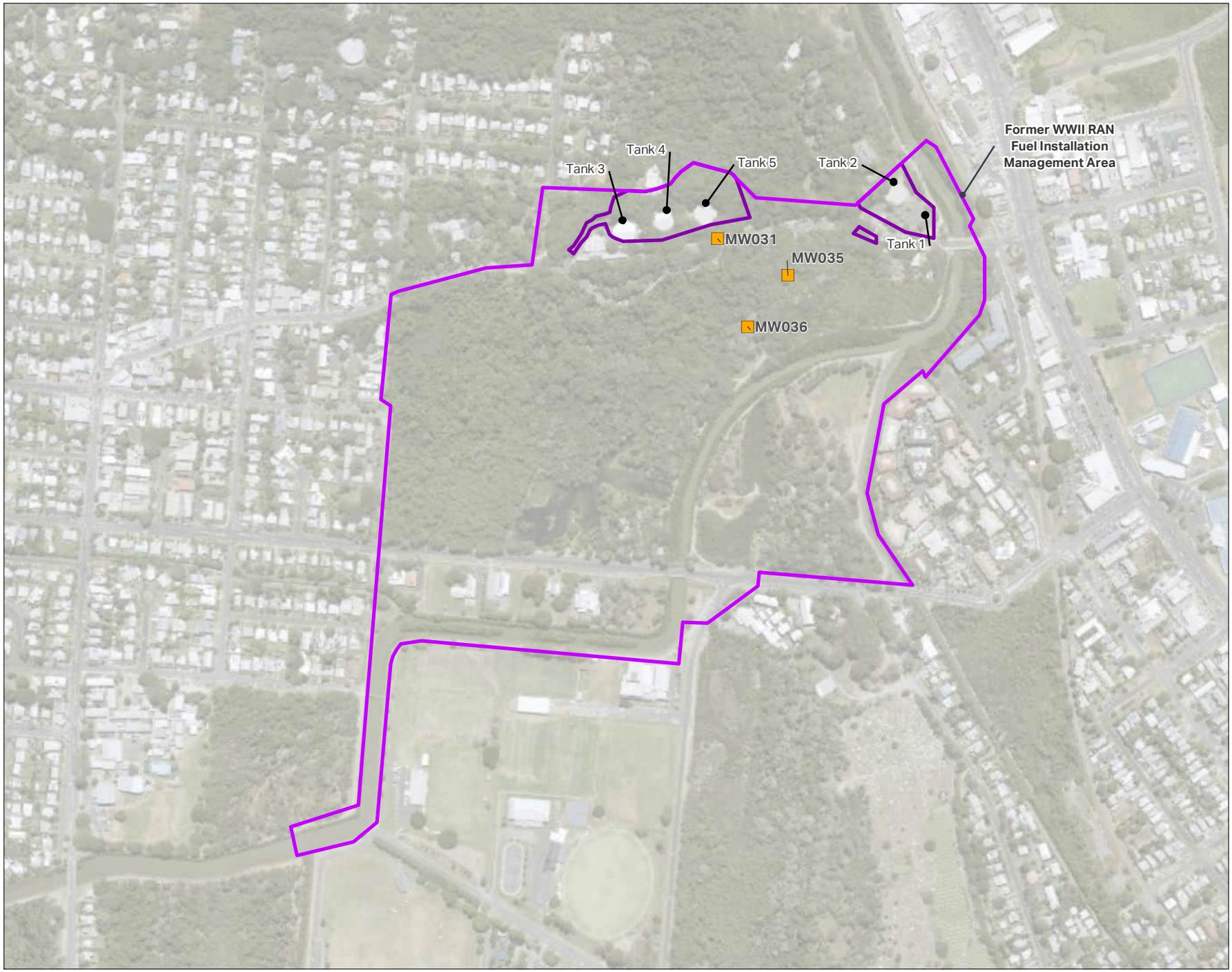
- > 50
- > 10 - 50
- > 0.07 - 10
- > Limit of Reporting - 0.07
- < Limit of Reporting

HT = High Tide
LT = Low Tide

FIGURE F6: GROUNDWATER REULTS: HMAS CAIRNS – PFOS+PFHxS (SEPTEMBER/ OCTOBER 2020)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Groundwater - PFOS +PFHxS (µg/L)

- > 50
- > 10 - 50
- > 0.07 - 10
- > Limit of Reporting - 0.07
- < Limit of Reporting

FIGURE F7: GROUNDWATER RESULTS - WWII RAN FUEL INSTALLATION – PFOS+PFHxS (SEPTEMBER/ OCTOBER 2020)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area

Groundwater - PFOA (µg/L)

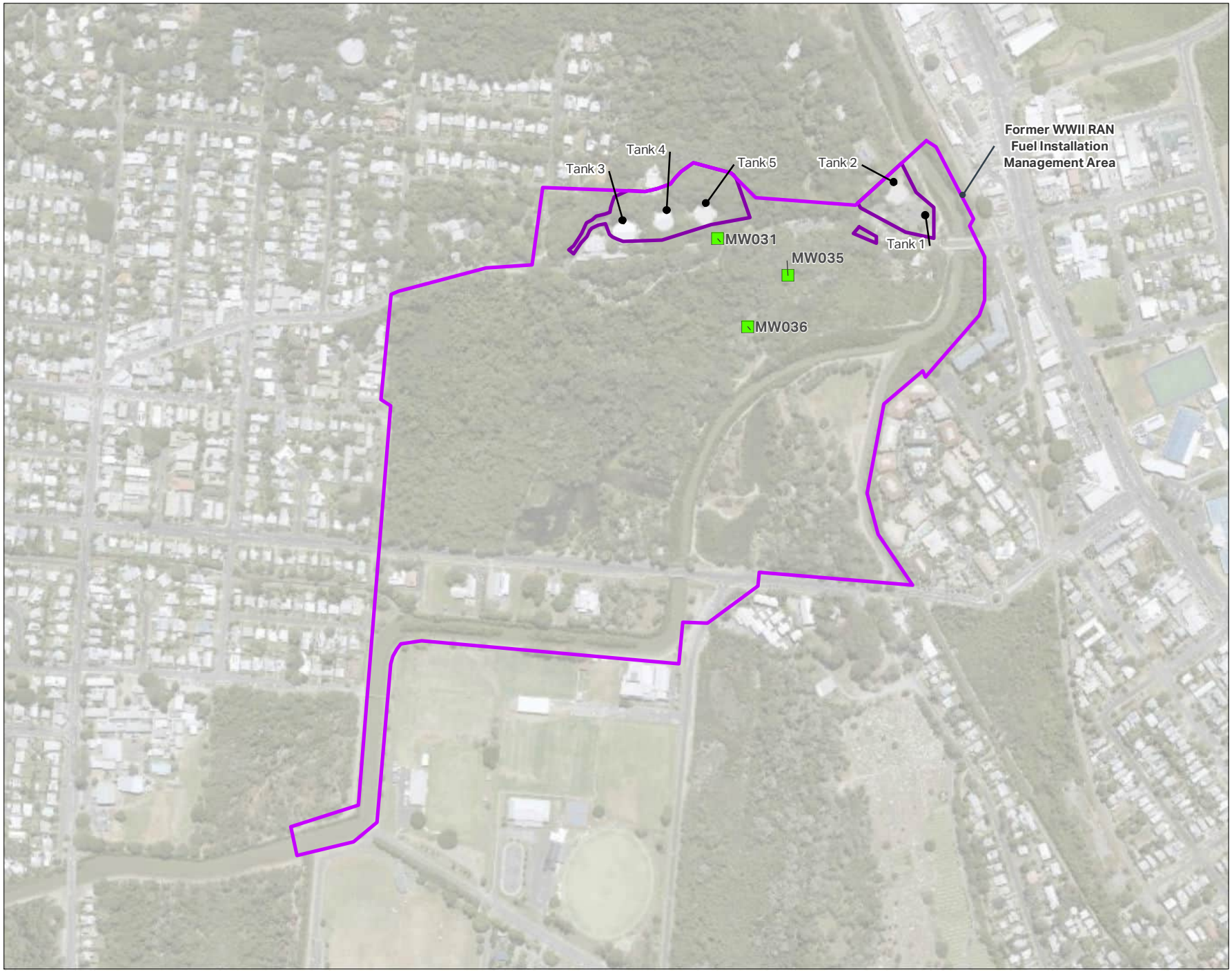
- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting

HT = High Tide
LT = Low Tide

FIGURE F8: GROUNDWATER RESULTS: HMAS CAIRNS – PFOA (SEPTEMBER/ OCTOBER 2020)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Groundwater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting

FIGURE F9:
GROUNDWATER RESULTS - WWII RAN FUEL INSTALLATION - PFOA – (SEPTEMBER/OCTOBER 2020)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area

Groundwater - PFOS +PFHxS (µg/L)

- > 50
- > 10 - 50
- > 0.07 - 10
- > Limit of Reporting - 0.07
- < Limit of Reporting

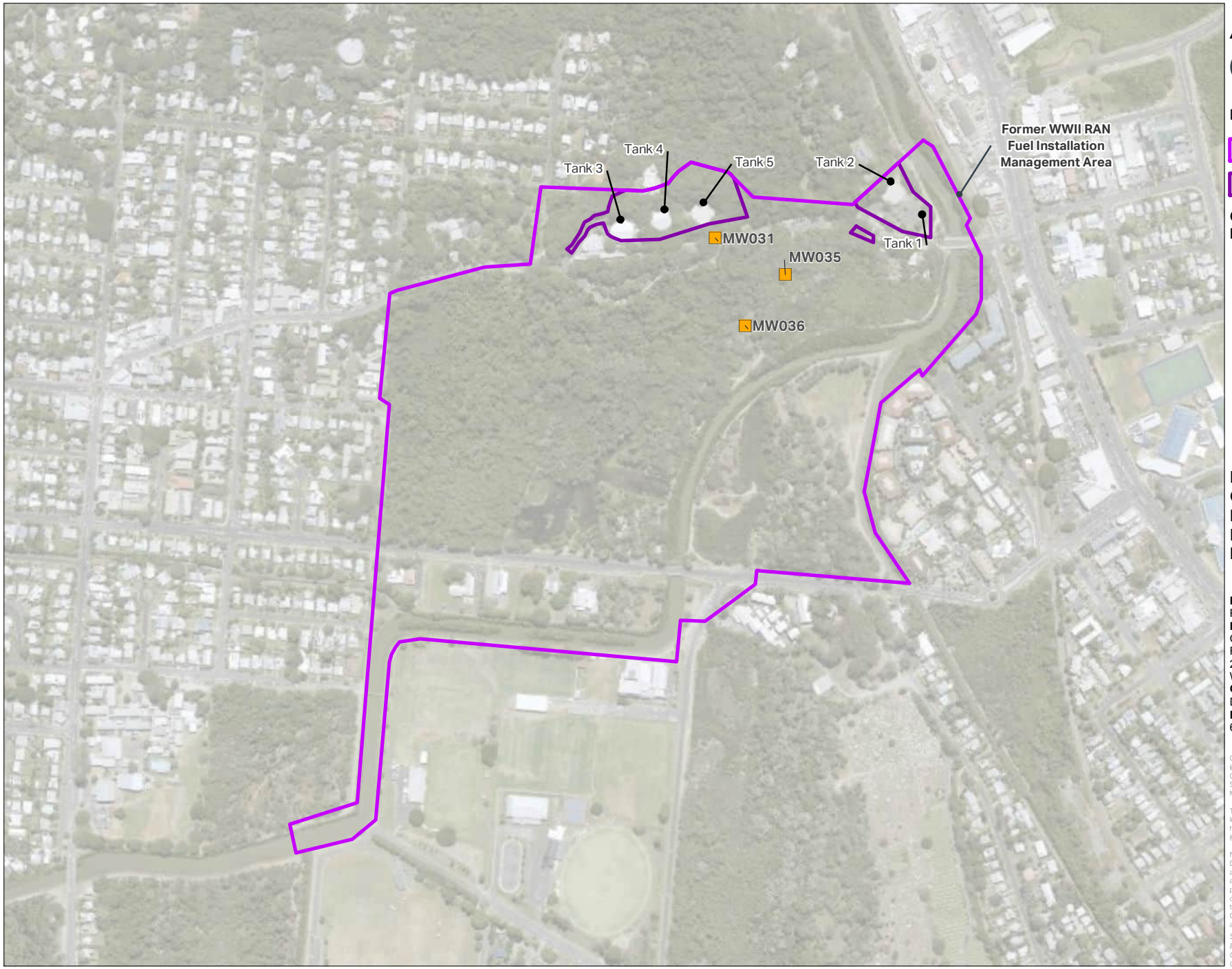
HT = High Tide
LT = Low Tide

FIGURE F10: GROUNDWATER RESULTS: HMAS CAIRNS – PFOS+PFHxS (APRIL 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Following issue of the factual reports a location error was identified for MW019. The position of MW019 has been rectified in this figure.



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Groundwater - PFOS +PFHxS (µg/L)

- > 50
- > 10 - 50
- > 0.07 - 10
- > Limit of Reporting - 0.07
- < Limit of Reporting

FIGURE F11 : GROUNDWATER RESULTS - WWII RAN FUEL INSTALLATION – PFOS+PFHxS (APRIL 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area

Groundwater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting

HT = High Tide
LT = Low Tide

FIGURE F12:
GROUNDWATER RESULTS: HMAS CAIRNS – PFOA (APRIL 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

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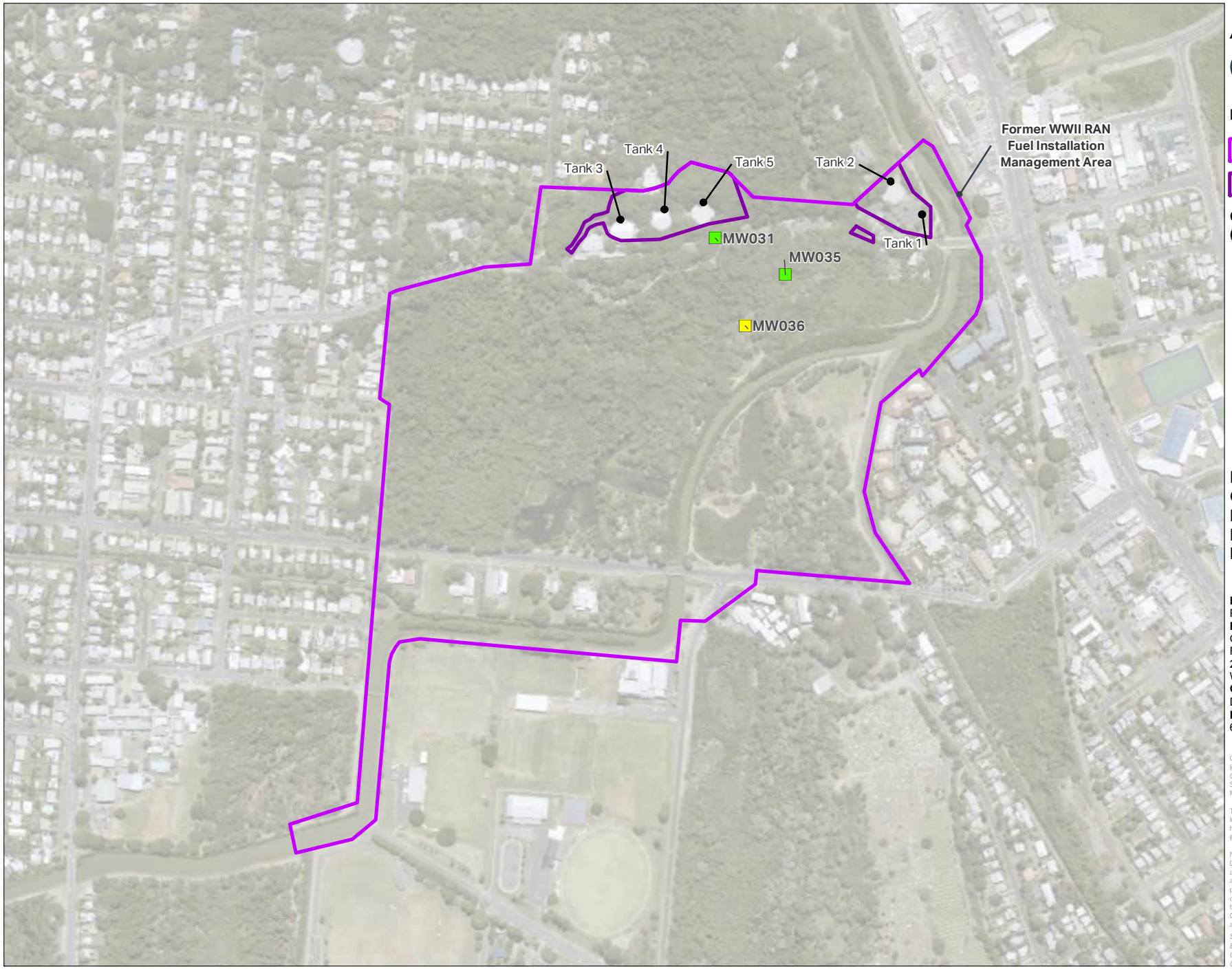

AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Groundwater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting

FIGURE F13:
GROUNDWATER RESULTS - WWII RAN FUEL INSTALLATION – PFOA (APRIL 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area

Groundwater - PFOS +PFHxS (µg/L)

- > 50
- > 10 - 50
- > 0.07 - 10
- > Limit of Reporting - 0.07
- < Limit of Reporting

FIGURE F14:
GROUNDWATER RESULTS: HMAS CAIRNS – PFOS+PFHxS (OCTOBER 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

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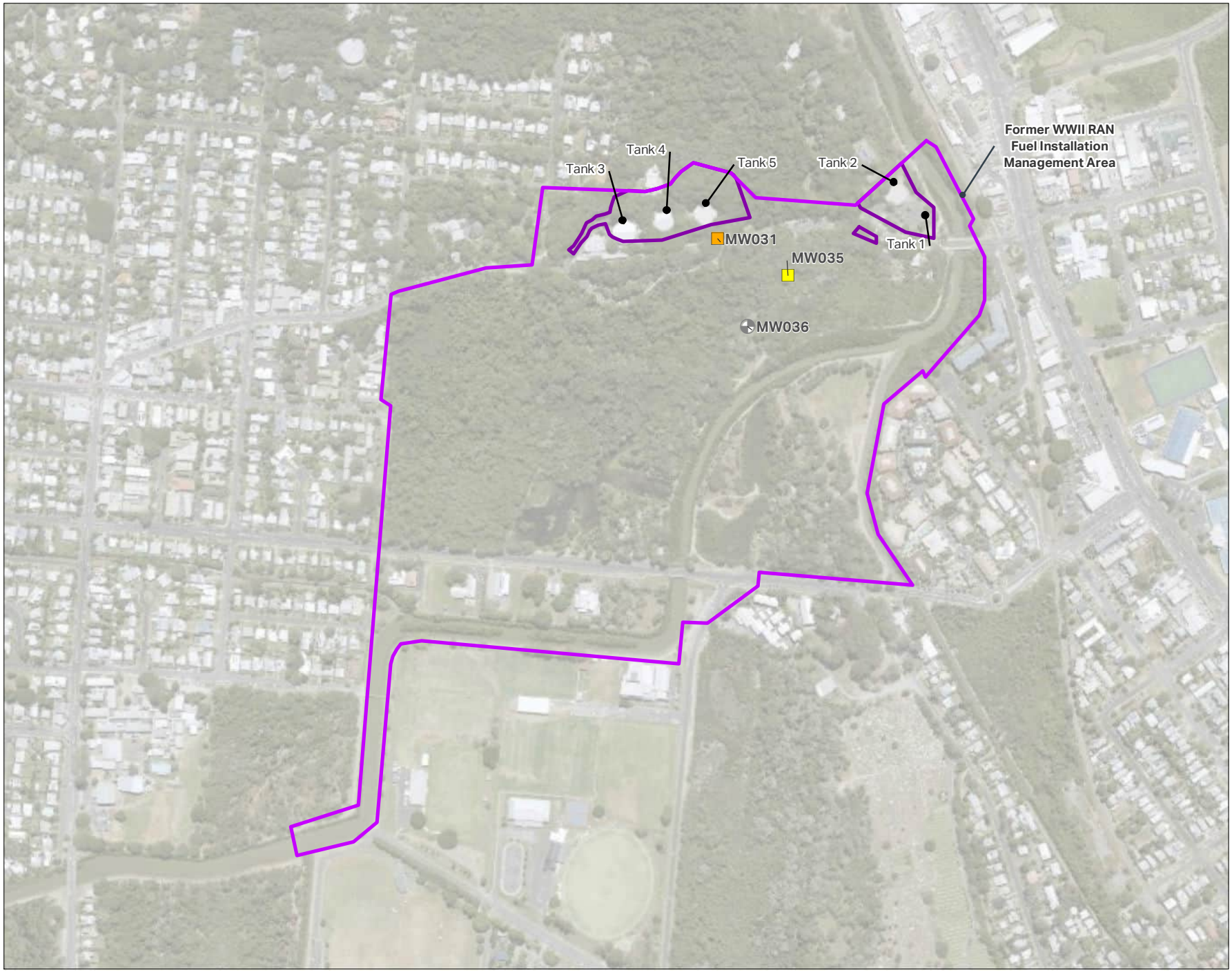

AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Groundwater - PFOS +PFHxS (µg/L)

- > 50
- > 10 - 50
- > 0.07 - 10
- > Limit of Reporting - 0.07
- < Limit of Reporting
- Groudwater Sample Location (not sampled)

FIGURE F15: GROUNDWATER RESULTS - WWII RAN FUEL INSTALLATION – PFOS+PFHxS (OCTOBER 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area

Groundwater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting

HT = High Tide
LT = Low Tide

FIGURE F16
GROUNDWATER RESULTS: HMAS CAIRNS – PFOA (OCTOBER 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
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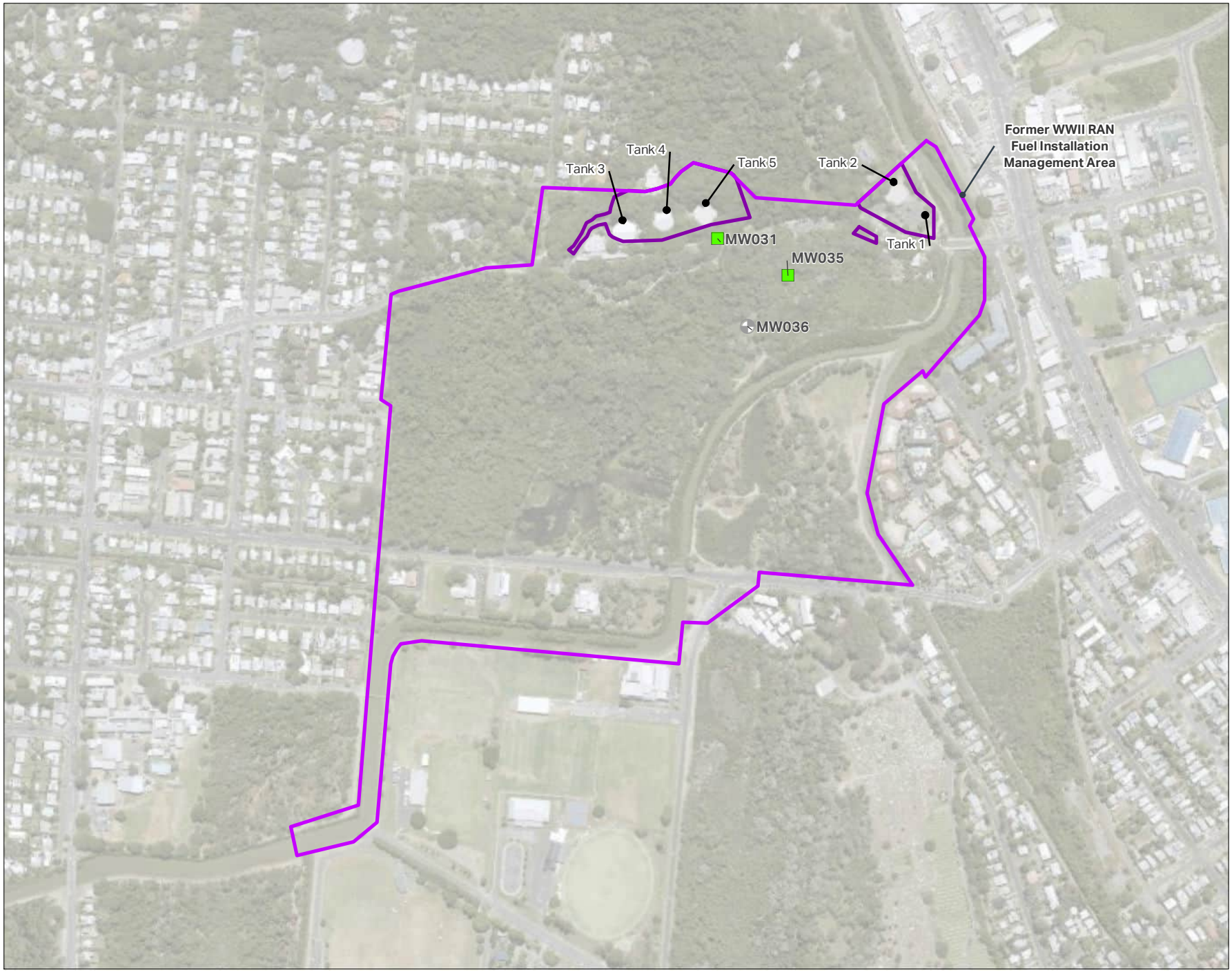

AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Groundwater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting
- Groundwater Sample Location (not sampled)

FIGURE F17: GROUNDWATER RESULTS - WWII RAN FUEL INSTALLATION – PFOA (OCTOBER 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area

Groundwater - PFOS +PFHxS (µg/L)

- > 50
- > 10 - 50
- > 0.07 - 10
- > Limit of Reporting - 0.07
- < Limit of Reporting

FIGURE F18: GROUNDWATER RESULTS: HMAS CAIRNS – PFOS+PFHxS (APRIL 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

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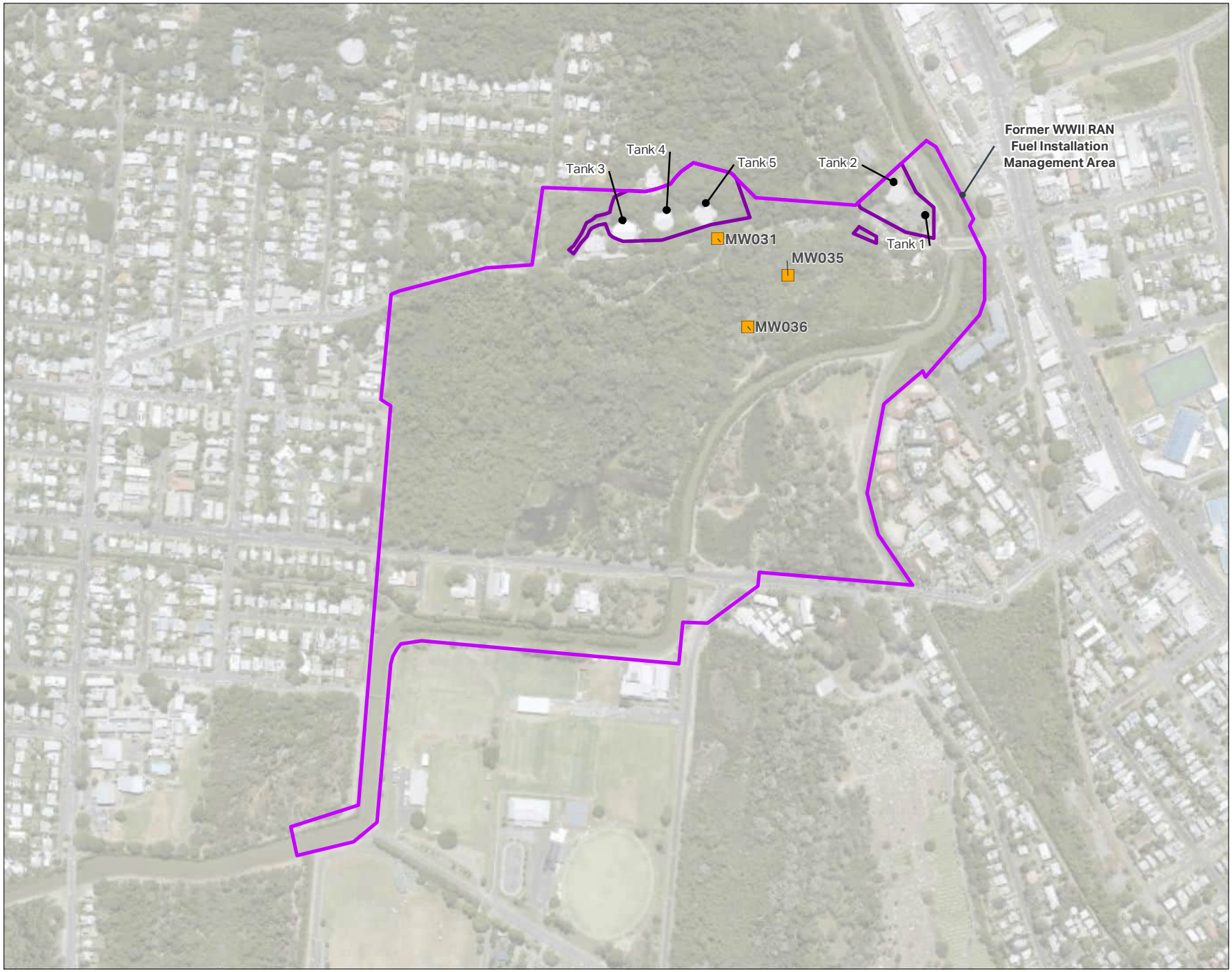

AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Groundwater - PFOS +PFHxS (µg/L)

- > 50
- > 10 - 50
- > 0.07 - 10
- > Limit of Reporting - 0.07
- < Limit of Reporting

FIGURE F19: GROUNDWATER RESULTS - WWII RAN FUEL INSTALLATION – PFOS+PFHxS (APRIL 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area

Groundwater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting

FIGURE F20: GROUNDWATER RESULTS: HMAS CAIRNS – PFOA (APRIL 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

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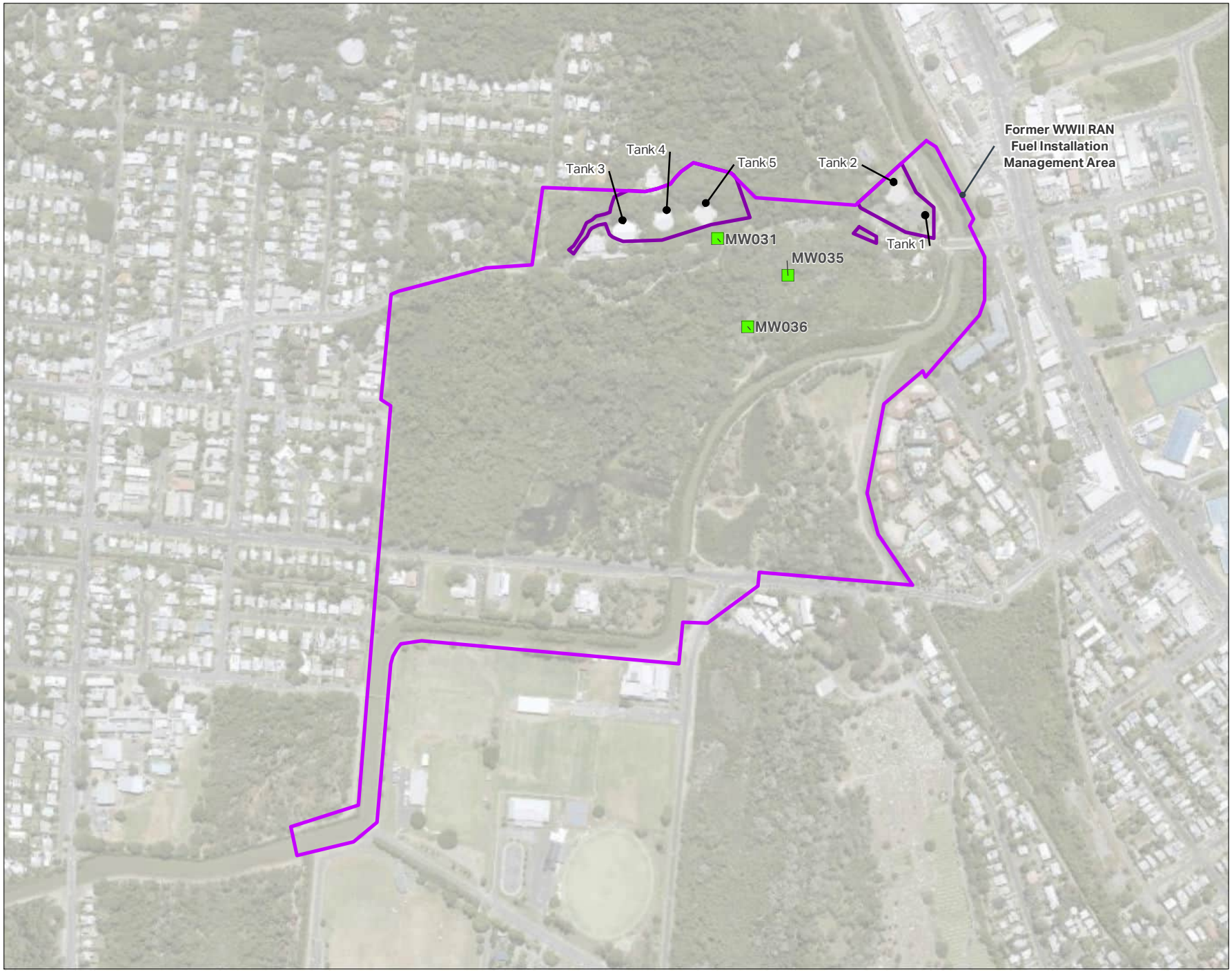

AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Groundwater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting

FIGURE F21: GROUNDWATER RESULTS - WWII RAN FUEL INSTALLATION – PFOA (APRIL 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area

Groundwater - PFOS +PFHxS (µg/L)

- > 50
- > 10 - 50
- > 0.07 - 10
- > Limit of Reporting - 0.07
- < Limit of Reporting

FIGURE F22: GROUNDWATER RESULTS: HMAS CAIRNS – PFOS+PFHxS (SEPTEMBER 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

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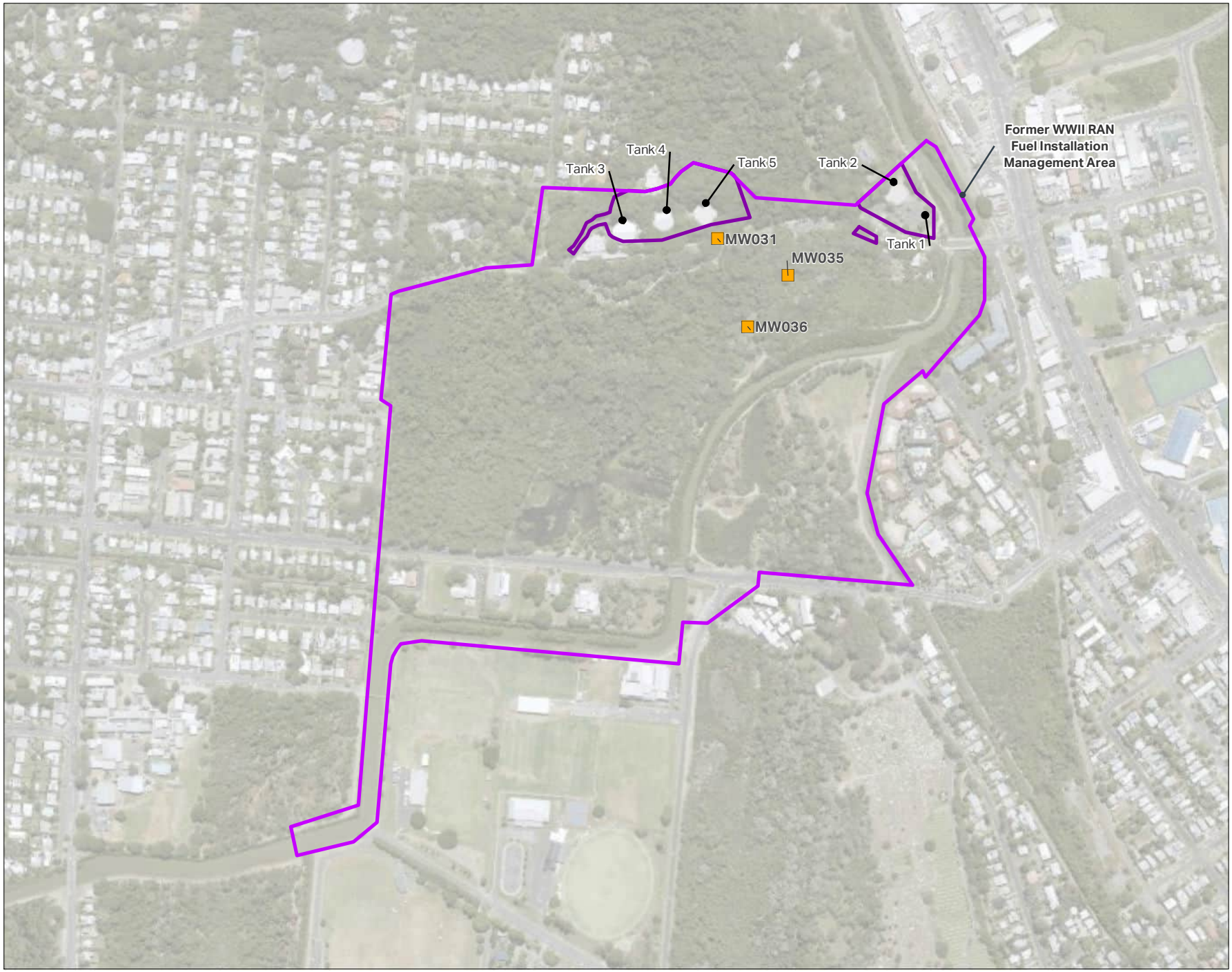


AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Groundwater - PFOS +PFHxS (µg/L)

- > 50
- > 10 - 50
- > 0.07 - 10
- > Limit of Reporting - 0.07
- < Limit of Reporting

FIGURE F23: GROUNDWATER RESULTS - WWII RAN FUEL INSTALLATION – PFOS+PFHxS (SEPTEMBER 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area

Groundwater - PFOA (µg/L)

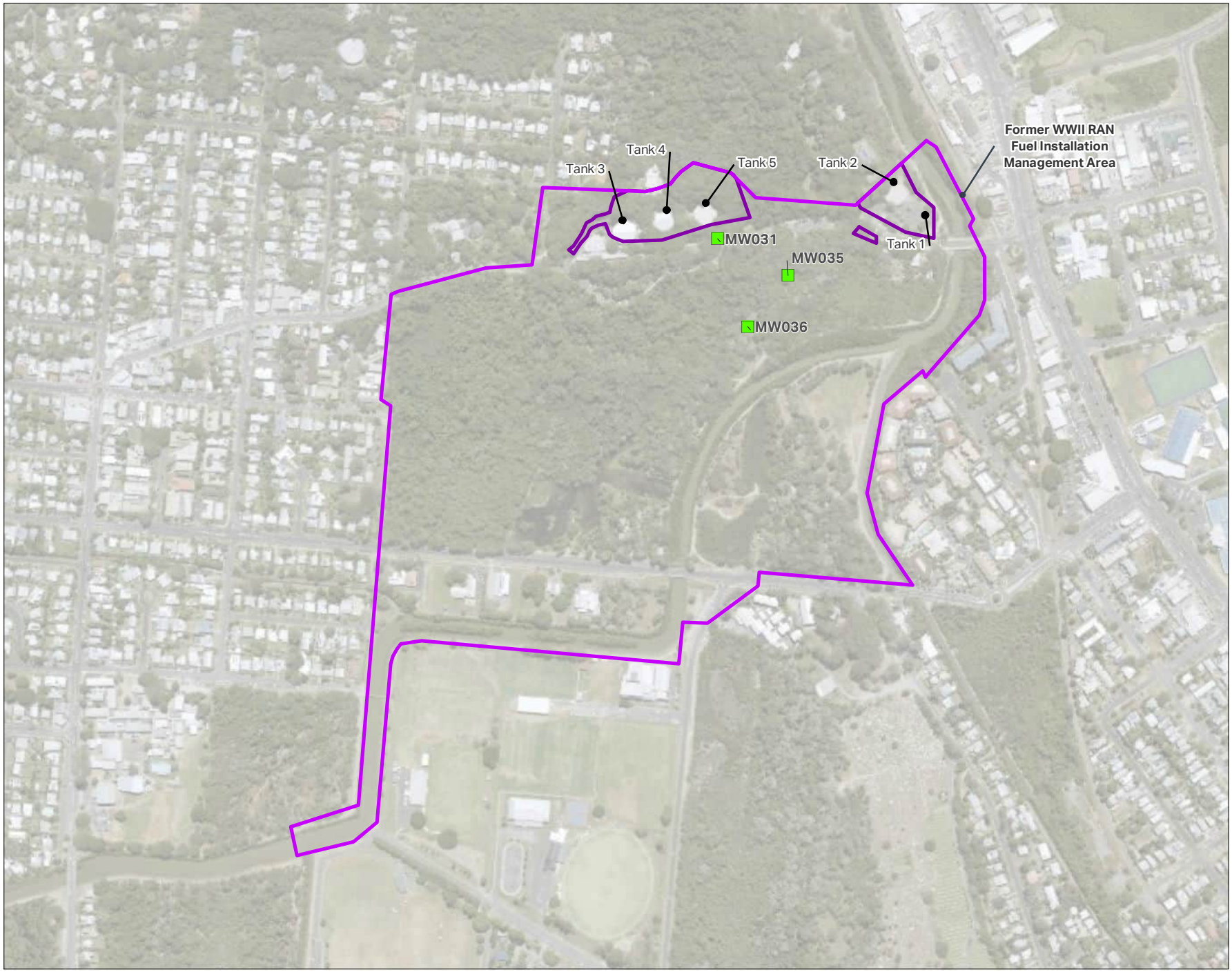
- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting

FIGURE F24:
GROUNDWATER RESULTS: HMAS CAIRNS
– PFOA (SEPTEMBER 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Following issue of the factual reports a location error was identified for MW019. The position of MW019 has been rectified in this figure.



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Groundwater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting

FIGURE F25: GROUNDWATER RESULTS - WWII RAN FUEL INSTALLATION – PFOA (SEPTEMBER 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

HMAS Cairns Property Boundary

Management Area

Seabed Area

Groundwater - PFOS +PFHxS (µg/L)

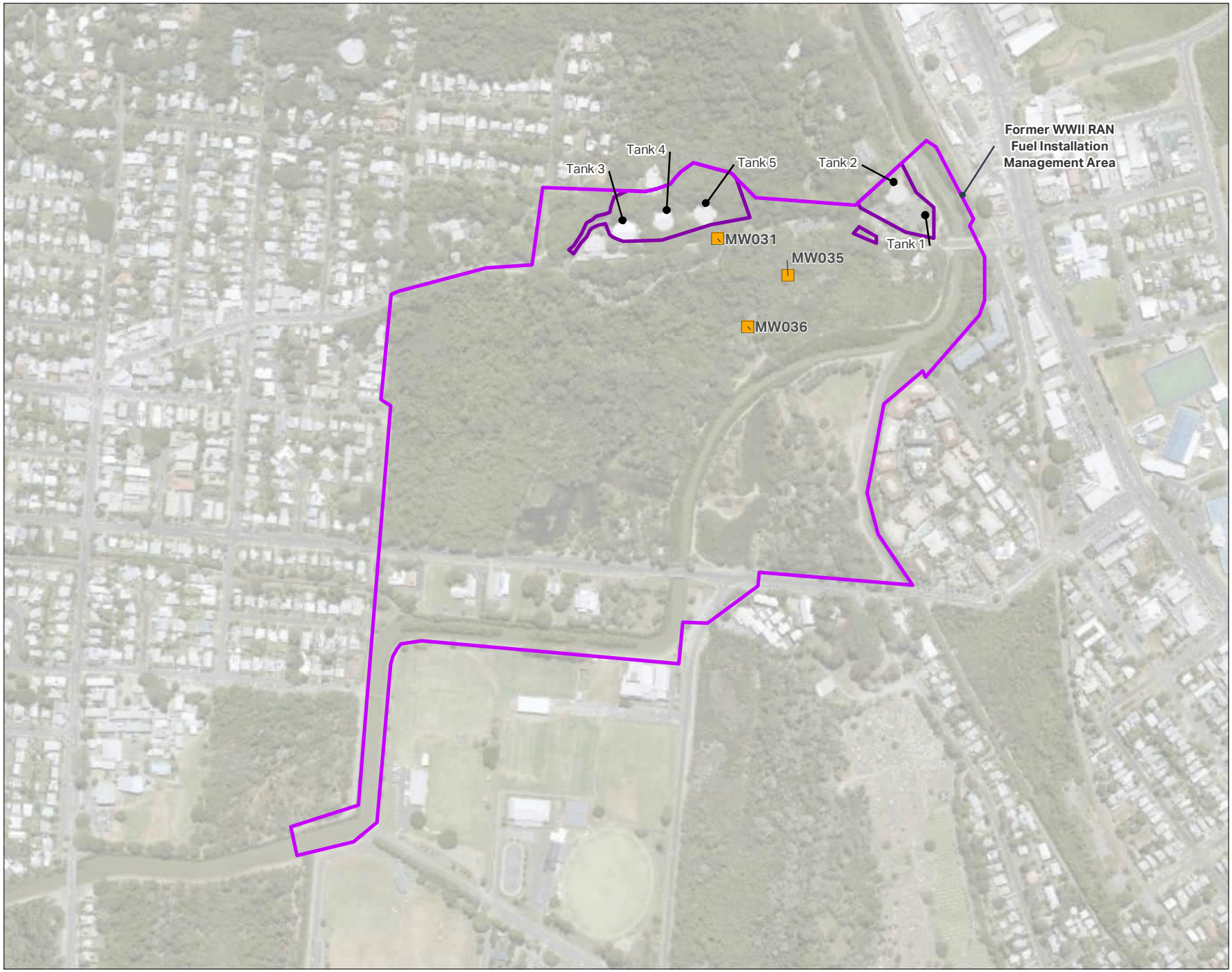
- > 50
- > 10 - 50
- > 0.07 - 10
- > Limit of Reporting - 0.07
- < Limit of Reporting

FIGURE F26
GROUNDWATER RESULTS: HMAS CAIRNS – PFOS+PFHxS (APRIL 2023)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Following issue of the factual reports a location error was identified for MW019. The position of MW019 has been rectified in this figure.



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Groundwater - PFOS +PFHxS (µg/L)

- > 50
- > 10 - 50
- > 0.07 - 10
- > Limit of Reporting - 0.07
- < Limit of Reporting

FIGURE F27: GROUNDWATER RESULTS - WWII RAN FUEL INSTALLATION – PFOS+PFHxS (APRIL 2023)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area

Groundwater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting

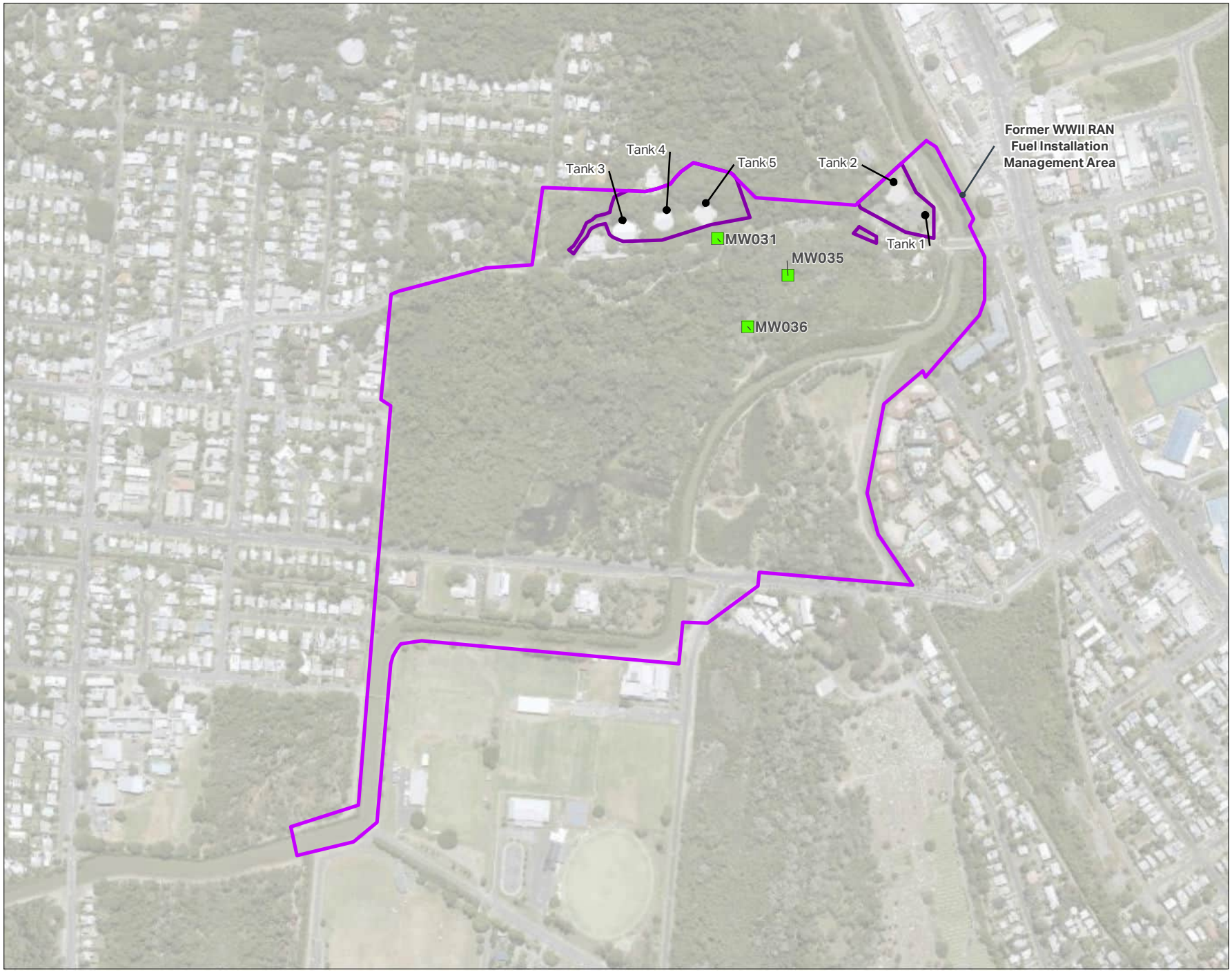
FIGURE F28:
GROUNDWATER RESULTS: HMAS CAIRNS
– PFOA (APRIL 2023)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

\\na.aecomnet.com\lfs\APAC\Townsville-AUTSV1\Legacy\Projects\606X\60612487\900_CAD_GIS\920_GIS\02_MXDs\Cairns\OMIR\G038_Cairns_F38_AIR_HMASCairns_GWSampling_PFOA_Apr2023_A4L_01_220110.mxd Date Saved: 16/08/2023

MW019 position on figure corrected 21/02/2024 to align with the location reported in the DSI (Aurecon, 2019 and 2020) and sampled.



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Groundwater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting

FIGURE F29: GROUNDWATER RESULTS - WWII RAN FUEL INSTALLATION – PFOA (APRIL 2023)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

HMAS Cairns

Management Area

Seabed Area

Sediment - PFOS +PFHxS (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

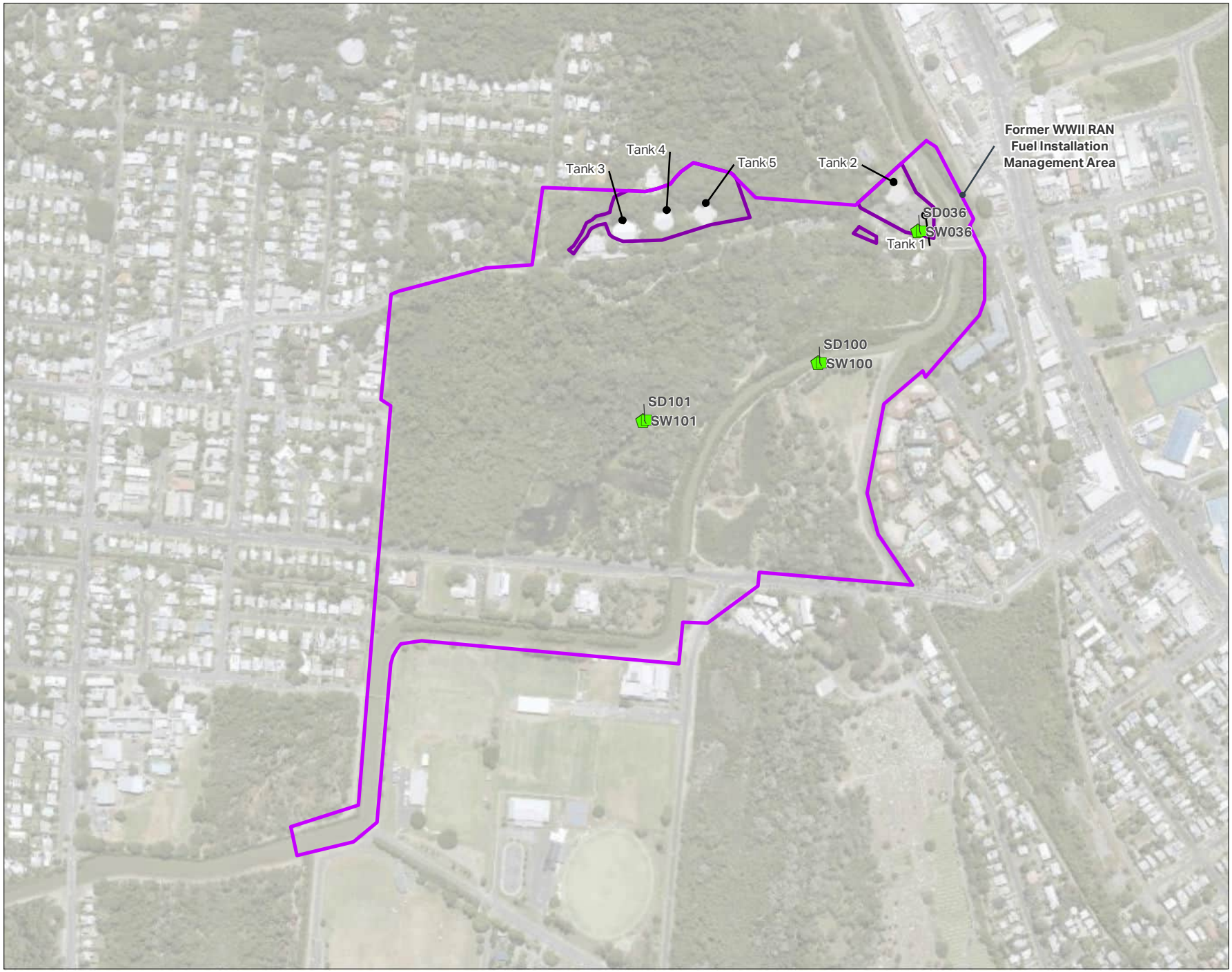
Surface water - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > Limit of Reporting - 2
- < Limit of Reporting

FIGURE F30:
SURFACE WATER AND SEDIMENT RESULTS: HMAS CAIRNS - PFOS+PFHxS (SEPTEMBER/OCTOBER 2020)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

Management Area

WWII RAN Fuel Installation

Surface water - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > Limit of Reporting - 2
- < Limit of Reporting

Sediment - PFOS +PFHxS (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F31:
SURFACE WATER AND SEDIMENTRESULTS: WWII RAN FUEL INSTALLATION - PFOS+PFHxS (SEPTEMBER/OCTOBER 2020)

PROJECT NAME:
PFAS OMP

REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation

CLIENT NAME:
Department of Defence

PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

HMAS Cairns Property Boundary

Management Area

Seabed Area

Surface Water - PFOA (µg/L)

- > 50
- > 10 - 50
- > Limit of Reporting
- < Limit of Reporting

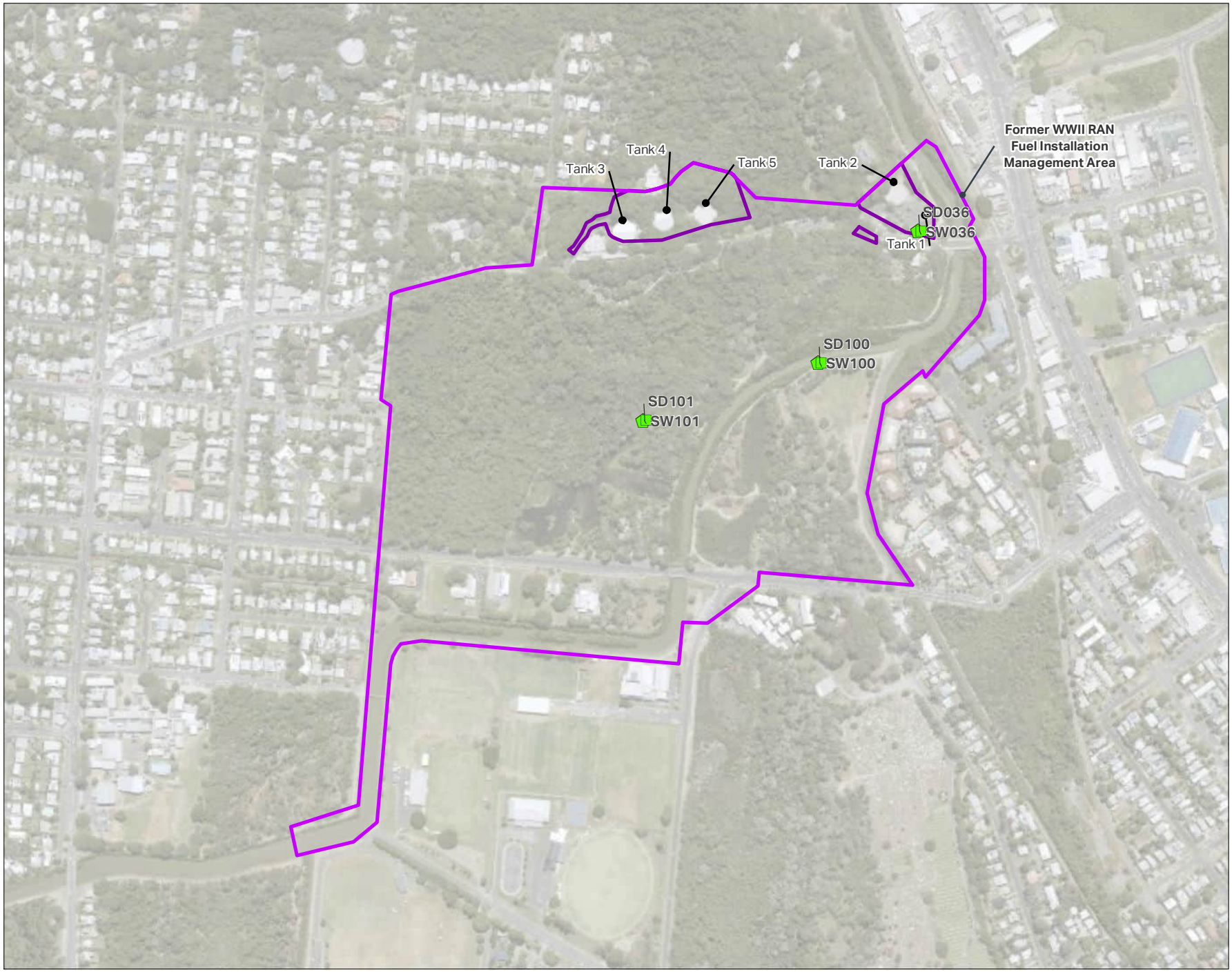
Sediment - PFOA (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F32: SURFACE WATER AND SEDIMENTRESULTS: HMAS CAIRNS - PFOA (SEPTEMBER/OCTOBER 2020)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

Management Area

WWII RAN Fuel Installation

Sediment - PFOA (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

Surface Water - PFOA (µg/L)

- > 50
- > 10 - 50
- > Limit of Reporting
- < Limit of Reporting

FIGURE F33: SURFACE WATER AND SEDIMENTRESULTS: WWII RAN FUEL INSTALLATION - PFOA (SEPTEMBER/ OCTOBER 2020)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

HMAS Cairns

Management Area

Seabed Area

Sediment - PFOS +PFHxS (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

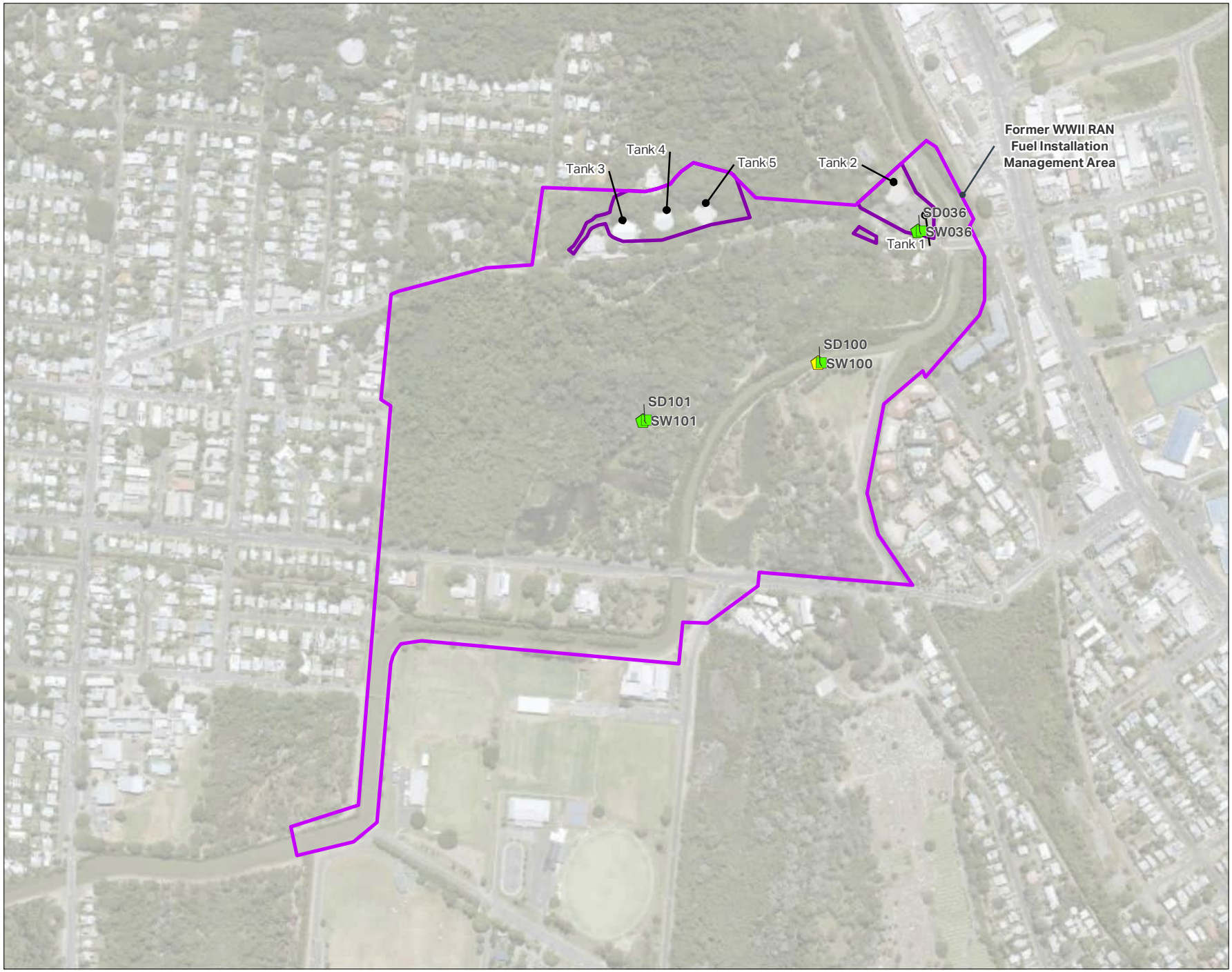
Surface water - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > Limit of Reporting - 2
- < Limit of Reporting

FIGURE F34: SURFACE WATER AND SEDIMENT RESULTS: HMAS CAIRNS - PFOS+PFHxS (APRIL 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

Management Area

WWII RAN Fuel Installation

Surface water - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > Limit of Reporting - 2
- < Limit of Reporting

Sediment - PFOS +PFHxS (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F35:
SURFACE WATER AND SEDIMENT RESULTS: WWII RAN FUEL INSTALLATION - PFOS+PFHxS (APRIL 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

HMAS Cairns Property Boundary

Management Area

Seabed Area

Surface Water - PFOA (µg/L)

- > 50
- > 10 - 50
- > Limit of Reporting
- < Limit of Reporting

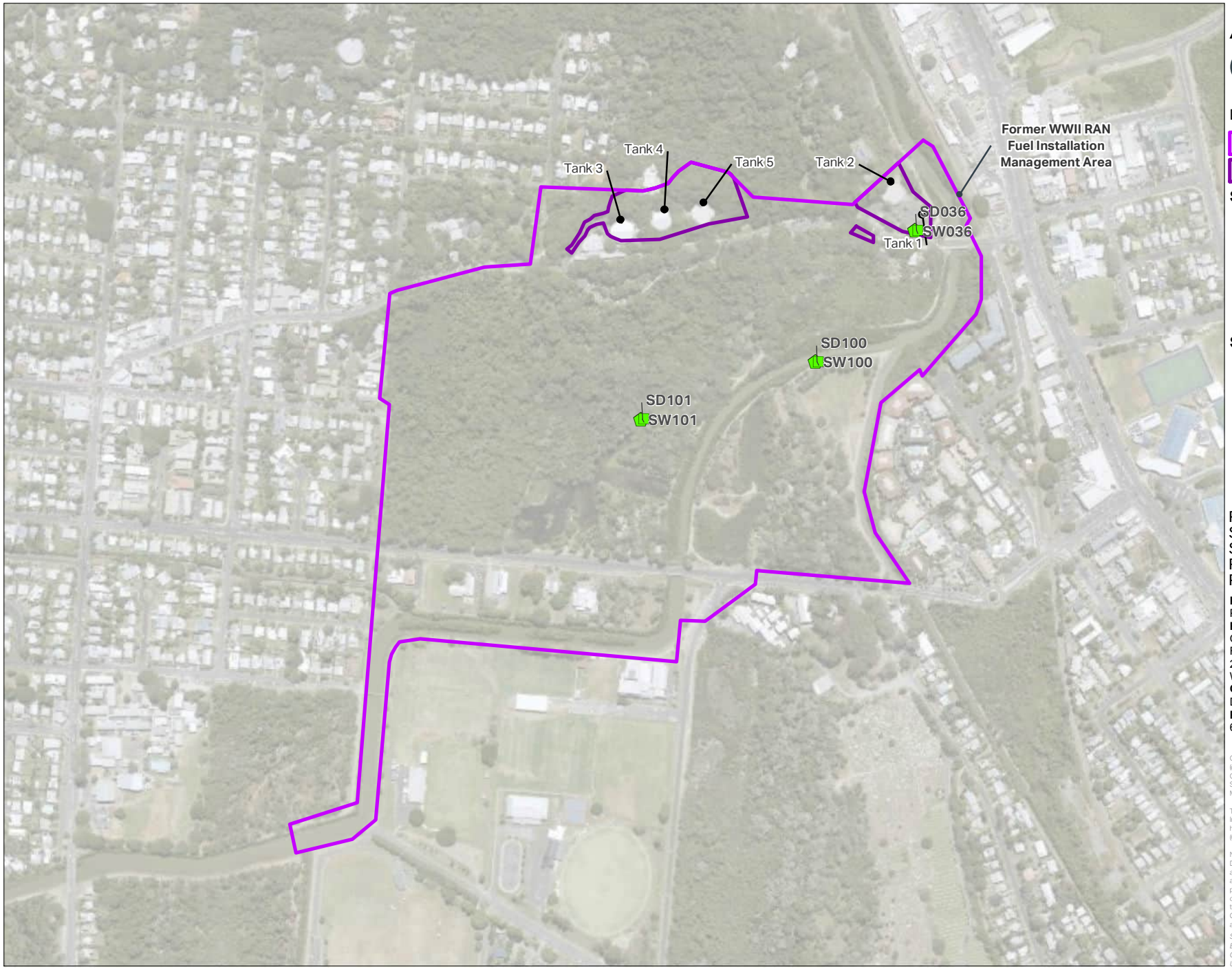
Sediment - PFOA (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F36:
SURFACE WATER AND SEDIMENT RESULTS: HMAS CAIRNS - PFOA (APRIL 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

Management Area

WWII RAN Fuel Installation

Sediment - PFOA (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

Surface Water - PFOA (µg/L)

- > 50
- > 10 - 50
- > Limit of Reporting
- < Limit of Reporting

FIGURE F37:
SURFACE WATER AND SEDIMENT RESULTS: WWII RAN FUEL INSTALLATION - PFOA (APRIL 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

HMAS Cairns

Management Area

Seabed Area

Sediment - PFOS +PFHxS (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

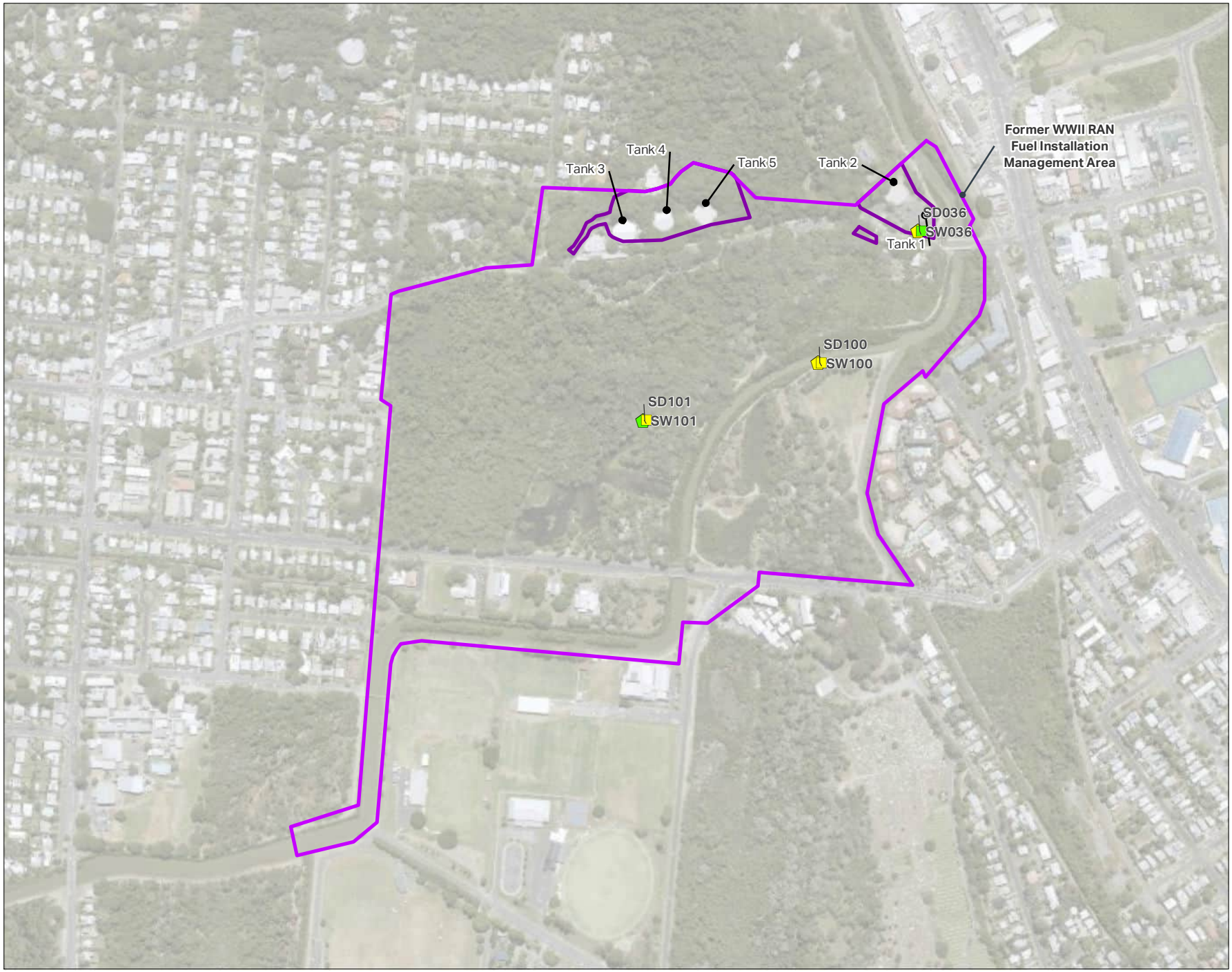
Surface water - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > Limit of Reporting - 2
- < Limit of Reporting

FIGURE F38:
SURFACE WATER AND SEDIMENT RESULTS: HMAS CAIRNS - PFOS+PFHxS (OCTOBER 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

Management Area

WWII RAN Fuel Installation

Surface water - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > Limit of Reporting - 2
- < Limit of Reporting

Sediment - PFOS +PFHxS (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F39:
SURFACE WATER AND SEDIMENT RESULTS: WWII RAN FUEL INSTALLATION - PFOS+PFHxS (OCTOBER 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

HMAS Cairns Property Boundary

Management Area

Seabed Area

Surface Water - PFOA (µg/L)

- > 50
- > 10 - 50
- > Limit of Reporting
- < Limit of Reporting

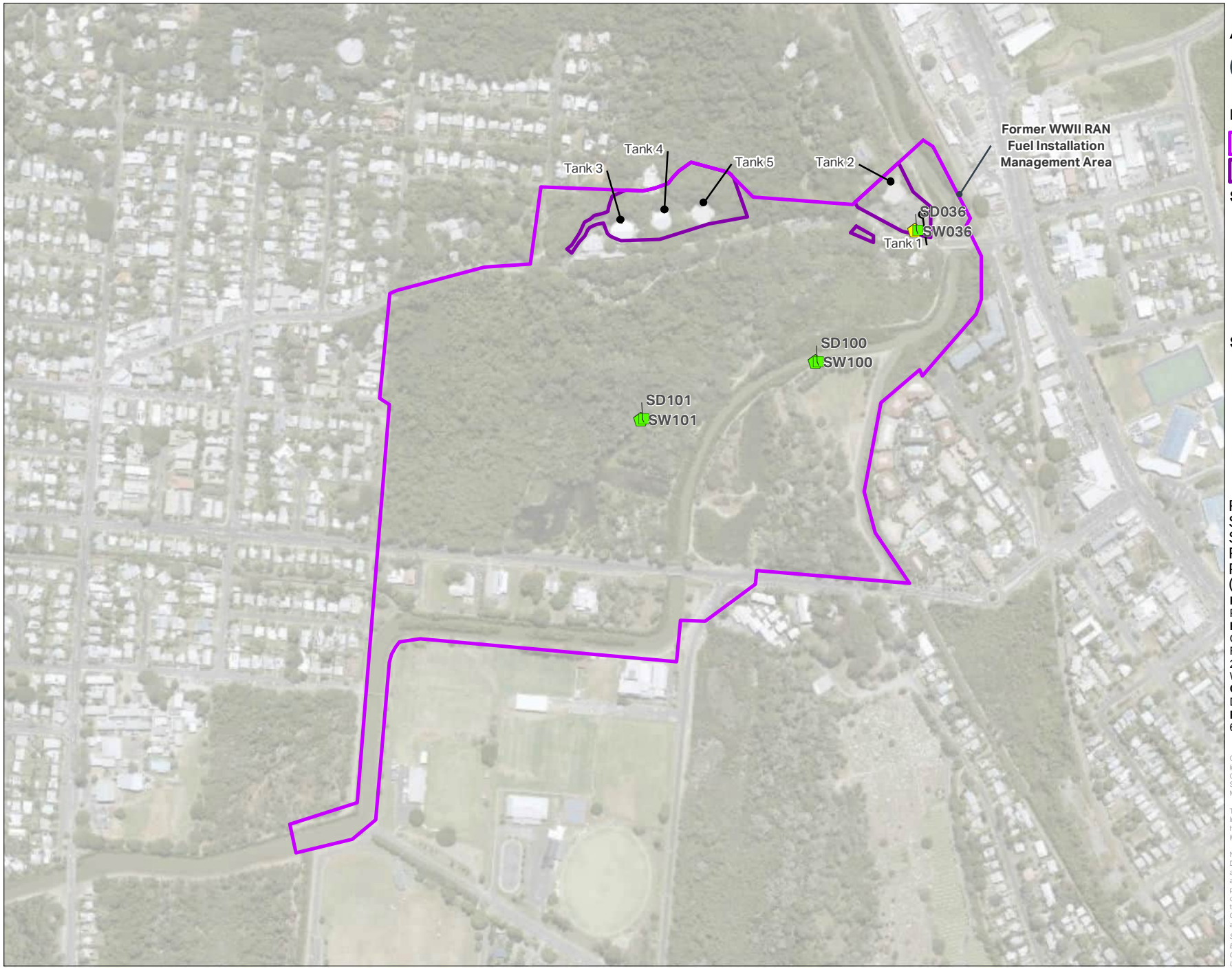
Sediment - PFOA (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F40:
SURFACE WATER AND SEDIMENT RESULTS: HMAS CAIRNS - PFOA (OCTOBER 2021)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

Management Area

WWII RAN Fuel Installation

Sediment - PFOA (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

Surface Water - PFOA (µg/L)

- > 50
- > 10 - 50
- > Limit of Reporting
- < Limit of Reporting

FIGURE F41:
SURFACE WATER AND SEDIMENT RESULTS: WWII RAN FUEL INSTALLATION - PFOA
(OCTOBER 2021)

PROJECT NAME:
PFAS OMP

REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation

CLIENT NAME:
Department of Defence

PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

HMAS Cairns Property Boundary

Management Area

Seabed Area

Surface water - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > Limit of Reporting - 2
- < Limit of Reporting

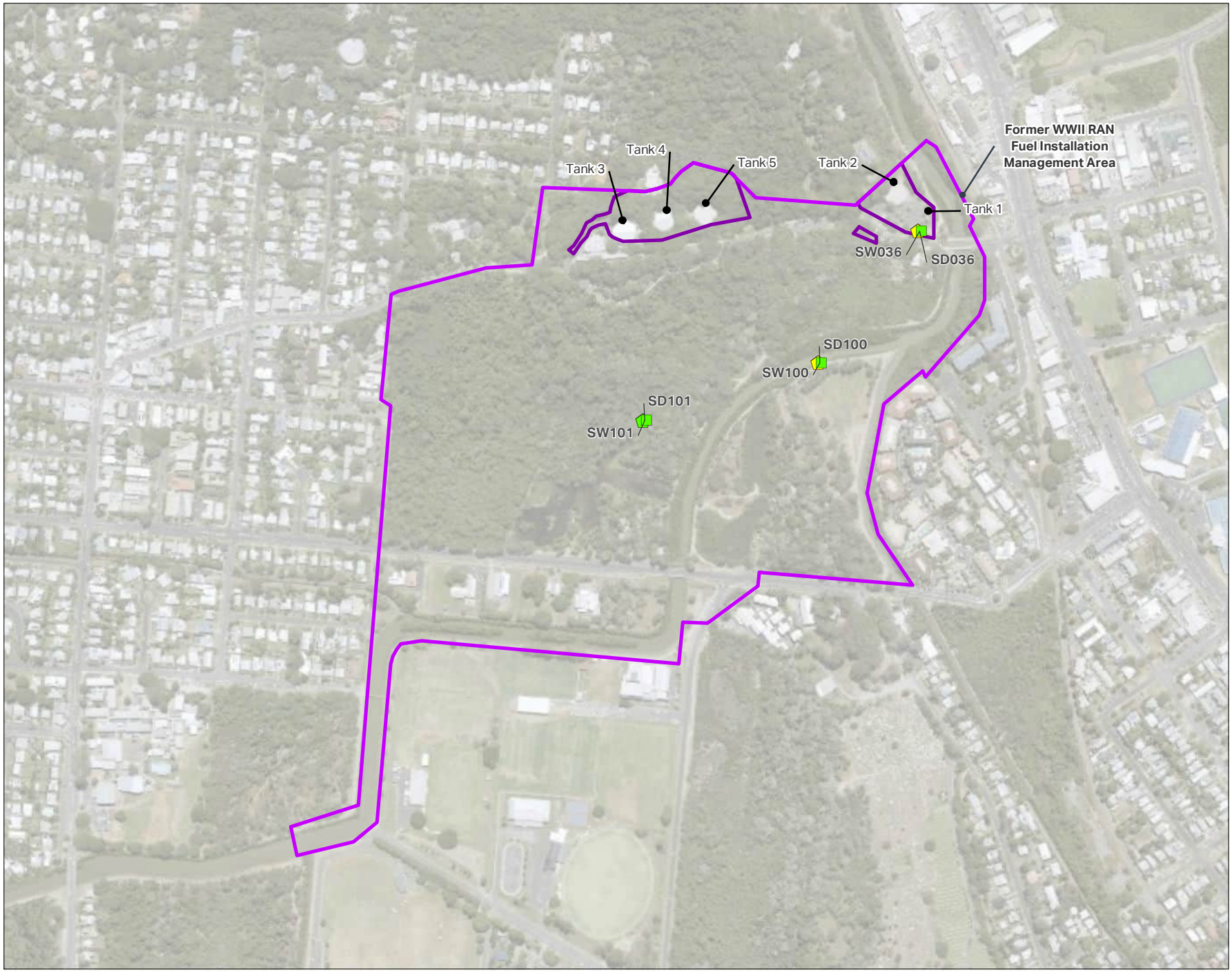
Sediment - PFOS +PFHxS (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F42:
SURFACE WATER AND SEDIMENT RESULTS- WWII RAN FUEL INSTALLATION – PFOS+PFHxS (APRIL 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Surface water - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > Limit of Reporting - 2
- < Limit of Reporting

Sediment - PFOS +PFHxS (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F43:
SURFACE WATER AND SEDIMENT RESULTS- - WWII RAN FUEL INSTALLATION – PFOS+PFHxS (APRIL 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area

Surface water - PFOA (µg/L)

- > 50
- > 10 - 50
- > Limit of Reporting
- < Limit of Reporting

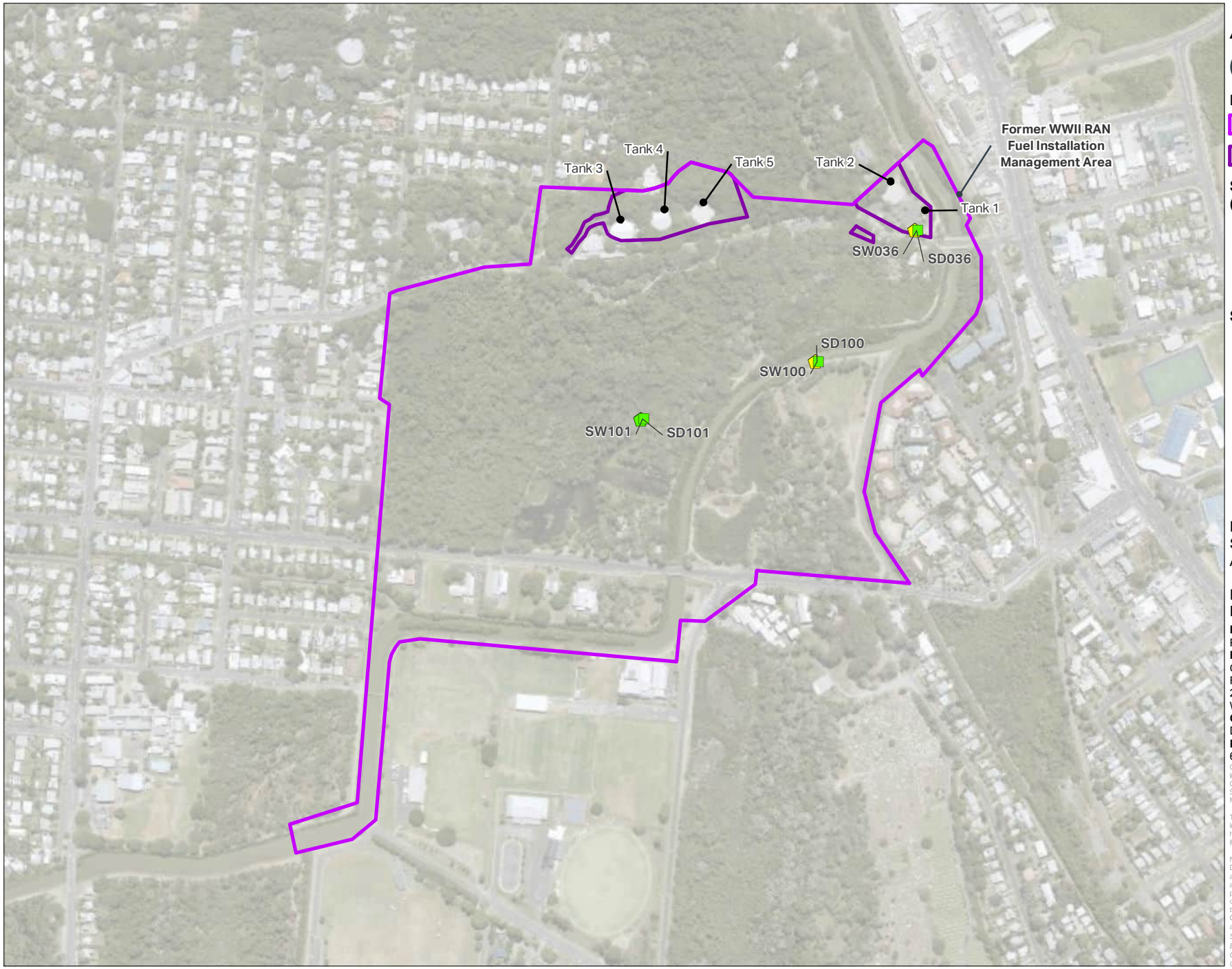
Sediment - PFOA (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F44:
SURFACE WATER AND SEDIMENT RESULTS- WWII RAN FUEL INSTALLATION – PFOA (APRIL 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Surface water - PFOA (µg/L)

- > 50
- > 10 - 50
- > Limit of Reporting
- < Limit of Reporting

Sediment - PFOA (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F45:
SURFACE WATER AND SEDIMENT RESULTS- - WWII RAN FUEL INSTALLATION – PFOA (APRIL 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

HMAS Cairns Property Boundary

Management Area

Seabed Area

Surface water - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > Limit of Reporting - 2
- < Limit of Reporting

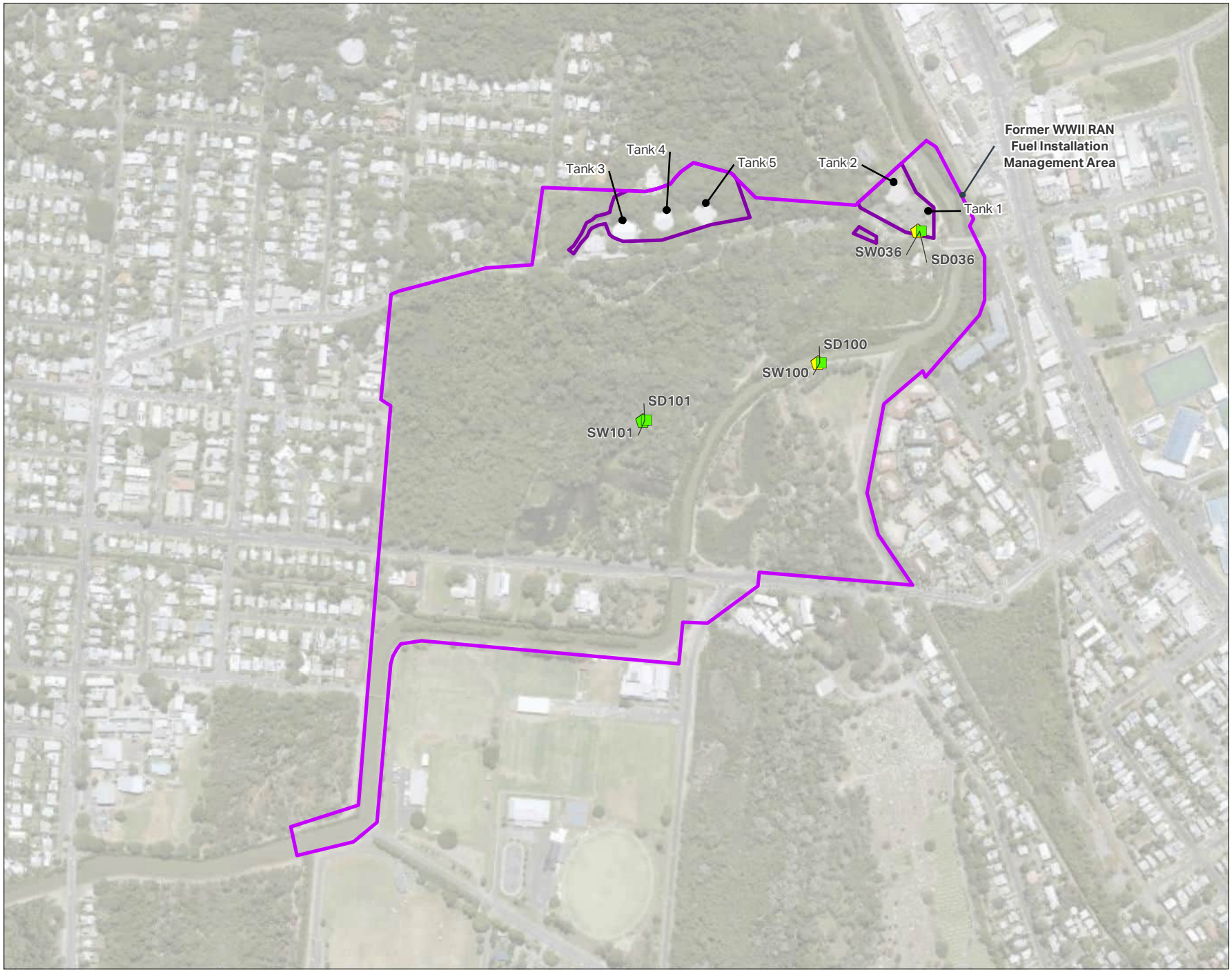
Sediment - PFOS +PFHxS (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F46:
SURFACE WATER AND SEDIMENT RESULTS- WWII RAN FUEL INSTALLATION – PFOS+PFHxS (SEPTEMBER 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Surface water - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > Limit of Reporting - 2
- < Limit of Reporting

Sediment - PFOS +PFHxS (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F47:
SURFACE WATER AND SEDIMENT RESULTS- - WWII RAN FUEL INSTALLATION – PFOS+PFHxS (SEPTEMBER 2022)

PROJECT NAME:
PFAS OMP

REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation

CLIENT NAME:
Department of Defence

PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

HMAS Cairns Property Boundary

Management Area

Seabed Area

Surface water - PFOA (µg/L)

- > 50
- > 10 - 50
- > Limit of Reporting
- < Limit of Reporting

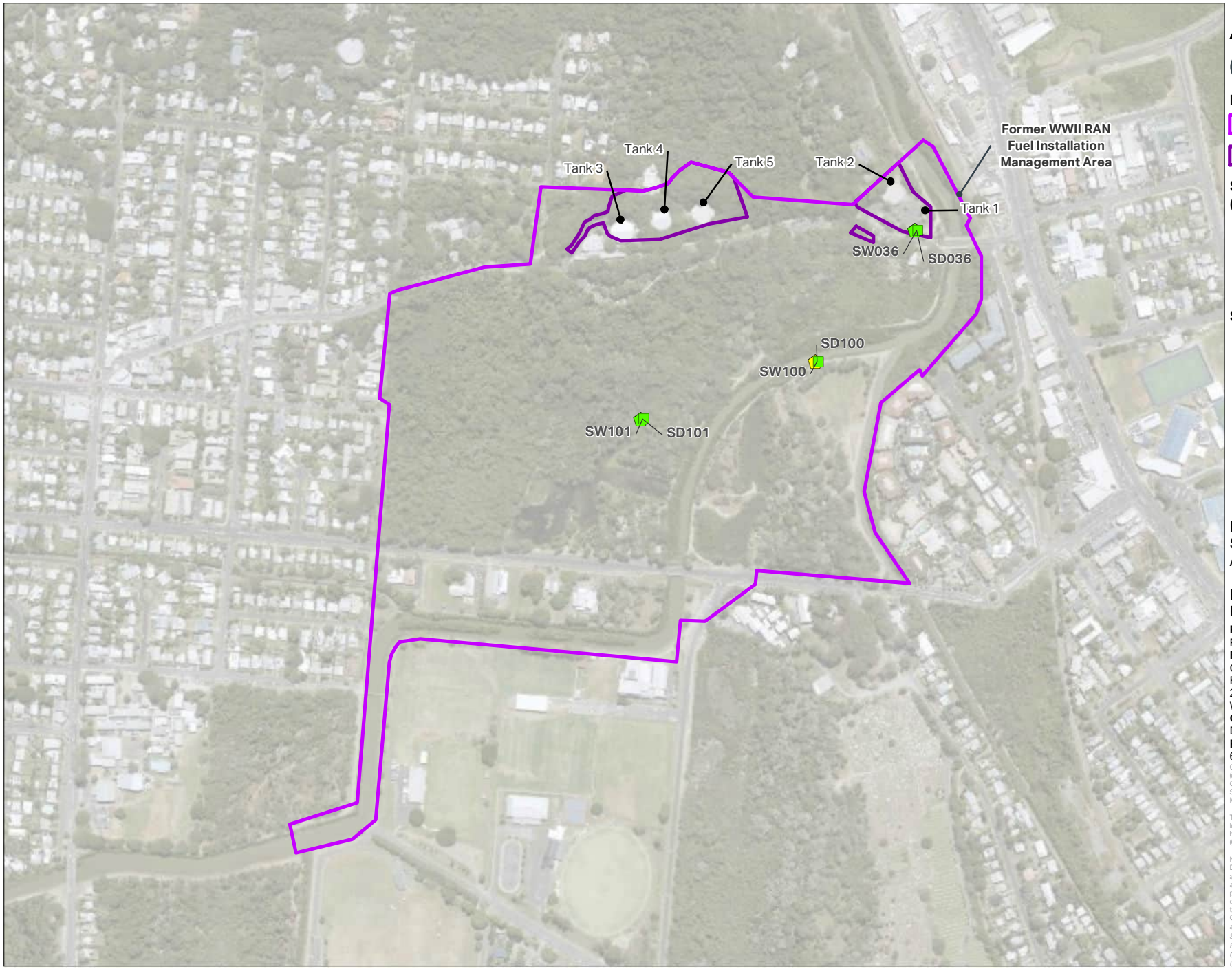
Sediment - PFOA (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F48:
SURFACE WATER AND SEDIMENT RESULTS- WWII RAN FUEL INSTALLATION – PFOA (SEPTEMBER 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

Management Area

WWII RAN Fuel Installation

Surface water - PFOA (µg/L)

- > 50
- > 10 - 50
- > Limit of Reporting
- < Limit of Reporting

Sediment - PFOA (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F49:
SURFACE WATER AND SEDIMENT RESULTS- - WWII RAN FUEL INSTALLATION – PFOA (SEPTEMBER 2022)

PROJECT NAME:
PFAS OMP

REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation

CLIENT NAME:
Department of Defence

PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

HMAS Cairns Property Boundary

Management Area

Seabed Area

Surface water - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > Limit of Reporting - 2
- < Limit of Reporting

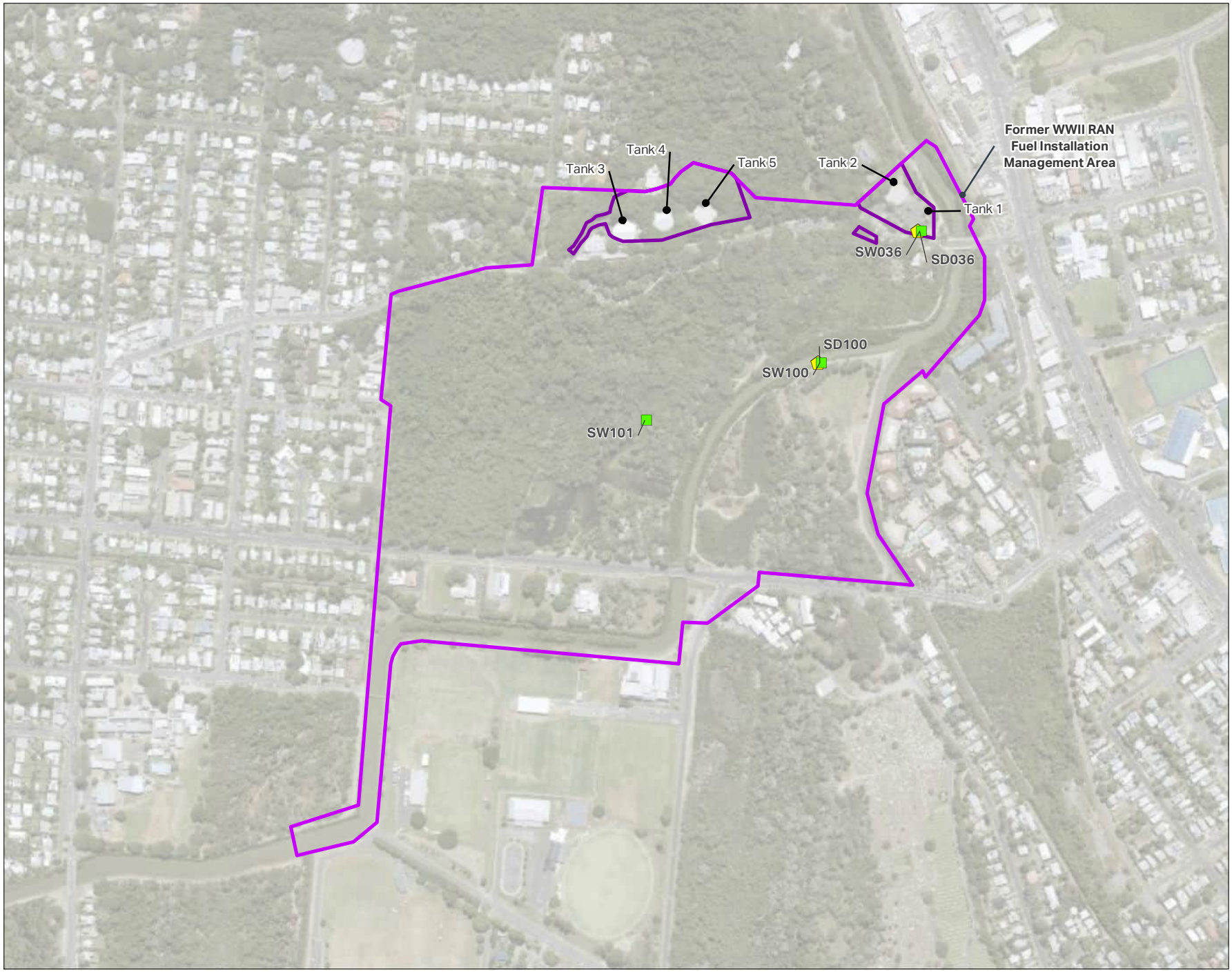
Sediment - PFOS +PFHxS (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F50:
SURFACE WATER AND SEDIMENT RESULTS- WWII RAN FUEL INSTALLATION – PFOS+PFHxS (APRIL 2023)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation

Surface water - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > Limit of Reporting - 2
- < Limit of Reporting

Sediment - PFOS +PFHxS (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F51:
SURFACE WATER AND SEDIMENT RESULTS- - WWII RAN FUEL INSTALLATION – PFOS+PFHxS (APRIL 2023)

PROJECT NAME:
PFAS OMP

REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation

CLIENT NAME:
Department of Defence

PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

HMAS Cairns Property Boundary

Management Area

Seabed Area

Surface water - PFOA (µg/L)

- > 50
- > 10 - 50
- > Limit of Reporting
- < Limit of Reporting

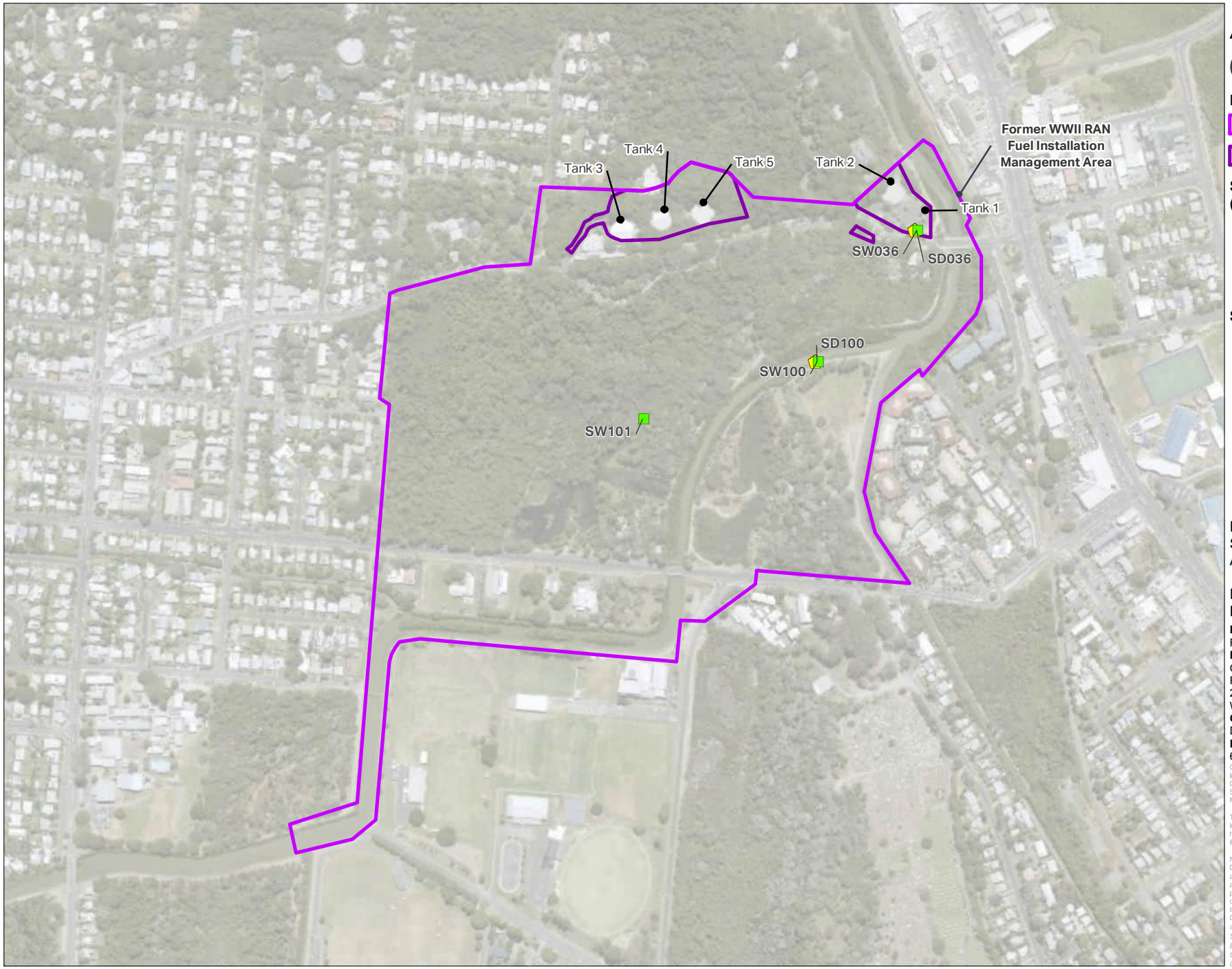
Sediment - PFOA (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F52:
SURFACE WATER AND SEDIMENT RESULTS- WWII RAN FUEL INSTALLATION – PFOA (APRIL 2023)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

Management Area

WWII RAN Fuel Installation

Surface water - PFOA (µg/L)

- > 50
- > 10 - 50
- > Limit of Reporting
- < Limit of Reporting

Sediment - PFOA (mg/kg)

- > 10
- > 1 - 10
- > 0.3 - 1
- > Limit of Reporting - 0.3
- < Limit of Reporting

FIGURE F53:
SURFACE WATER AND SEDIMENT RESULTS- - WWII RAN FUEL INSTALLATION – PFOA (APRIL 2023)

PROJECT NAME:
PFAS OMP

REPORT NAME:
Ongoing Monitoring Interpretive Report (September 2020 to April 2023), HMAS Cairns and Former WWII RAN Fuel Installation

CLIENT NAME:
Department of Defence

PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Appendix B

SAQP and OMP Factual Reports

Prepared for
Department of Defence - Environment and Engineering Branch, Directorate of PFAS Remediation (DPFASR)
ABN: 68 706 814 312

Sampling and Analysis Quality Plan

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

01-Sep-2022
PFAS Ongoing Monitoring Plan
Doc No. 60612487_RP18
Commercial-in-Confidence

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Delivering a better world

Sampling and Analysis Quality Plan

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

Client: Department of Defence - Environment and Engineering Branch, Directorate of PFAS Remediation (DPFASR)

ABN: 68 706 814 312

Prepared by

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ABN 20 093 846 925

30-Aug-2022

Job No.: 60612487

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

Quality Information

Document Sampling and Analysis Quality Plan

Ref 60612487_RP18_20220901

Date 01-Sep-2022

Originator [redacted]

Checker/s [redacted]

Verifier/s

Revision History

Rev	Revision Date	Details	Approved	
			Name/Position	Signature
A	28 Aug 2020	Draft	[redacted] Project Manager	
0	18-Sep-2020	Final for Issue	[redacted] Project Director	
1	19-Mar-2021	For Defence Review	[redacted] Project Manager	
2	29-Mar-2021	Revised for Issue	[redacted] Project Manager	
3	02-Feb-2022	For Defence Review	[redacted] Project Manager	
4	01-Apr-2022	Revised for Issue	[redacted] Project Manager	
5	01-Sep-2022	Revised for Issue	[redacted] Project Manager	[redacted]

Table of Contents

1.0 Introduction

1.1 Preamble

AECOM Australia Pty Ltd (AECOM) has prepared this Sampling and Analysis Quality Plan (SAQP) for the per- and poly-fluoroalkyl substances (PFAS) ongoing monitoring program at HMAS Cairns and the Former WWII RAN Fuel Installation and their respective Management Areas in the North Queensland Region, as defined in the *PFAS Management Area Plan (PMAP),* (Department of Defence, 2020b).The SAQP supports the *PFAS Ongoing Monitoring Plan (OMP)* which was included in the *HMAS Cairns PFAS Management Area Plan (PMAP).*

The purpose of the OMP is to collect data to enable Defence to maintain an up to date understanding of the distribution, concentration and transport (migration pathways and flow) of PFAS within the HMAS Cairns and Former WWII RAN Fuel Installation Management Areas. The data will assist in the timely identification of risks and inform Department of Defence's (Defence) approach to the management of PFAS, including updates and revisions to the PMAP.

1.2 SAQP Objectives

The objectives of this SAQP are to:

- Define the proposed scope of works in detail;
- Outline the proposed sampling methodology to be adopted;
- Outline the proposed data quality assurance and quality control (QA/QC) measures to be adopted; and
- Define the data collection requirements for the project.

1.3 Scope of Works

To meet the project objectives, the following scope of works are proposed as per the OMP (Department of Defence, 2020a) for HMAS Cairns and the Former WWII RAN Fuel Installation:

- post-wet season sampling event in April 2021, April 2022 and April 2023 including:
  - Groundwater sampling of 15 monitoring wells at both high and low tides at HMAS Cairns;
  - Groundwater sampling of 3 monitoring wells within the Former WWII RAN Fuel Installation Management Area;
  - Sediment sampling at 6 locations at HMAS Cairns with co-located surface water sampling when water is present; and
  - Sediment sampling at 3 locations within the Former WWII RAN Fuel Installation Management Area with co-located surface water sampling when water is present.
- post-dry season sampling event in October 2020, October 2021 and September 2022 including:
  - Groundwater sampling of 15 monitoring wells at both high and low tides at HMAS Cairns;
  - Groundwater sampling of 3 monitoring wells within the Former WWII RAN Fuel Installation Management Area;
  - Sediment sampling at 6 locations at HMAS Cairns with co-located surface water sampling when water is present; and
  - Sediment sampling at 3 locations within the Former WWII RAN Fuel Installation Management Area with co-located surface water sampling when water is present.
- Preparation of reports including a sampling event factual report (following each biannual sampling event) and annual interpretative reports following the completion of each 12-month sampling period.

The sampling locations are presented in **Appendix A**.

1.4 Guidelines and Legislation

The SAQP has been developed with reference to the following guidelines and legislation:

- PFAS National Environmental Management Plan (NEMP) 2.0, Heads of Environmental Protection Agencies (HEPA), 2020;
- National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM), National Environment Protection Council (NEPC), 2013;
- Commonwealth of Australia Department of Defence, Routine Environment Water Quality Monitoring Manual, 2018;
- Commonwealth of Australia Department of Defence, Contamination Management Manual, 2018 amended June 2021;
- Department of Health (DoH), Health Based Guidance Values for PFAS for use in site investigations in Australia. September 2019;
- National Health and Medical Research Council (NHMRC), Guidance on PFAS in Recreational Water. August 2019;
- Standards Australia 1998. AS/NZ 5667:1998 Water Quality – Sampling;
- Australian and New Zealand Guidelines, 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality;
- Environmental Protection Policy, (Water and Wetland Biodiversity), 2019.

2.0 Site Identification and Conceptual Site Model

2.1 HMAS Cairns Management Area

HMAS Cairns is located approximately 2 km southeast of the Cairns Central Business District (CBD) and sits on the western shore of Trinity Inlet, within the Cairns Regional Council (CRC) local government area (Department of Defence, 2020a).

The Base covers an area of approximately 14.81 hectares (ha) with its responsibilities extending from Rockhampton to Thursday Island. The main operations of the Base include; housing of nine naval vessels, maintenance, logistics, and administrative support for Cairns based fleet units whilst also providing refit and training support for neighbouring pacific island nations (Department of Defence, 2020a).

The HMAS Cairns Management Area is 273.24 ha and its boundary is formed to the north (approximately 1.7 km) and south east (approximately 2 km) by a tidal estuary system, Trinity Inlet; south west by Smiths Creek; and west by Kenny and Draper Streets. Drainage for the area is predominantly directed into an underground stormwater drainage system which discharges into Trinity Inlet through six stormwater outlets. Trinity Inlet and its tributaries are considered key ecological receptors within the Management Area. Current and future users and ingestion of impacted biota are considered the human health receptors associated with the Management Area (Department of Defence, 2020b).

2.2 Former WWII RAN Fuel Installation Management Area

The WWII RAN Fuel Installation at Edge Hill is located approximately 3.5 km north-west of the Cairns CBD and sits within the CRC local government area. The site is publicly accessible with the land being purchased by CRC in 1991 for the development of the Botanic Gardens and now also redeveloped as The Tanks Arts Centre. The installation includes five diesel/fuel oil tanks. Tanks three to five form part of the Tanks Art Centre at the Botanic Gardens and used as a venue to showcase music, performance, theatre, visual art as well as host community events. Tank one has been removed although its foundations remain and the space is now used as a car park, while tank two remains and is disused (Department of Defence, 2020a).

The Management Area is 53.22 ha and its boundary is formed to the south by Saltwater Creek, Greenslopes Street and Lily Creek. Lily Creek also forms the western boundary of the Management Area. The boundary to the north is formed by Collins Avenue, Macdonell Street, Goodwin Street and vegetation. The east boundary is formed by the edge of the parklands where they meet the residential land. Sensitive receptors include terrestrial ecosystems in Cairns Botanic Gardens and aquatic ecosystems in downstream receiving waters (Department of Defence, 2020b).

2.3 Conceptual Site Model

The conceptual site models (CSM) for the HMAS Cairns and the Former WWII RAN Fuel Installation and their Management Areas are presented in the Detailed Site Investigation (DSI) (Aurecon Australasia Pty Ltd, 2020) referenced in the OMP (Department of Defence, 2020a) which summarises the linkages between sources, pathways and receptors.

3.0 Data Quality Assessment

3.1 Data Quality Objectives

The amended National Environmental Protection Measure (NEPM, Schedule B [2]) Guideline on Site Characterisation (1999, as amended May 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: EPA/240/B-06/001), February 2006.*

The US EPA defines the process as *'a strategic planning approach based on the Scientific Method that is used to prepare for a data collection activity. It provides a systematic procedure for defining the criteria that a data collection design should satisfy, including when to collect samples, where to collect samples, the tolerable level of decision errors for the study, and how many samples to collect'.*

The process of establishing appropriate DQOs is defined according to the following seven steps:

Table 1 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 approach adopted relative to the seven steps presented above is discussed below.

3.1.1 Step 1 – State the Problem

Defence and State agencies require up-to-date data to enable informed risk management decisions to protect human health and the environment, given that elevated concentrations of PFAS have been identified in environmental media.

Defence requires an understanding of the holistic effect of PFAS management response activities that have and will be implemented.

The data collected by this SAQP will provide a detailed dataset that can be used to assist with assessment of temporal changes in PFAS concentrations in groundwater and surface water/sediment on-Base and off-Base. This will facilitate refinement of the CSM and associated risk, allow update of the human health and ecological risk assessment and inform management decisions by Defence and government agencies.

3.1.2 Step 2 – Identify the Goal of the Study

The overall goal of the study is to establish a systematic routine groundwater and surface water/sediment sampling and analysis program to provide current and ongoing information on the distribution and migration of PFAS contaminants of potential concern in groundwater and surface water/sediment 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 sediment within the Management Area;
- Understand if the nature, extent and magnitude of PFAS concentrations have changed significantly to warrant a revision to the human health and environmental risk assessments; and
- Understand if the nature, extent and magnitude of PFAS concentrations have changed significantly to warrant refinement of any existing management measures.

The decisions to be made based on the results of the investigation are:

- Do the analytical results and field observations allow for an assessment of risk(s) associated with complete or potentially complete PFAS source-pathway-receptor pathways?
- Do the analytical results and field observations allow for the interpretation of PFAS trends and do these trends warrant a re-evaluation of management actions?
- Does the OMP need to be refined to address uncertainty and would such a change(s) result in greater efficacy with respect to ongoing management or future intervention.

3.1.3 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:

- Physical setting of the Site;
- PFAS results from previous investigations;
- Meteorological data including rainfall and tide information;
- Field observations including gauging data, and water quality measurements;
- Groundwater, sediment and surface water data collected and analysed for PFAS to assess the distribution and extent of PFAS, as part of this SAQP;
- Groundwater and surface water elevation data;
- Fate and transport mechanisms and behaviour of PFAS in the environment including data from neighbouring properties as requested by Defence;
- Screening criteria (refer **Section 4.10**);
- Statistical analysis to identify trends;
- Advances in laboratory analytical approaches and changes in regulatory requirements; and
- Recommendations made in the preceding Sampling Event Factual Reports and Annual Interpretive Report completed by AECOM (AECOM Australia Pty Ltd, 2021a; AECOM Australia Pty Ltd., 2021b; AECOM Australia Pty Ltd., 2021c; AECOM Australia Pty Ltd, 2022a; AECOM Australia Pty Ltd, 2022b)

3.1.4 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 the HMAS Cairns and Former WWII RAN Fuel Installation property boundaries and the respective Management Areas. Refer to **Appendix A** for all sampling locations and **Appendix B** for the Management Areas.
- The sampling completed as part of the SAQP includes groundwater, sediment and surface water, at the frequencies defined in **Section 4.3**.
- The monitoring will be undertaken initially for three years as outlined in the OMP (Department of Defence, 2020a) followed by a review to assess the need for ongoing monitoring.

The SAQP will also cover the initial implementation period of the OMP (Department of Defence, 2020a). The SAQP will also cover the extent required by specific characteristics of HMAS Cairns and the Former WWII RAN Fuel Installation and surrounds, and behaviour of the plume, measured against specified data trends.

3.1.5 Step 5 – Develop the Analytical Approach

The decision rules can be defined as:

- Analytical selection; all samples will be analysed for the extended PFAS suite.
- Analytical method selection for PFAS is based on achieving appropriate laboratory limit of reporting (LOR) in the various media to be analysed. Standard LORs will be used for the OMP Implementation.
- 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 and groundwater.
- If the laboratory QA/QC 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 is required.
- If PFAS is reported at a concentration that is consistently above the adopted screening criteria then it will be considered that further assessment is required.
- If 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 will be undertaken after three years of monitoring.

The decision on the acceptance of the analytical data will 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 present on site.
- **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.

Table 2 provides further specific details.

3.1.6 Step 6 – Specify Performance or Acceptance Criteria

Specific limits for the works included in the OMP (Department of Defence, 2020a) 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 site. To address this, the OMP outlines minimum numbers of samples proposed to be collected from each media.

- As such, there may be limitations in the data if aspects of the OMP cannot be implemented. Some examples of this scenario include but are not limited to:
  - Proposed surface water sample locations may be dry at the time of sampling.
  - Proposed groundwater well locations are damaged or destroyed and therefore cannot be sampled.
  - Proposed samples are not collected due to access being restricted to a given location.
- Measurement errors can occur during sample collection, handling, preparation, analysis and data reduction. To address this the following measures are proposed:
  - Collection of sufficient sample mass to facilitate analysis reported to standard laboratory detections limits. 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. LOR may be increased for saline samples due to matrix interference for higher salinity samples.
  - Laboratories to report quality assurance/ quality control data for comparison with the DQIs established for the SAQP.

Table 2 provides acceptance criteria.

3.1.7 Step 7 – Optimise the Design for Obtaining Data

The methodology presented in this SAQP is designed to meet the project objectives described in **Section 1.2** 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:
  - Department of Defence (July 2018, as amended June 2021), *Defence Contamination Management Manual;*
  - Standards Australia (AS/NZS5667.11–1998) *Water Quality – Sampling, part 11: Guidance on sampling of groundwater;*
  - Standards Australia (AS 4482.1-2005) *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds;*
  - Standards Australia (AS 4482.2-1999) *Guide to the sampling and investigation of potentially contaminated soil, Part 2: Volatile Substances;*
- Conducting sampling in accordance with 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; and
- Progressive review of the data throughout the initial three-year 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.

3.2 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; and
- 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 2**.

Table 2 Acceptance Criteria for Data Quality Indicators for Sample Analysis

Data Quality Indicators	Acceptance Criteria
Water and Sediment Samples	
Rinsates (where sampling equipment is reused)	Less than the laboratory LOR.
Field duplicates/Inter-lab duplicates	The RPDs will be assessed as acceptable if less than or equal to 30% as per the NEPM Schedule B3. Where the results show greater than 30% difference a review of the cause will be conducted (NEPM, 2013). 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%; and • Heterogeneous materials are encountered.
Laboratory duplicates	RPDs less than: • 20% for high level laboratory duplicates (i.e. >20 x LOR); and • 50% for medium level laboratory duplicates (i.e. 10 to 20 x LOR).
Matrix spikes	Recoveries between 70-130% of the theoretical recovery or as nominated in the laboratory's QC report, based on their historical database.
Method blanks	Less than the laboratory LOR.
Laboratory control samples	Recoveries between laboratories specified range for each particular analyte/analytical suite.

4.0 Sampling Location Rationale and Methodology

4.1 OMP

The OMP (Department of Defence, 2020a) presents an overview of specific monitoring works to be undertaken and provides the basis for the preparation of this SAQP. This scope of works presented in this SAQP is consistent with that detailed in the OMP.

4.2 Proposed Schedule

4.2.1 Sampling Events

Groundwater, sediment and surface water sampling from across the Management Area will be performed biannually as part of a comprehensive wet season sampling event in April and a targeted dry season sampling event in October for an initial period of three years, with the initial comprehensive sampling event completed in October 2020.

The proposed schedule of fieldworks across the initial three-year period is presented in **Table 3** below.

Table 3 Proposed Fieldwork Schedule

Sampling Round No.	Description of works	Proposed Schedule
1	Dry season groundwater, sediment and surface water sampling	October 2020
2	Wet season groundwater, sediment and surface water sampling	April 2021
3	Dry season groundwater, sediment and surface water sampling	October 2021
4	Wet season groundwater, sediment and surface water sampling	March/April 2022
5	Dry season groundwater, sediment and surface water sampling	September 2022
6	Wet season groundwater, sediment and surface water sampling	March/April 2023

4.3 Sample Location Rationale

4.3.1 Groundwater Sampling Locations Rationale

There are 15 groundwater monitoring wells identified for ongoing monitoring located at HMAS Cairns and 3 groundwater monitoring wells identified for ongoing monitoring located at the Former WWII RAN Fuel Installation. Monitoring wells located at the Former WWII RAN Fuel Installation are on Cairns Regional Council property and will require permission prior to access for sampling. No formal permits are required for collection of environmental samples under this SAQP.

Groundwater sampling for HMAS Cairns is to be done at both high and low tide during the same week (Department of Defence, 2020a).

The rationale for monitoring well selection for each area is summarised in **Table 4** and **Table 5**. Monitoring wells locations are shown on Figure 1.

Table 4 Rationale for Groundwater Monitoring Locations for HMAS Cairns

Area	Rationale
MW001	Along the southern boundary of the Defence Fuel Installation (DFI) where elevated PFAS concentrations consistently recorded.
MW002	North west boundary of the DFI, receiving upgradient groundwater flow and where elevated PFAS concentrations consistently recorded
MW003	Along the northern boundary of the DFI where elevated PFAS concentrations consistently recorded.
MW004	Along the eastern boundary of the DFI where elevated PFAS concentrations consistently recorded.
MW005	Along the eastern boundary of the DFI where elevated PFAS concentrations consistently recorded.
MW007	At the component wash down where elevated PFAS concentrations consistently recorded
MW009	To provide sufficient coverage of the Base
MW011	To provide sufficient coverage of the Base
MW013	To provide sufficient coverage of the Base
MW014	Along the southern boundary of the DFI where elevated PFAS concentrations consistently recorded.
MW015	Along the southern boundary of the DFI where elevated PFAS concentrations consistently recorded.
MW016	Along the southern boundary of the DFI where elevated PFAS concentrations consistently recorded.
MW017	To provide sufficient coverage of the Base
MW018	To provide sufficient coverage of the Base
MW019	South eastern corner of the Base where elevated PFAS concentrations consistently recorded and firefighting training had previously occurred.

Table 5 Rationale for Groundwater Monitoring Locations for former WWII RAN Fuel Installation

Area	Rationale
MW031	Groundwater well located directly adjacent to former AFFF storage at the WWII RAN Fuel Installation
MW035 (refer **Section 4.15**)	Groundwater well consistently contained highest PFAS concentrations and directly downgradient of MW031.
MW036 (refer **Section 4.15**)	Elevated concentrations consistently detected at this location.

4.3.2 Groundwater Gauging Locations

All locations are proposed to be gauged prior to each sampling event and area presented in **Figure 1** and **Figure 2**, in **Appendix A**.

4.3.3 Groundwater Sampling Locations

The groundwater locations to be monitored as part of the wet and dry season sampling events are provided in **Table 6** below and are presented in **Figures 1** and **2** in **Appendix A**. Groundwater monitoring wells at HMAS Cairns are to be sampled at high tide and at low tide.

Table 6 Groundwater sampling locations

Locations	Monitoring Well ID	Number of samples to be collected
HMAS Cairns Management Area	MW001, MW002, MW003, MW004, MW005, MW007, MW009, MW011, MW013, MW014, MW015, MW016, MW017, MW018, MW019	15 locations sampled once at low tide and once at high tide within 24 hours of each other.
Former WWII RAN Fuel Installation	MW031, MW035, MW036	3
	Total	33

4.3.4 Sediment Sampling Locations Rationale

The sediment locations to be monitored as part of the wet and dry season sampling events are provided in **Table 7** below and are presented in **Figures 1** and **2 Appendix A**. These locations have been selected to maintain consistency with the recent monitoring completed within the Management Areas (Department of Defence, 2020a).

4.3.5 Sediment Sampling Locations

Table 7 Sediment sampling locations

Locations	Location ID	Number of locations
HMAS Cairns Management Area	SD030, SD031, SD032, SD033, SD034, SD035	6
Former WWII RAN Fuel Installation	SD036, SD100, SD101	3
	Total	9

4.3.6 Surface Water Sampling Locations Rationale

The surface water locations to be monitored as part of the wet and dry season sampling events are provided in **Table 8** below and are presented in Figures 1 and 2 **Appendix A**. These locations have been selected to maintain consistency with the recent monitoring completed within the Management Area (Department of Defence, 2020a). Surface water locations are co-located with sediment sampling locations, and surface water will be collected where present.

4.3.7 Surface Water Sampling Locations

Table 8 Surface water sampling locations

Locations	Location ID	Number of locations
HMAS Cairns Management Area	SW030, SW031, SW032, SW033, SW034, SW035	6
Former WWII RAN Fuel Installation	SW036, SW100, SW101	3
	Total	9

4.4 Sample Collection and Handling

4.4.1 Groundwater Sampling

The groundwater sampling methodology and schedule are presented in **Table 9**.

Table 9 Groundwater sampling methodology and schedule

Item	Details
Groundwater gauging	The depth to groundwater will be measured in each monitoring well immediately prior to the collection of groundwater samples.
Sample Collection Methodology	Groundwater samples will be collected from all monitoring wells using no-purge methodology HydraSleeves™, which will be installed within the screened interval of the wells approximately 1 m above the base of the well, geenrally for a minimum of 24 hours prior to the sampling round. Shorter sampling intervals will be used for sampling between tides and where operating hours are limited such as at the DFI. This may result in deployment of Hydrasleeves™ outside of normal Base operating hours, and where required, a decontaminated steel bailer may be used to take a grab sample to coincide with tidal sampling within the available operating hours. Shorter sampling intervals where Hydrasleeves™ are used are not anticipated to affect the data quality of samples collected with bottom weighted Hydrasleeves™ which will be allowed to settle prior to sampling. Well construction details are presented in **Appendix C**. Once sampling is completed, new HydraSleeves™ will not be deployed due to conflicting sampling programs with other consultants. A decontaminated steel bailer will be used where tree roots are present (MW031 and MW036) or where insufficient water volume is able to be collected via HydraSleeves™ (MW011, MW031 and MW035).
QA/QC samples to be collected	Field QA/QC samples are to include intra-laboratory duplicate and inter-laboratory duplicate and equipment rinsate blank (rinsate) samples. Duplicate samples are to be collected at a minimum frequency of 1 in 10 primary PFAS samples. Rinsate samples are to be collected at a rate of one sample per day of sampling when non-dedicated equipment is used by pouring laboratory supplied PFAS free deionised water over the decontaminated sampling equipment. Additional sample volume is required to be collected to enable the appropriate laboratory QA/QC.
Field Parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation reduction potential (ORP), pH and observations of water quality will be recorded for all samples.
Sample Analysis	All primary samples will be submitted for PFAS extended suite using the standard levels of detection.
Sampling Schedule	The monitoring across the investigation area will include two monitoring events, as detailed below: **Wet Season**: 15 monitoring wells across HMAS Cairns and surrounding areas, including high and low tides. 3 monitoring wells across the Former WWII RAN Fuel Installation. **Dry Season**: 15 monitoring wells across HMAS Cairns and surrounding areas, including high and low tides. 3 monitoring wells across the Former WWII RAN Fuel Installation.

4.4.2 Sediment Sampling

The sediment sampling methodology and schedule are presented in **Table 10**.

Table 10 Sediment sampling methodology and schedule

Item	Details
Sample Collection Methodology	Samples representative of potentially deposited sediments will be collected from within the water body if possible. Sediment samples will be collected using a gloved hand or hand trowel where possible. At each location, a new laboratory supplied container will be used for each sample.
Sample Location Observations	Descriptions on the sample location characteristics will be recorded as outlined in **Section 4.13.1.**
QA/QC samples to be collected	Field QA/QC samples are to include intra-laboratory duplicate and inter-laboratory duplicate and equipment rinsate blank (rinsate) samples. Duplicate samples are to be collected at a minimum frequency of 1 in 10 primary PFAS samples. Rinsate samples are to be collected at a rate of one sample per day of fieldwork when non-dedicated equipment is used by pouring laboratory supplied PFAS free deionised water over the decontaminated sampling equipment.
Sample Analysis	All primary samples will be submitted for analysis of PFAS extended suite using the standard levels of detection.
Sampling Schedule	Sediment sampling will be conducted during both the wet and dry season sampling events at: HMAS Cairns: 6 locations Former WWII RAN Fuel Installation: 3 locations

4.4.3 Surface Water Sampling

The surface water sampling methodology and schedule are presented in **Table 11**.

Table 11 Surface water sampling methodology and schedule

Item	Details
Sample Collection Methodology	Samples to be collected from immediately below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a new, laboratory supplied container will be lowered into the water with the cap immediately applied once the container is full. Where the waterway cannot be accessed from the bank a telescopic sampler with a stainless steel scoop will be used to collect the sample. The sample will then immediately be transferred into the new laboratory supplied container.
Sample Location Observations	Descriptions on the sample location characteristics will be recorded as outlined in **Section 4.13.1.**
QA/QC samples to be collected	Field QA/QC samples are to include intra-laboratory duplicate and inter-laboratory duplicate and equipment rinsate blank (rinsate) samples. Duplicate samples are to be collected at a minimum frequency of 1 in 10 primary PFAS samples. Rinsate samples are to be collected at a rate of one sample per day of sampling when non-dedicated equipment is used by pouring laboratory supplied PFAS free deionised water over the decontaminated sampling equipment. Additional sample volume is required to be collected to enable the appropriate laboratory QA/QC.
Field Parameters	Temperature, EC, DO, ORP, pH and observations of water quality will be recorded for all samples.
Sample Analysis	All primary samples will be submitted for PFAS extended suite using the standard levels of detection.

Item	Details
Sampling Schedule	Surface water sampling will be conducted during both the wet and dry season sampling events. Samples collected will depend on the availability of water within the waterway. Samples will be collected at: HMAS Cairns: 6 locations Former WWII RAN Fuel Installation: 3 locations

4.4.4 Sample Handling and Transport to Laboratory

AECOM personnel will attempt to reduce heterogeneity in the sample media matrix by dividing the sample collected between primary and inter/intra-laboratory jars or bottles during sampling. All samples will be placed on ice in eskies immediately after sampling.

All samples will be kept, if possible, at or below 4°C during transit to the laboratory. Prior to sampling, assessment of the analytical holding times will be made, and the sampling planned accordingly to help ensure that holding times are not breached or are minimised as far as practicable.

Samples will be transported to the laboratory for analytical testing under standard Chain of Custody (CoC) documentation. Primary and associated duplicate QA/QC samples will be analysed by ALS Brisbane. The inter-laboratory duplicate samples will be analysed by the National Measurement Institute (NMI) in Sydney.

4.5 Calibration

The water quality meter will be calibrated each day of use prior to the commencement of field activities with relevant solutions, including pH, EC, DO and ORP. The calibration will be in accordance with manufacturers' instructions or NATA publication "General Requirements for Registration: Supplementary Requirement: Chemical Testing (NATA 1993) and Technical Note N0. 19 (NATA 1994)". Where satisfactory calibration cannot be achieved, the water quality data will not be used for interpretive purposes.

Calibration details will be recorded on field sheets and included in the Sampling Events Factual Reports.

4.6 Logistics

The laboratory sample containers will be collected from the laboratory prior to the commencement of fieldwork. All primary and duplicate samples will be shipped directly from Cairns to ALS Brisbane. All inter-laboratory duplicate samples will be couriered directly to the secondary laboratory (NMI Sydney) under a separate CoC documentation for analysis.

4.7 Analytical Suite and Laboratory Analysis Methods

4.7.1 Laboratory NATA Accreditation Details

The laboratory is required to use NATA accredited methods based on NEPM, US EPA, Table B 15 of the US Department of Defence/Department of Energy (US DOD/DoE) and American Society for Testing and Materials (ASTM) methods as appropriate.

The primary and secondary laboratories selected for this program are ALS (NATA Accreditation Number 825) and NMI (NATA Accreditation Number 198), respectively.

4.7.2 Analytical Schedule

All media sampled shall be analysed for the extended PFAS suite with standard LOR as outlined in **Table 12** below.

Table 12 Sample Analytical Suite for PFAS

PFAS Group	Compound	CAS No.
Perfluoroalkyl Sulfonic Acids	Perfluorobutane sulfonic acid (PFBS)	375-73-5
	Perfluoropentane sulfonic acid (PFPeS)	2706-91-4
	Perfluorohexane sulfonic acid (PFHxS)	355-46-4
	Perfluoroheptane sulfonic acid (PFHpS)	375-92-8
	Perfluorooctane sulfonic acid (PFOS)	1763-23-1
	Perfluorodecane sulfonic acid (PFDS)	335-77-3
Perfluoroalkyl Carboxylic Acids	Perfluorobutanoic acid (PFBA)	375-22-4
	Perfluoropentanoic acid (PFPeA)	2706-90-3
	Perfluorohexanoic acid (PFHxA)	307-24-4
	Perfluoroheptanoic acid (PFHpA)	375-85-9
	Perfluorooctanoic acid (PFOA)	335-67-1
	Perfluorononanoic acid (PFNA)	375-95-1
	Perfluorodecanoic acid (PFDA)	335-76-2
	Perfluoroundecanoic acid (PFUnDA)	2058-94-8
	Perfluorododecanoic acid (PFDoDA)	307-55-1
	Perfluorotridecanoic acid (PFTrDA)	72629-94-8
	Perfluorotetradecanoic acid (PFTeDA)	376-06-7
Perfluoroalkyl Sulfonamides	Perfluorooctane sulphonamide (FOSA)	754-91-6
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6
(n:2) Fluorotelomer Sulfonic Acids	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0

The current standard laboratory limits of reporting (LOR) are described in **Table 13** below.

Table 13 Laboratory Limits of Reporting

Sample Media	Parameter	Technique/Method Reference	LOR*
Groundwater and Surface Water	Extended PFAS Suite	LC/MS-MS	0.01 – 1.0 µg/L
Sediment	Extended PFAS Suite	LC/MS-MS	0.0002 – 0.001 mg/kg

LC/MS-MS = Liquid chromatography–mass spectrometry
*LOR for Australian Laboratory Services (ALS)

4.8 Sample Nomenclature

In order to meet Defence data management requirements, a consistent sample nomenclature has been adopted for the Program. All primary samples will be labelled using the following Defence Contamination Management Manual (DCMM) naming convention:

PPPP_XX000_YYMMDD

[property ID]_[type of sample][THREE DIGIT sample number]_[High tide/low tide]_[yearmonthday]

e.g. 0009_MW001_HT/LT_200401

Location types and codes are prescribed by Defence and the investigation history.

Primary Sample Types/Location Codes relevant to this OMP include:

- MW = monitoring well;
- SW = surface water - no depth required;
- SD = sediment – no depth required as all sediment samples will be from surface.

QA/QC Samples will be labelled in accordance with the following convention:

- Duplicate: PPPP_QC1XX_YYMMDD;
- Triplicate: PPPP_QC2XX_YYMMDD;
- Rinsate: PPPP_QC3XX_YYMMDD; and
- Trip blank: PPPP_QC5XX_YYMMDD.

4.9 Defence ESdat Requirements

Defence has contracted Earth Science Information Systems (EScIS), to provide contamination data management services through a cloud instance of its ESdat product.

All ongoing monitoring program field and laboratory data collected by AECOM will be uploaded, stored and managed in Defence's ESdat database in accordance with Section 6 of DCMM Annex L (Department of Defence, July 2018, as amended June 2021). AECOM will refer to historical investigation data to ensure consistent location codes are used to enable analysis of data trends. Where required under Annex L, non-compliant location codes will be resolved under direction from Defence.

AECOM will upload the data from each monitoring event into ESdat prior to submitting the Sampling Event Factual Report.

4.10 Adopted Screening Criteria

Adopted screening criteria references national guidance in the form of the PFAS National Environmental Management Plan, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance.

At the time of preparing this SAQP, a number of guidance documents were in circulation in Australia including:

- PFAS National Environmental Management Plan (NEMP) 2.0, Heads of Environmental Protection Agencies (HEPA), 2020;
- Department of Health (DoH), (2019). Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017 [updated September 2019] (FSANZ 2017);
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC 2019);
- ASC NEPM, NEPC 2013.

The adopted PFAS screening criteria to assess the data generated as part of the ongoing monitoring program are presented in **Table 14** below.

Table 14 Summary of Adopted Screening Criteria

Pathway	Compound	Criteria	Comment / Reference
Human Health Receptors			
Recreational use – surface water	PFOS + PFHxS	2 µg/L	The values are from the PFAS NEMP, 2020 *All surface water results will be compared to these criteria.*
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater and marine water (95% species protection values)	PFOS	0.13 µg/L	The values are from the PFAS NEMP, 2020 The 95% level of protection has been applied for moderately disturbed ecosystems per the OMP. *All surface water and groundwater results will be compared to these criteria.*
	PFOA	220 µg/L	

There are no current HEPA (2020) endorsed guideline values for PFAS in sediment.

4.11 Waste Management

Due to the proposed “no purge” sampling methodology, it is not anticipated that significant volumes of liquid waste would be generated that would require management or disposal.

Wastewater generated from HydraSleeves™ sampling will be returned to ground next to the well it was collected from or returned to the well if located on hardstand. If large volumes (greater than 1 L) of wastewater are generated this will be collected in a plastic drum for disposal by a licenced contractor.

No waste soil will be generated due to the proposed grab sampling approach.

All consumables (i.e. HydraSleeves™, general rubbish) will be bagged and placed in general waste bins for disposal.

4.12 Quality Assurance Quality Control Sampling

4.12.1 Field Duplicate and Inter-laboratory Duplicate Samples

Field duplicate (intra-laboratory) samples and triplicate (inter-laboratory field duplicates) for PFAS analysis will be collected and analysed at a minimum frequency of 1 in 10 primary samples.

4.12.2 Rinsate Samples

Rinsate samples are to be collected at a rate of one sample per fieldwork day by pouring laboratory supplied deionised water over the decontaminated sampling equipment.

4.12.3 Trip Blank Samples

Trip blank samples will be supplied by the laboratory and placed in the eskies used to transport the samples at a rate of one per batch of samples delivered to the laboratory. The trip blank samples will be

analysed for PFAS to assess if any contaminants have entered the sample containers during transit to the laboratory or within the container itself.

4.13 Fieldwork Documentation

4.13.1 Field Notes

Field notes will be collected electronically and maintained to record all field sampling events and include observations made at each sample location. Field notes will include information specific to the sample media as follows:

- Groundwater gauging and sampling- date and time of gauging, HydraSleeve™ installation and sampling will be recorded at each sampling location.
- Groundwater and surface water samples – comments on the observed characteristics of the sample (e.g. colour, turbidity, odour, sheen) and reported field water quality parameters (pH, EC, DO, ORP, temperature) will be recorded; and
- Sediment and surface water samples - comments on the morphology of the sample location, the depth, flow direction and strength of water flow (if water is present), the water and sediment/soil colour and odour, and the presence of flora and fauna. The soil/sediment types observed at each sample location will be described using the Unified Soil Classification System (USCS).

The coordinates for each sample location will be noted. The location of quality control (e.g. duplicate and inter-laboratory duplicate) sample collection points will also be noted.

AECOM's tablet-based data capture ('EDCA') system will be utilised by field staff to minimise potential data recording errors and allow on-the-spot identification of potentially erroneous data in comparison to historical data.

4.13.2 Sample Labels

AECOM will utilise the tablet-based ALS 'Compass' sample management application to streamline sample labelling and CoC creation to ensure compliant sample IDs are used in the field.

Sample containers will also be labelled with the sample ID as a failsafe method.

A ball point pen will be used for labelling, to ensure PFAS is not introduced to the samples from permanent markers.

4.13.3 Chain of Custody Forms

A CoC form will be completed, documenting the sample identification number and analytes. The CoC documents the chain of events from sample collection to delivery at the laboratory and provides a traceable account of sample handling. The CoC form will be signed by both the sample collector and the receiving laboratory. The CoC will be generated electronically using the ALS Compass application to reduce potential transcription errors.

The CoC form will include the following information:

- Job number (Note: the name of the site is not identified for confidentiality purposes);
- Defence ESdat database reference (i.e. QLD_0009_PFASOMP_21);
- Date and time of sample collection;
- Sample ID;
- Type of containers;
- Name of sampler;
- Laboratory to be used;
- Analyses required;
- Any comments; and
- Signatures of the sampler and laboratory receiver.

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.

Upon receipt of the original documents accompanying the samples at the laboratory, the laboratory will provide a sample receipt document (noting the temperature of samples upon receipt, analyses required and any non-conformances) and return the signed CoC form to confirm analyses to be performed and the due date for the analytical results.

4.13.4 Sampling Documentation

Field sampling sheets will be completed for each location, and will include the following information (as appropriate for the media being sampled):

- Name of sampler;
- Sample location;
- Date /time of monitoring/ sampling;
- Sampling method;
- Observations of the sampled media; and
- Calibration records.

Records of all equipment calibration will be included in the Sampling Event Factual Reports. Photographs of surface water sampling locations will be taken where permitted.

4.14 Reporting

4.14.1 Sampling Event Factual Report

No later than four weeks following receipt of the laboratory reports, AECOM will prepare and submit a Sampling Event Factual Report to Defence. Each Sampling Event Factual Report will include:

- Details of the scope of monitoring completed;
- A description of the sampling methodologies used;
- A summary of observations made while sampling (e.g. recent weather conditions, any visual or olfactory observations that may indicate impacts to surface water or groundwater, or any estate management works or training activities that may have the potential to impact sampling or data);
- A summary of any changes to the monitoring network condition that may affect data integrity, or require rectification works, and recommendations for repair, replacement of decommissioning of a location;
- A presentation of the analysis results in a table that includes comparisons with PFAS guidelines, highlighting any significant statistical deviations from historical monitoring and investigation data, and identifying any locations with first-time detections of PFOS + PFHxS or POFA or new exceedances of guideline values;
- A presentation of the relative groundwater levels for the event on a figure with inferred contours and inferred groundwater flow direction;
- Discussion of the analytical data quality, including review of the quality control sampling results and laboratory quality control data; and
- Inclusion of the following information as attachments:
    - Figures;
    - Tables;
    - Sampling logs and forms including field water quality parameter measurements;

- Chain of custody forms;
- Laboratory analytical certificates and QA/QC reports; and
- Equipment calibration certificates.

4.14.2 Annual Interpretive Report

At the end of each 12-month monitoring period, AECOM will prepare and submit an Annual Interpretive Report to Defence. Each Interpretive Report will include:

- Evidence of compliance with the requirements of the SAQP and meeting stated objectives of the OMP (Department of Defence, 2020a);
- Relevant figures depicting sampling locations and site-specific hydrogeological features;
- Laboratory results and analysis including comparison with relevant screening criteria as identified in the OMP (Department of Defence, 2020a);
- Assessment and commentary on appropriate QA/QC procedures;
- A review of the CSM and provision of a revised CSM if required;
- Data interpretation, including trends in groundwater concentration, gradient and flow directions;
- Assessment of statistically based trends that may inform decision making when it comes to the revision of the OMP (Department of Defence, 2020a); and
- A statement as to whether the risk profile has changed overall, or for any specific location at HMAS Cairns or the Former WWII RAN Fuel Installation or their respective Management Areas, and a recommendation as to whether this should trigger an OMP and/or PMAP review, or other action.

4.15 Deviation from OMP

While the scope of works and methodology described in this SAQP are generally consistent with that presented in the OMP (Department of Defence, 2020a), deviations as a results of subsequent sampling events may occur as a result of review of recommendations made in the Sampling Event Reports. A summary of the deviations is presented in the table below.

Table 15 Deviations from OMP

No	Description	Rationale for deviation
1	Former location codes CRC_MW1 and CRC_MW2 identified in the OMP were not compliant with ESdat.	The monitoring well sample identification numbers were changed to be ESdat compliant: • CRC_MW1 changed to MW035; • CRC_MW2 changed to MW036.
2	Discrepancies were identified with the sample ID for the surface water and sediment sampling locations on and off Base during the September/October 2020 sampling event.	As a result, the location IDs have been amended for consistency. See the below table for a summary of changes to the surface water and sediment location IDs.

Table 16 Location IDs, deviation from the OMP

Location ID as per original OMP (Department of Defence, 2020a)	Location ID as identified in ESdat	New location ID
HMAS Cairns		
SW001 / SD001	SW021 / SD019	SW/SD032
SW002 / SD002	SW022 / SD020	SW/SD030
SW003 / SD003	SW023 / SW021	SW/SD031
SW004 / SD004	SW024 / SD022	SW/SD033
SW005 / SD005	SW025 / SD023	SW/SD034
SW006 / SD006	SW026 / SD024	SW/SD035
WWII RAN Fuel Installation		
SW008 / SD008	SW008 / No ID	SW/SD036
SW017 / SD017[1]	SW017 / SD101	SW101/No change
SW022 / SD022[1]	SW020 / SD100	SW100/No change

[1] - Sample location did not exist in Defence Esdat therefore new sample location ID was created during the September/October 2020 Sampling Event completed by AECOM.

5.0 References

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Appendix A

Figures

AECOM

N

0 30 60 m

Legend

- HMAS Cairns
- Management Area
- Groundwater Monitoring Location
- Combined Surface and Sediment Location

FIGURE 1:
HMAS CAIRNS - GROUNDWATER, SURFACE WATER AND SEDIMENT LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
OMP HMAS Cairns and Former WWII RAN Fuel Installation, Sampling Analysis and Quality Plan
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Surface Water and Sediment Location

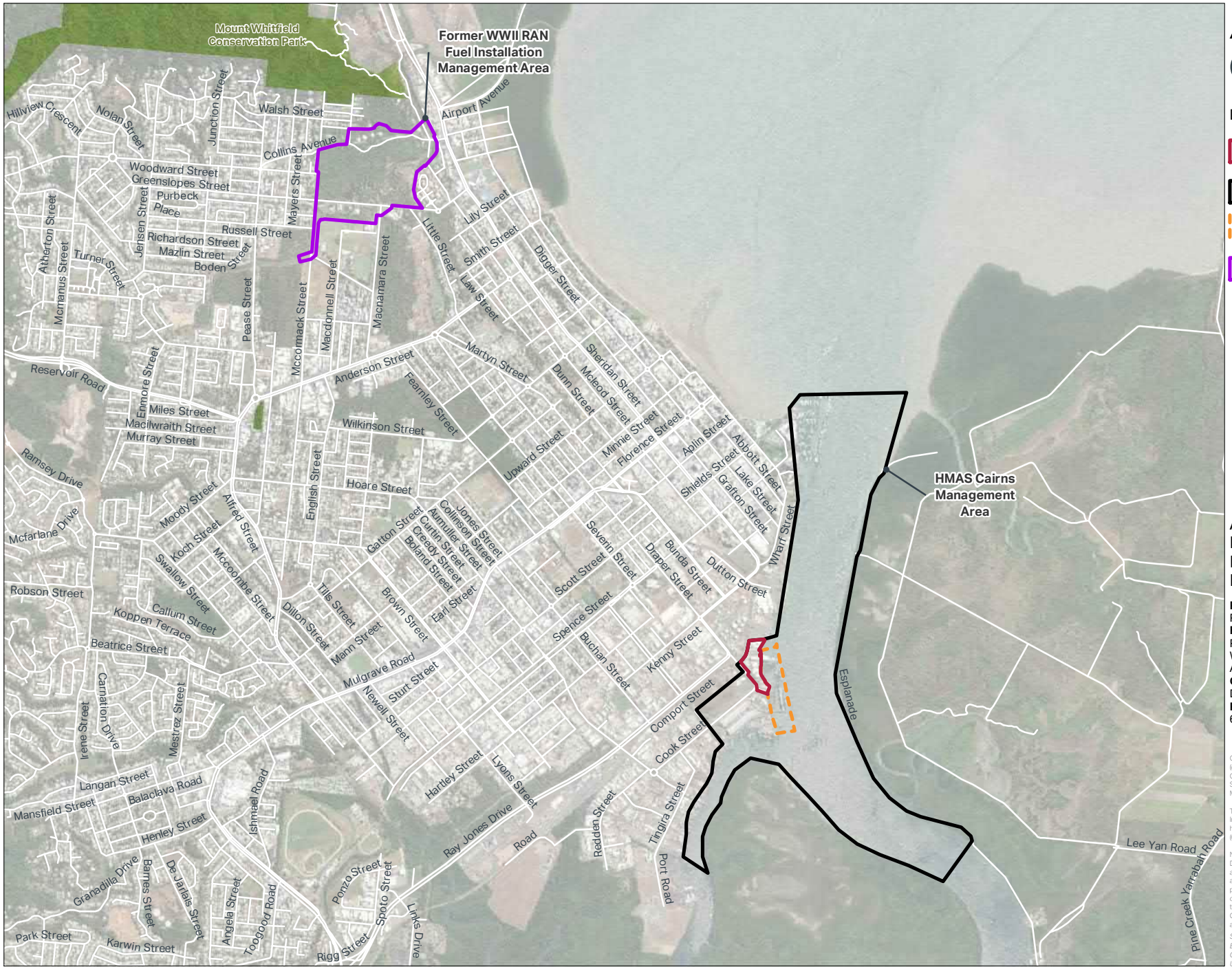
FIGURE 2:
FORMER WWII RAN FUEL INSTALLATION – GROUNDWATER, SURFACE WATER AND SEDIMENT LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
PFAS OMP - HMAS Cairns and Former WWII RAN Fuel Installation, Sampling and Analysis Quality Plan
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Appendix B

HMAS Cairns and Former WWII RAN Fuel Installation Management Area



AECOM

N

0 500 1,000 m

Legend

- HMAS Cairns Property Boundary
- HMAS Cairns Management Area
- Seabed Area
- Former WWII RAN Fuel Installation Management Area

APPENDIX B: HMAS CAIRNS AND FORMER WWII RAN FUEL INSTALLATION

PROJECT NAME:
PFAS OMP
REPORT NAME:
PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation - Sampling Analysis and Quality Plan
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Appendix C

Well Construction Details

Appendix C
Well construction details at HMAS Cairns and WWII RAN Fuel Installation

Location ID	Screen Interval (mbgl)	Well Depth (mbtoc)
MW001	2.5 – 5.5	5.35
MW002	1.5 – 4.5	4.21
MW003	2.5 – 5.5	4.08
MW004	2.0 – 4.0	3.9
MW005	2.0 – 4.0	3.6
MW007	1.5 – 4.0	3.6
MW009	1.5 – 4.5	4.41
MW011	2.0 – 3.0	2.92
MW013	2.0 – 5.0	4.96
MW014	2.0 – 5.0	4.98
MW015	2.0 – 5.0	5.03
MW016	2.0 – 5.0	5.03
MW017	2.0 – 5.0	4.91
MW018	2.0 – 5.0	4.91
MW019	2.0 – 5.0	4.99
MW031	2.5 - 4.5	5.33
MW035	1.0 - 2.0	2.5
MW036	0.7 - 1.7	2.2

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Department of Defence
31-May-2021
Doc No. 60612487_RP23_20210531_Rev1

Sampling Event Factual Report, September / October 2020

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

Sampling Event Factual Report, September / October 2020

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

Client: Department of Defence

ABN: 68 706 814 312

Prepared by

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			Name/Position	Signature
A	30-Oct-2020	Draft Issue	[redacted] Principal Contaminated Land Consultant	
B	02-Dec-2020	Draft Issue	[redacted] Principal Contaminated Land Consultant	
0	20-Jan-2021	Final Issue	[redacted] Principal Contaminated Land Consultant	
1	31-May-2021	Final Issue	[redacted] Principal Contaminated Land Consultant	

Table of Contents

List of Tables (in Text)

List of Figures (in Appendix A)

List of Tables (in Appendix B)

Abbreviations

Term	Description
AECOM	AECOM Australia Pty Ltd
ALS	Australian Laboratory Services
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure, as amended (2013)
DCMM	Defence Contamination Management Manual
DO	Dissolved oxygen
DoH	Department of Health
EC	Electrical conductivity
FSANZ	Food Standards Australia and New Zealand
HEPA	Heads of Environmental Protection Agencies
HMAS	Her Majesty's Australian Ship
LOR	Limit of reporting
mAHD	metres Australian Height Datum
mbtoc	metres below top of casing
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPC	National Environment Protection Council
NHMRC	National Health and Medical Research Council
NMI	National Measurement Institute
NSW	New South Wales
NTU	Nephelometric Turbidity Unit
OMP	Ongoing Monitoring Program
ORP	Oxidation-reduction potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance/Quality Control
QLD	Queensland
RAN	Royal Australian Navy
SAQP	Sampling Analysis Quality Plan
SWL	Standing Water Level

Term	Description
WWII	World War II

Units of Measurement			
L	Litres	m	Metres
mg	Milligram	ha	Hectares
kg	Kilogram		

1.0 Introduction

1.1 General

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Program (OMP) (Department of Defence, 2020a) outlined in the *PFAS Management Area Plan (PMAP)* (Department of Defence, 2020b) at Her Majesty's Australian Ship (HMAS) Cairns and the Former World War II Royal Australian Navy (WWII RAN) Fuel Installation located in the North Queensland Region. The location of the Site and the Management Areas are shown in **Figure 1A** and **Figure 1B** in **Appendix A**. The OMP for Cairns (Department of Defence, 2020a) includes the following sampling events:

- Post-wet season sampling events in April 2021, April 2022 and April 2023
- Post-dry season sampling events in October 2020, October 2021 and October 2022.

These sampling events include the following;

- High and low tide groundwater sampling of 15 monitoring wells on Base at HMAS Cairns
- Groundwater sampling of three monitoring wells off-Base within the Former WWII RAN Fuel Installation Management Area
- Sediment sampling at six locations on-Base at HMAS Cairns with co-located surface water sampling when water is present; and
- Sediment sampling at three locations off-Base within the Former WWII RAN Fuel Installation Management Area with co-located surface water sampling when water is present.

Following each sampling event, factual reports will be prepared. Annual interpretative reports will be prepared following the completion of each 12-month sampling period. This sampling event factual report has been prepared to report the results of the post-dry season sampling event completed in late September and early October 2020, specifically highlighting first time detections and/or first-time exceedances of human health screening criteria for Perfluorohexane sulfonic acid (PFHxS)+ perfluorooctane sulfonate (PFOS) and / or perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the *Defence (2020) PFAS OMP factual reports – interim guidance for preparation,* v0.2, March 2020 (Defence, 2020).

1.2 Objectives

The objectives of the OMP program are to:

- Implement the OMP prepared as part of the PMAP; and
- Collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration and transport of PFAS at HMAS Cairns and the Former WWII RAN Fuel Installation.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PMAP.

The objective of this phase of works is to implement the scope of works for the October 2020 sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2020).

2.0 Scope of Work

The sampling event at HMAS Cairns and the Former WWII RAN Fuel Installation was completed in general accordance with the SAQP (AECOM, 2020). In summary, the scope of works for this sampling event included:

- Obtaining permission to work in public spaces where some sampling locations are situated
- Review of the SAQP prior to monitoring event to ensure compliance with the following:
  - PFAS National Environmental Management Plan (NEMP) (2020)
  - National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (ASC NEPM, 2013)
  - Defence Routine Environment Water Quality Monitoring Manual
  - AS/NZ 5667:1998 Water quality – Sampling
  - Australian and New Zealand Guidelines for Fresh and Marine Water Quality; and
  - Relevant State regulatory guidelines.
- Gauging of groundwater level in monitoring wells prior to collection of samples (refer to **Table 1** below, and **Figure 2A** and **Figure 2B** in **Appendix A** for specific locations)
- Collection of groundwater samples from 18 locations including 15 locations at HMAS Cairns at both high and low tides, and 3 locations at the Former WWII RAN Fuel Installation. (refer to **Table 1** below, and **Figure 2A** and **Figure 2B** in **Appendix A**)
- Collection of co-located surface water and sediment samples at nine locations including six locations at HMAS Cairns and three locations at the Former WWII RAN Fuel Installation (refer to **Table 2** and **Table 3** below, and **Figure 2A** and **Figure 2B** in **Appendix A**)
- Collecting intra- and inter-laboratory duplicate samples at a rate of one in 10 primary samples, one rinsate sample per fieldwork day, and one trip blank per sample esky
- Analysis of all samples for a suite of 28 PFAS analytes at the standard limit of reporting (LOR)
- Data management of all OMP field and laboratory data in the Defence ESdat database
- Preparation of this Sampling Event Factual Report.

Table 1 Groundwater Sampling Locations

Locations	Monitoring Well ID
HMAS Cairns Management Area	MW001, MW002, MW003, MW004, MW005, MW007, MW009, MW011, MW013, MW014, MW015, MW016, MW017, MW018, MW019
Former WWII RAN Fuel Installation Management Area	MW031, MW035, MW036

Table 2 Surface Water Sampling Locations

Locations	Location ID
HMAS Cairns Management Area	SW021, SW022, SW023, SW024, SW025, SW026
Former WWII RAN Fuel Installation Management Area	SW008, SW017, SW020

Table 3 Sediment Sampling Locations

Locations	Location ID
HMAS Cairns Management Area	SD019, SD020, SD021, SD022, SD023, SD024
Former WWII RAN Fuel Installation Management Area	SD008, SD100, SD101

3.0 Methodology

3.1 Groundwater Sampling Methodology

The methodology used for the September/October 2020 sampling event was in accordance with the SAQP (AECOM, 2020) and is summarised below.

Table 4 Groundwater Sampling Methodology

Item	Details
Groundwater gauging	The depth to groundwater was measured in each monitoring well prior to the installation of HydraSleeves™ and immediately prior to collection of groundwater samples using an interface probe (IP).
Field parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and water quality observations were recorded for all groundwater samples.
Sampling methodology	Groundwater samples were collected from monitoring wells using no-purge methodology HydraSleeves™, which were installed within the screened interval of each well (based on a review of the well construction log) for a minimum of 24 hours prior to the sampling round (as stated in **Table T1**, **Appendix B**). Shorter sampling intervals were used for sampling between tides. Once the first tidal sampling round was completed at HMAS Cairns, new HydraSleeves™ were deployed at the screened interval depth in preparation for the second tidal sampling round. New HydraSleeves™ were not deployed following the second tidal sampling round at HMAS Cairns or following the single sampling round at the Former WWII RAN Fuel Installation. Two groundwater samples from MW031 and MW036 were collected using a bailer from the screened interval due to insufficient volume of water collected from the HydraSleeve™.
Quality Assurance/Quality Control (QA/QC) Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits), trip blanks, and rinsate samples. Refer to **Appendix C** for assessment of QA/QC sample data.
Sample analysis	All primary samples were submitted for PFAS suite using the standard levels of detection. Australian Laboratory Services (ALS) Environmental Brisbane, Queensland (QLD) was used as the primary laboratory. The National Measurement Institute (NMI) of Sydney, New South Wales (NSW) was used as the secondary laboratory. ALS and NMI methods for groundwater analyses are certified by the National Association of Testing Authorities (NATA). Chain of Custody Forms are presented in **Appendix D**. Laboratory certificates are presented in **Appendix E**.

3.2 Surface Water Sampling Methodology

The methodology used for the October 2020 sampling event was in accordance with the SAQP (AECOM, 2020) and is summarised below.

Table 5 Surface Water Sampling Methodology

Item	Details
Field parameters	Temperature, EC, DO, ORP, pH and observations of water quality were recorded for all surface water samples.
Sampling methodology	Samples were collected from immediately below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a decontaminated, stainless steel sampling cup was lowered into the water and collected surface water was poured into a new, laboratory-supplied container with the cap immediately applied once the container was full.
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and trip blanks samples. Refer to **Appendix C** for assessment of QA/QC sample data.
Sample analysis	All primary samples were submitted for PFAS suite using the standard levels of detection. ALS Brisbane, QLD was used as the primary laboratory. NMI of Sydney, NSW was used as the secondary laboratory. Chain of Custody Forms are presented in **Appendix D**. Laboratory certificates are presented in **Appendix E**.

3.3 Sediment Sampling Methodology

The methodology used for the September/October 2020 sampling event was in accordance with the SAQP (AECOM, 2020) and is summarised below.

Table 6 Sediment Sampling Methodology

Item	Details
Sampling Collection Methodology	Samples representative of potentially deposited sediments were collected from within the water body (if possible) using a decontaminated steel trowel. At each location, a new, laboratory supplied container was used for each sample with the cap immediately applied once the container was full.
Logging	Sediment characteristics were recorded for each sample.
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and trip blank samples. Refer to **Appendix C** for assessment of QA/QC sample data.
Sample analysis	All primary samples were submitted for PFAS suite using the standard levels of detection. ALS Brisbane, Queensland was used as the primary laboratory. The NMI of Sydney, NSW was used as the secondary laboratory. Chain of Custody Forms are presented in **Appendix D**. Laboratory certificates are presented in **Appendix E**.

3.4 Adopted Screening Criteria

Adopted screening criteria references national guidance in the form of the PFAS NEMP, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset include the following:

- PFAS NEMP, (HEPA, 2020)
- Department of Health (DoH), 2019. Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017 [updated September 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 1999, Schedule B1, as amended in 2013 (ASC NEPM, 2013).

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in **Table 7** below.

Table 7 Summary of Adopted Screening Criteria

Pathway	Compound	Criteria	Comment / Reference
Human Health Receptors			
Recreational use – surface water	PFOS + PFHxS	2 µg/L	The values are from NHMRC (2019). *All surface water results will be compared to these criteria.*
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater and marine (95% species protection values)	PFOS	0.13µg/L	The values are from the PFAS NEMP (HEPA, 2020). *All surface water and groundwater results will be compared to these criteria.*
	PFOA	220 µg/L	

There are no human health or ecological guideline values available for sediment.

3.5 Data Quality Objectives and Data Validation

The data quality objectives and data quality indicators adopted for these works are presented in the SAQP (AECOM, 2020).

Data validation assessment is provided in **Appendix C**.

Data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) (Defence, 2018 as amended 2019) Annex L requirements.

3.6 Deviations from the SAQP

Table 8 lists the deviations from the SAQP (AECOM, 2020) during this sampling event.

Table 8 Deviations from the SAQP during sampling event for October 2020

SAQP	October 2020 Sampling Event
8 sediment and 7 surface water location ID codes in the SAQP are listed differently.	The location codes have been updated in ESdat by another consultant. Locations were referred per Defence ESdat. It is noted that the location codes updated in ESdat by another consultant caused sediment and surface water samples that are co-located to have different numbers.
The water quality meter will be calibrated each day prior to the commencement of field activities.	The water quality meter was calibrated at the beginning of the program prior to mobilisation to Cairns from Townsville.
Groundwater samples will be collected from all monitoring wells using no-purge methodology HydraSleeve™.	Groundwater samples from MW031 and MW036 were collected using a bailer from the screened interval due to insufficient volume of water collected from the HydraSleeve™ as there was less than 0.4 m of water in these wells.

4.0 Field Observations and Results

The September/October 2020 sampling event was completed between 29 September and 1 October 2020, commencing with groundwater gauging and deployment of Hydrasleeves™. The results are summarised in following sections.

4.1 Groundwater

4.1.1 Observations and Field Measurements

Table 9 Groundwater Observations and Field Measurements

Compound	Criteria
Access	All monitoring wells were accessible, and samples were collected from all locations.
Monitoring Well Network	No monitoring wells were noted to be damaged during the fieldworks. Two monitoring wells (MW035 and MW036) at the Former WWII RAN Fuel Installation were discovered with well caps removed and on the ground beside each monument. Well caps were replaced upon completion of sampling. Two monitoring wells (MW031 and MW036) at the Former WWII RAN Fuel Installation were blocked by tree roots. The tree roots were cleared using a decontaminated steel bailer however an insufficient water level was present for HydraSleeve™ deployment so grab samples were collected via decontaminated steel bailer following removal of the tree roots.
Tidal Summary	All tidal samples were collected on September 30, 2020. The Bureau of Meteorology (BOM, 2020) tidal summary for Cairns, located at (16°56'S, 145°47'E) was: • High tide occurred at 08:22 with a height of 2.40 m; and • Low tide occurred at 14:17 with a height of 0.69 m.
Field Observations	Groundwater from seven monitoring well locations at HMAS Cairns at high tide (MW004, MW007, MW011, MW013, MW014, MW018 and MW019) and three monitoring well locations at low tide (MW004, MW013 and MW019) had a sulphurous odour. No odour was noted in the remaining wells. Groundwater colour ranged from clear, to light brown, light yellow, yellow brown, yellow green, light grey and black. A biosheen was noted at MW003 at HMAS Cairns at high tide. No other visible or olfactory indications of contamination were observed during the sampling of the monitoring wells. Field observations are presented **Table T1** in **Appendix B**.
Depth to Groundwater	At HMAS Cairns, depth to groundwater at high tide was between 0.703 and 2.294 metres below top of casing (mbtoc) and groundwater elevations were between 0.204 and 1.950 metres Australian Height Datum (mAHD). Depth to groundwater at low tide was between 0.699 and 3.145 mbtoc and groundwater elevations were between -0.63 and 1.960 mAHD. At the Former WWII RAN Fuel Installation depth to groundwater was between 1.781 and 5.121 mbtoc and groundwater elevations were between 0.645 and 1.939 mAHD. Groundwater gauging data are presented in **Table T1** in **Appendix B**.

Compound	Criteria
Groundwater Flow Direction	Groundwater contours and inferred groundwater flow directions at HMAS Cairns at both high and low tide, and the Former WWII RAN Fuel Installation in September/October 2020 are shown on **Figure 2A** and **Figure 2B** in **Appendix A**. MW007 at HMAS Cairns was excluded from groundwater contours as it is inferred to be within an unnaturally compacted area, directly east of a boat ramp, and exhibited an anomalous groundwater elevation. Groundwater is inferred to flow predominantly in a general easterly direction at HMAS Cairns towards Trinity Inlet with some tidal influence observed between high and low tides. The inferred groundwater flow direction at the Former WWII RAN Fuel Installation is from to the south-east towards Lily Creek.
Geophysical Parameters	Groundwater geophysical parameters were measured prior to collecting groundwater samples. The readings are presented in **Table T1** in **Appendix B** and are summarised below. At HMAS Cairns: • DO results ranged between 0.28 mg/L (MW019) and 6.73 mg/L (MW015) at high tide, and between 0.64 mg/L (MW019) and 6.67 mg/L (MW015) at low tide indicating low to well oxygenated conditions. • EC ranged from 4,260 µS/cm (MW009) to 68,177 µS/cm (MW016) at high tide, and from 5,450 µS/cm (MW007) to 69,833 µS/cm (MW016) at low tide indicating saline conditions in groundwater. • pH ranged from 6.38 (MW016) to 7.24 (MW015) at high tide, and from 6.38 (MW019) to 7.49 (MW014) at low tide indicating slightly acidic to neutral conditions. • ORP ranged from -56.5 mV (MW019) to 92.2 mV (MW017) at high tide, and from -94.2 mV (MW019) to 96.7 mV (MW017) at low tide, indicating mildly oxidising to mildly reducing conditions. • Turbidity ranged from 5.75 NTU (MW016) to 340 NTU (MW018) at high tide, and from 16.3 NTU (MW013) to 253 NTU (MW011) at low tide indicating low to high turbidity conditions. • Temperature ranged from 24.2°C (MW011) to 28.8°C (MW002) at high tide, and from 25.2°C (MW015) to 29.6°C (MW001) at low tide. At the Former WWII RAN Fuel Installation: • DO results ranged between 2.51 mg/L (MW035) and 3.3 mg/L (MW031) indicating moderate oxygenated conditions. • EC ranged from 410 µS/cm (MW036) to 629 µS/cm (MW035) indicating fresh to brackish groundwater conditions. • pH ranged from 6.02 (MW031) to 6.07 (MW035 and MW036) indicating slightly acidic conditions. • ORP ranged from 67.2 mV (MW036) to 124.2 mV (MW035) indicating oxidising conditions. • Turbidity ranged from 483 NTU (MW036) to 3,136 NTU (MW031) indicating high turbidity conditions. • Temperature ranged from 21.9°C (MW035) to 22.9°C (MW031).
Weather Conditions	Weather was clear, hot and humid during the sampling event.
Estate Management Works or Training Activities	During the sampling event recent construction works were noted in the vicinity of MW014. Foreman informed works were not planned to affect integrity of MW014. No other notable estate works or training activities were observed in the vicinity of other groundwater sampling locations.

4.1.2 Analytical Results

All of the 33 groundwater samples collected during this event, all reported concentrations of PFAS compounds above the laboratory LOR and two samples from one location reported new ecological screening criteria exceedances for PFOS. The groundwater analytical results from this sampling event are presented in **Table T2** in **Appendix B**.

First time detections of PFAS or new exceedances of guideline values are presented in **Table 10** below and on **Figure 3** in **Appendix A**.

Table 10 First Time Detections of PFAS or New Exceedances of Guidelines in Groundwater

Type	Monitoring Well	Sum of PFHxS+PFOS concentration (µg/L)		PFOA concentration (µg/L)		PFOS concentration (µg/L)	
		October 2020	Historical maximum	October 2020	Historical maximum	October 2020	Historical maximum
First time detections of Sum of PFHxS+PFOS, PFOS or PFOA in groundwater.	There were no first-time detections of PFHxS+PFOS, PFOS or PFOA in the current round of sampling.						
First time exceedance of ecological screening criteria.	MW001_HT	0.89	1.955	0.05	0.21	0.16	0.1
	MW001_LT	2.28		0.17		0.26	

Note: Yellow shading indicates a first-time exceedance of the ecological screening criteria for PFOS+PFHxS, PFOA or PFOS.

4.2 Surface Water

4.2.1 Observations and Field Measurements

Table 11 Surface Water Observations and Field Measurements

Compound	Criteria
Access	All surface water sampling locations were accessible, and samples were collected from all locations.
Field Observations	Surface water colour ranged from light olive brown, to olive yellow and dark olive brown. A biosheen was noted at SW020 at the Former WWII RAN Fuel Installation. No other visual or olfactory indications of contamination were observed during the sampling of the other surface water sampling locations. Field observations are presented in **Table T3** in **Appendix B**.

Compound	Criteria
Geophysical Parameters	Surface water geophysical parameters were measured prior to collecting surface water samples. The readings are presented in **Table T3** in **Appendix B** and are summarised below. At HMAS Cairns: • DO ranged from 5.61 mg/L (SW024) to 6.66 mg/L (SW022) indicating well oxygenated conditions. • EC ranged from 51,886 µS/cm (SW026) to 63,387 µS/cm (SW023) indicating saline conditions. • pH ranged from 7.68 (SW024) to 8.36 (SW021) indicating near neutral to slightly alkaline conditions. • ORP ranged from 54.3 mV (SW021) to 90.4 mV (SW026) indicating moderately oxidising conditions. • Turbidity ranged from 14.3 NTU (SW023) to 250 NTU (SW024) indicating low turbidity conditions. • Temperature ranged from 26.8°C (SW021) and 30.4°C (SW022). At the Former WWII RAN Fuel Installation: • DO ranged from 3.71 mg/L (SW017) to 5.34 mg/L (SW008) indicating moderate to well oxygenated conditions. • EC ranged from 1,243 µS/cm (SW017) to 55,941 µS/cm (SW020) indicating brackish to saline conditions. • pH ranged from 6.98 (SW020) to 7.53 (SW008) indicating near neutral conditions. • ORP ranged from 78 mV (SW017) to 161.5 mV (SW207) indicating mildly oxidising conditions. • Turbidity ranged from 12.2 NTU (SW017) to 27 NTU (SW020) indicating low turbidity conditions. • Temperature ranged from 22.5°C (SW017) and 24.3°C (SW008).
Weather Conditions	Weather was clear, hot and humid during the sampling event.
Estate Management Works or Training Activities	During the sampling event no notable estate works or training activities were observed in the vicinity of sampling locations.

4.2.2 Analytical Results

Of the nine surface water samples collected during this event, four samples reported concentrations of PFAS compounds above the laboratory LOR and one sample reported a concentration of PFOS exceeding the nominated ecological screening criteria. The surface water analytical results from this sampling event are presented in **Table T4** in **Appendix B**.

No first-time detections of PFHxS+PFOS or PFOA, or first-time exceedances of guideline values in surface water were reported, as presented in **Table 12** below.

Table 12 First Time Detections of PFAS or New Exceedances of Guidelines in Surface Water

Type	Surface Water Locations	Sum of PFHxS+PFOS concentration (µg/L)		PFOA concentration (µg/L)		PFOS concentration (µg/L)	
		October 2020	Historical maximum	October 2020	Historical maximum	October 2020	Historical maximum
First time detections of Sum of PFHxS+PFOS, PFOS or PFOA in surface water.	There were no first-time detections of PFHxS+PFOS, PFOS or PFOA in the current round of sampling.						
First time exceedance of the NHMRC (2019) recreational use guidelines or ecological screening criteria.	There were no first-time exceedances of the NHMRC (2019) recreational use guidelines or ecological screening criteria.						

4.3 Sediment

4.3.1 Observations and Field Measurements

Table 13 Sediment Observations and Field Measurements

Compound	Criteria
Access	All sediment sampling locations were accessible, and samples were collected from all locations.
Field Observations	No visible or olfactory indications of contamination were observed during the sampling of the sediment locations. Sediment logging data are presented in **Table T5** in **Appendix B**.
Weather Conditions	Weather was clear, hot and humid during the sampling event.
Estate Management Works or Training Activities	During the sampling event no notable estate works or training activities were observed in the vicinity of sampling locations.

4.3.2 Analytical Results

Of the nine sediment samples collected during this event, six samples reported concentrations of PFAS compounds above the laboratory LOR. The sediment analytical results from this sampling event are presented in **Table T6** in **Appendix B**.

First-time detections of PFHxS+PFOS in sediment are presented in **Table 14** below and on **Figure 3** in **Appendix A**.

Table 14 First Time Detections of PFAS or New Exceedances of Guidelines in Sediment

Type	Sediment Locations	Sum of PFHxS+PFOS concentration (mg/kg)		PFOA concentration (mg/kg)	
		October 2020	Historical maximum	October 2020	Historical maximum
First time detections of Sum of PFHxS+PFOS or PFOA in sediment.	SD019	0.0006*	<0.005	<0.0002	<0.005
	SD021	0.001*	<0.005	<0.0002	<0.005
	SD024	0.007	<0.005	<0.0002	<0.005

Note: Blue shading indicates a sampling location with a first-time detection of Sum of PFHxS+PFOS or PFOA.
*The standard laboratory limit of reporting has decreased since the previous monitoring round.

5.0 Summary and Next Sampling Event

5.1 Summary of Monitoring Event

A groundwater, surface water and sediment monitoring event was completed at HMAS Cairns and the Former WWII RAN Fuel Installation between 29 September and 1 October 2020. The program included sampling of 18 groundwater monitoring wells including 15 wells at HMAS Cairns at both high and low tides and three wells at the Former WWII RAN Fuel Installation, and collection of co-located surface water and sediment samples at nine locations including six locations at HMAS Cairns and three locations at the Former WWII RAN Fuel Installation.

Table 15 summarises the findings of the September/October 2020 sampling event and the recommended actions.

Table 15 Summary of Sampling Event

Item	Comment	Recommended Actions
Access to sampling locations	All groundwater monitoring wells, surface water sampling locations and sediment sampling locations were accessible. Samples were collected from all locations.	No actions recommended.
Monitoring well network condition	No issues were identified in 15 of the 18 monitoring wells sampled. Two monitoring wells (MW031 and MW036) at the Former WWII RAN Fuel Installation were obstructed by tree roots and unable to be sampled via HydraSleeves™ and samples were collected via decontaminated steel bailer. The well caps at two monitoring wells (MW035 and MW036) at the Former WWII RAN Fuel Installation were discovered on the ground beside each monument.	Use alternative sampling method at MW031 and MW036. Lock monuments at the Former WWII RAN Fuel Installation to prevent members of the public or wildlife removing well caps as part of the next sampling round.
Analytical Results	PFAS compounds were detected above laboratory LOR in all 33 groundwater samples. PFAS compounds were detected above laboratory LOR in four surface water samples. PFAS compounds were detected above laboratory LOR in six sediment samples.	Ongoing monitoring in accordance with the OMP.
First-time detections of Sum of PFHxS+PFOS, PFOS or PFOA	Sediment (at SD019, SD021 and SD024) reported first-time detections of PFOS above LOR. All other surface water and sediment samples reported concentrations consistent with historical data. No first-time detections of PFAS above the laboratory limit of reporting were recorded in any of the 33 groundwater samples collected.	Ongoing monitoring in accordance with the OMP.

Item	Comment	Recommended Actions
First time exceedance of ecological screening criteria for PFOS or PFOA in groundwater, or first-time exceedance of human health recreational screening criteria for PFOS+PFHxS or PFOA in surface water.	One first-time exceedances of the NEMP (HEPA, 2020) 95% Species Protection guidelines for groundwater in sample MW001 at both high and low tide. There were no first-time exceedances of the NHMRC (2019) recreational use guidelines for surface water.	Ongoing monitoring in accordance with the OMP.

5.2 Upcoming Sampling Events

The next biannual sampling event is scheduled for April 2021.

5.3 Upcoming Annual Interpretive Report

The next annual interpretative report is scheduled for May 2021.

6.0 References

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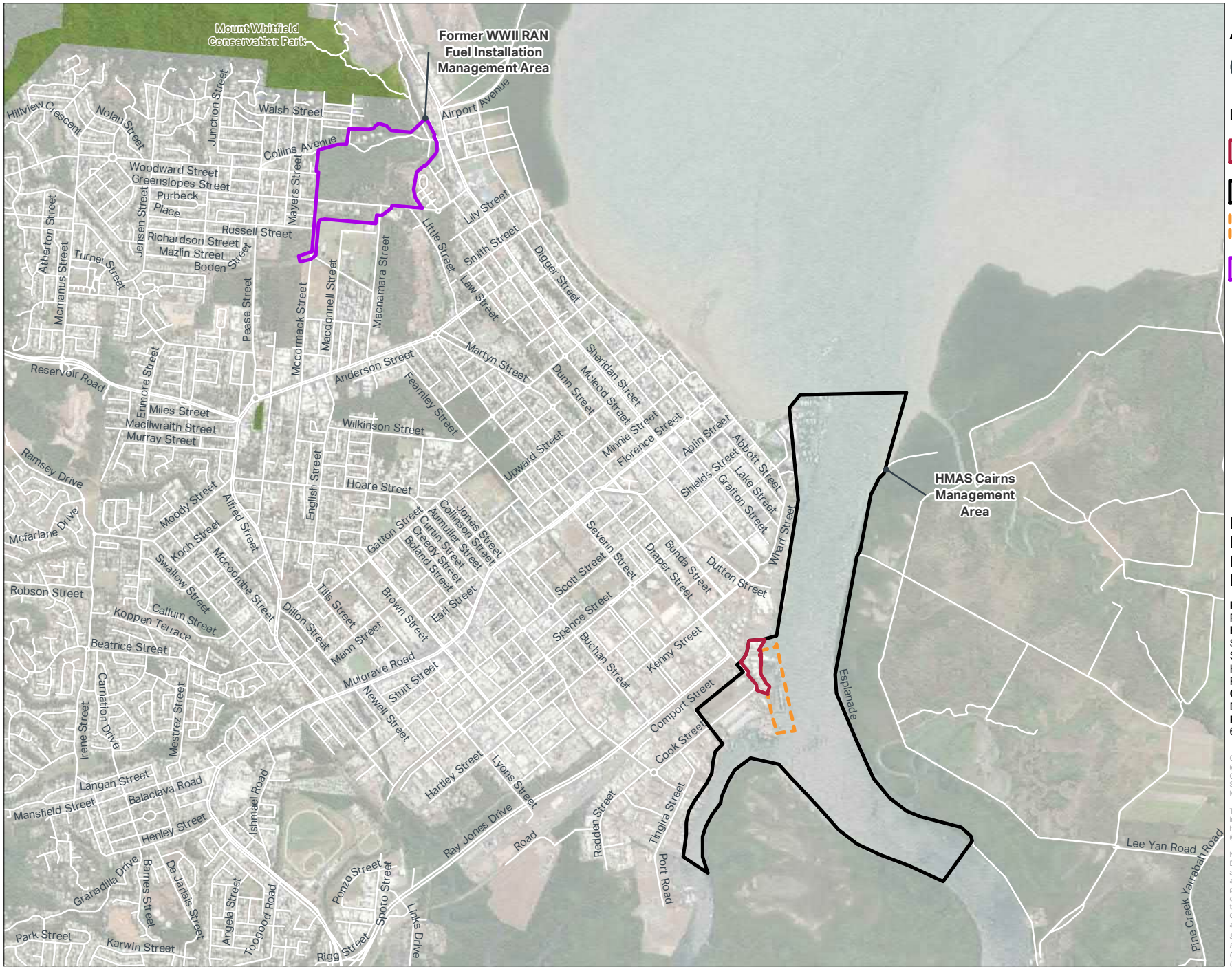
Appendix A

Figures

Appendix A Figures



AECOM

FIGURE 1A:
HMAS CAIRNS AND FORMER WWII RAN FUEL INSTALLATION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, September/October 2020 - PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 75 150 m

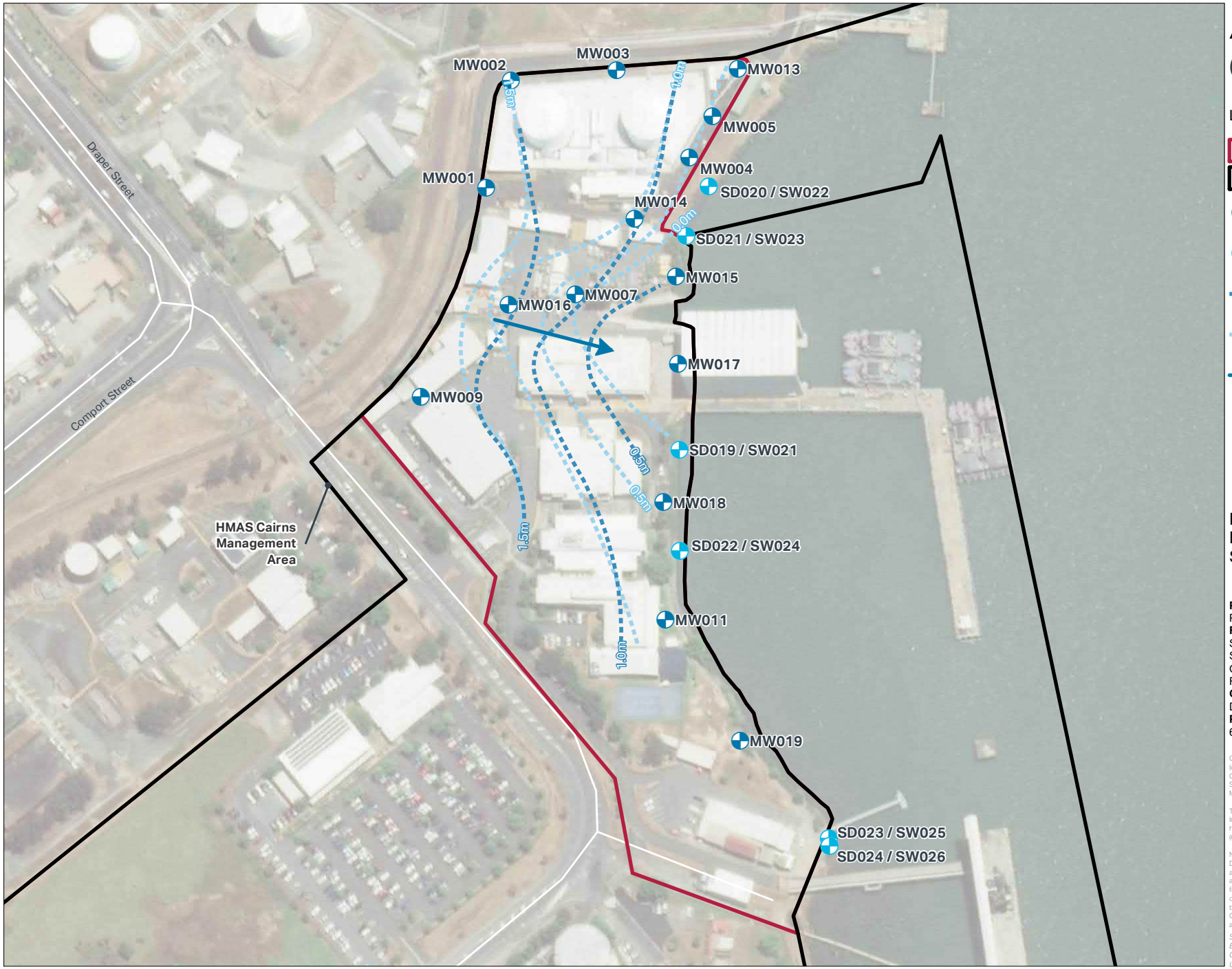
Legend

- Management Area
- WWII RAN Fuel Installation

FIGURE 1B: HMAS CAIRNS WWII RAN FUEL INSTALLATION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, September/October 2020 - PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 30 60 m

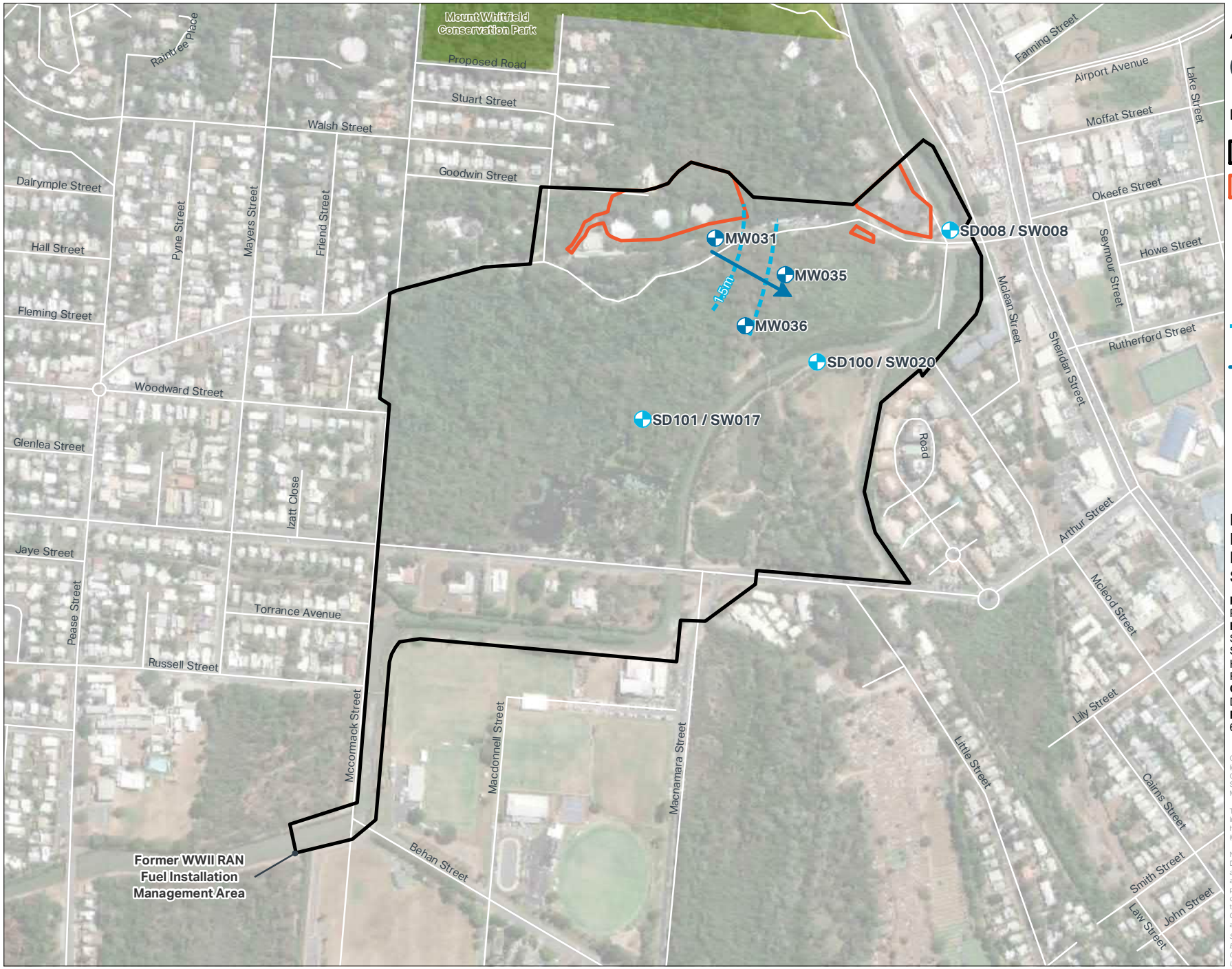
Legend

- HMAS Cairns
- Management Area
- Groundwater Monitoring Location
- Combined Sediment and Surface Water Location
- Groundwater Contours at High Tide (mAHD)
- Groundwater Contours at Low Tide (mAHD)
- Inferred Groundwater Flow Direction

FIGURE 2A: HMAS CAIRNS SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, September/October 2020 - PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Combined Sediment and Surface Water Location
- Groundwater Contours (mAHD)
- Inferred Groundwater Flow Direction

FIGURE 2B: FORMER WWII RAN FUEL INSTALLATION SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, September/October 2020 - PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns
- Management Area
- First time detect of PFOS+PHSxS or PFOA
- First time exceedance of screening criteria for PFOS+PFHxS or PFOA

FIGURE 3: GROUNDWATER. SURFACE WATER AND SEDIMENT DEVIATIONS FROM HISTORICAL DATA SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, September/October 2020 - PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Appendix B

Tables

Appendix B Tables

Table T1: Groundwater Gauging and Field Parameter Results

Property ID	Location ID	HydraSleeve Deployment Date	HydraSleeve Deployment Time	Screen Interval (mbgl)	Hydrasleeve Deployment Collar Depth* (mbgl)	Sample Date	Sample Time	Well Depth (mbtoc)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Condition of Gatic	DO (mg/L)	EC (µS/cm)	pH	Eh/Redox (mV)	Temp (°C)	Turbidity	Turbidity Value (NTU)	Water Colour	Odour	Sheen	Sample Method
HMAS Cairns High Tide																							
0009	MW001	29/09/2020	14:15	2.5 – 5.5	4.05	30/09/2020	08:00	5.35	0.703	2.494	1.791	Good	3.97	9125	6.73	69.2	28.2	Clear	7.43	Clear	No odour	No sheen	Hydrasleeve
0009	MW002	29/09/2020	14:00	1.5 – 4.5	2.91	30/09/2020	08:20	4.21	1.428	2.564	1.136	Good	2.4	5735	6.49	19	28.8	Low	18.43	Yellow / Brown	No odour	No sheen	Hydrasleeve
0009	MW003	29/09/2020	13:50	2.5 – 5.5	2.78	30/09/2020	08:50	4.08	1.272	2.542	1.27	Good	1.93	10310	6.71	2.9	27.2	Clear	18.52	Clear	No odour	Biosheen	Hydrasleeve
0009	MW004	29/09/2020	13:15	2.0 – 4.0	2.6	30/09/2020	09:25	3.9	1.818	2.543	0.725	Good	3.07	44697	6.89	-55.8	26	Medium	34.7	Light Brown	Strong rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW005	29/09/2020	13:30	2.0 – 4.0	2.3	30/09/2020	09:10	3.6	1.758	2.548	0.79	Good	3.28	34406	6.94	49.3	26.7	Clear	29.55	Clear	No odour	No sheen	Hydrasleeve
0009	MW007	29/09/2020	15:05	1.5 – 4.0	2.3	30/09/2020	10:35	3.6	1.009	2.602	1.593	Good	3.03	6307	6.95	-26.1	28.7	Medium	31.79	Light Brown	Distinct rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW009	29/09/2020	16:10	1.5 – 4.5	3.11	30/09/2020	11:05	4.41	0.709	2.659	1.95	Good	3.45	4260	6.94	77.7	25.5	Clear	8.89	Clear	No odour	No sheen	Hydrasleeve
0009	MW011	29/09/2020	16:35	2.0 – 3.0	2.62	30/09/2020	07:15	2.92	1.467	2.376	0.909	Good	2.57	7749	6.99	-5.1	24.2	Clear	193.3	Clear	Weak rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW013	29/09/2020	13:40	2.0 – 5.0	3.66	30/09/2020	09:05	4.96	1.624	2.437	0.813	Good	2.6	20366	6.75	-16.6	27	Low	14.25	Black	Distinct rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW014	29/09/2020	15:35	2.0 – 5.0	3.68	30/09/2020	09:50	4.98	1.354	2.395	1.041	Good	2.53	14342	7.03	-17.8	26	Low	10.01	Light Brown	Distinct rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW015	29/09/2020	15:15	2.0 – 5.0	3.73	30/09/2020	10:10	5.03	1.99	2.515	0.525	Good	6.73	52134	7.24	84	25.3	Low	31.62	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW016	29/09/2020	16:00	2.0 – 5.0	3.73	30/09/2020	10:20	5.03	0.895	2.702	1.807	Good	1.86	68177	6.38	51.3	27.7	Low	5.75	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW017	29/09/2020	15:45	2.0 – 5.0	3.61	30/09/2020	10:50	4.91	2.294	2.498	0.204	Good	6.12	5144	6.99	92.2	26.7	Low	17.84	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW018	29/09/2020	15:50	2.0 – 5.0	3.61	30/09/2020	11:20	4.91	2.073	2.668	0.595	Good	1.38	14290	7.05	-26.3	26.4	Turbid	339.98	Light Brown	Weak rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW019	29/09/2020	16:30	2.0 – 5.0	3.69	30/09/2020	06:50	4.99	1.343	1.913	0.57	Good	0.28	23792	6.51	-56.5	24.6	Medium	50	Yellow / Green	Very strong rotten egg smell (sulfurous)	No sheen	Hydrasleeve
HMAS Cairns Low Tide																							
0009	MW001	30/09/2020	08:00	2.5 – 5.5	4.05	30/09/2020	12:45	5.35	0.764	2.494	1.73	Good	2.57	34395	6.64	30.2	29.6	Low	17.5	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW002	30/09/2020	08:20	1.5 – 4.5	2.91	30/09/2020	12:55	4.21	1.066	2.564	1.498	Good	2.72	7552	6.59	-12.5	28.5	Low	55.25	Yellow / Brown	No odour	No sheen	Hydrasleeve
0009	MW003	30/09/2020	08:50	2.5 – 5.5	2.78	30/09/2020	13:10	4.08	1.259	2.542	1.283	Good	2.34	10702	6.75	-20.8	28.7	Low	30.48	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW004	30/09/2020	09:25	2.0 – 4.0	2.6	30/09/2020	13:55	3.9	2.085	2.543	0.458	Good	3.27	43991	6.96	-49.9	26.3	Low	66.13	Light Brown	Distinct rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW005	30/09/2020	09:10	2.0 – 4.0	2.3	30/09/2020	13:40	3.6	2.149	2.548	0.399	Good	4.22	31645	6.97	70.1	27.1	Medium	115.2	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW007	30/09/2020	10:35	1.5 – 4.0	2.3	30/09/2020	16:10	3.6	1.023	2.602	1.579	Good	2.42	5450	7.04	-2.3	29.2	Low	45.37	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW009	30/09/2020	11:05	1.5 – 4.5	3.11	30/09/2020	16:30	4.41	0.699	2.659	1.96	Good	2	7025	6.87	70.4	25.5	Low	17.36	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW011	30/09/2020	07:15	2.0 – 3.0	2.62	30/09/2020	12:30	2.92	1.482	2.376	0.894	Good	3.4	9301	7.07	-20.5	27.3	Medium	253	Light Yellow	No odour	No sheen	Hydrasleeve
0009	MW013	30/09/2020	09:05	2.0 – 5.0	3.66	30/09/2020	13:30	4.96	2.033	2.437	0.404	Good	3.22	17529	6.7	19.2	27.7	Low	16.3	Light Grey	Strong rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW014	30/09/2020	09:50	2.0 – 5.0	3.68	30/09/2020	15:40	4.98	1.363	2.395	1.032	Good	3.01	12287	7.49	47.1	26.8	Low	39.03	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW015	30/09/2020	10:10	2.0 – 5.0	3.73	30/09/2020	15:50	5.03	3.145	2.515	-0.63	Good	6.67	52998	7.38	75.5	25.2	Low	49.82	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW016	30/09/2020	10:20	2.0 – 5.0	3.73	30/09/2020	16:05	5.03	1.868	2.702	0.834	Good	2.08	69833	6.47	68.2	28.4	Low	25.72	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW017	30/09/2020	10:50	2.0 – 5.0	3.61	30/09/2020	16:20	4.91	3.018	2.498	-0.52	Good	3.59	63783	6.66	96.7	26.5	Low	126.05	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW018	30/09/2020	11:20	2.0 – 5.0	3.61	30/09/2020	16:45	4.91	2.176	2.668	0.492	Good	3.36	11099	7.18	62	26.1	Low	37.18	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW019	30/09/2020	06:50	2.0 – 5.0	3.69	30/09/2020	12:15	4.99	1.371	1.913	0.542	Good	0.64	29807	6.38	-94.2	26.8	Medium	42.4	Yellow / Green	Very strong rotten egg smell (sulfurous)	No sheen	Hydrasleeve
Former WWII RAN Fuel Installation																							
0009	MW031	29/09/2020	17:15	2.5 – 4.5	-	1/10/2020	06:45	5.37	5.121	7.06	1.939	Good	3.3	412	6.02	88.2	22.9	Turbid	3136	Light Brown	No odour	No sheen	Grab Sample
0009	MW035	29/09/2020	17:50	1.0 – 2.0	1.44	1/10/2020	07:15	2.74	1.781	2.426	0.645	Good	2.51	629	6.07	124.2	21.9	Turbid	680	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW036	29/09/2020	17:40	0.7 – 1.7	-	1/10/2020	07:05	2.2	1.806	2.878	1.072	Good	2.56	410.1	6.07	67.2	22	Turbid	482.5	Light Brown	No odour	No sheen	Grab Sample

*HydraSleeves were installed with bottom weight touching the bottom of the well, HydraSleeve installation depth was claculated based on HydraSleeve length of 1.3 m full length and 0.3 m if installed with a top weight.

mbtoc	metres below top of casing
mAHD	metres above Australian Height Datum
DO	Dissolved Oxygen
EC	Electrical Conductivity
ORP	Oxidation Reduction Potential
Temp	Temperature
mg/L	milligrams per litre
µS/cm	microsiemens per centimetre
mV	millivolt
NTU	Nephelometric Turbidity Unit
°C	degrees Celcius
-	no data collected

Table T2: Groundwater Analytical Results

		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)	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)	Sum of PFAS	Sum of PFHxS and PFOS
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.01	0.01	0.02	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																											**0.13**	**220**			
Location ID	**Sample ID**	**Sample Date**																														
HMAS Cairns																																
0009_MW001	0009_MW001_HT_200930	30/09/2020	<0.05	<0.05	0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	0.02	0.04	0.24	<0.02	<0.02	0.09	0.04	<0.05	<0.02	<0.02	**0.16**	0.05	0.73	1.56	0.89
0009_MW001	0009_MW001_LT_200930	30/09/2020	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.53	0.1	<0.02	<0.02	<0.02	0.08	0.11	0.76	<0.02	<0.02	0.42	0.15	<0.05	<0.02	<0.02	**0.26**	0.17	2.02	4.66	2.28
0009_MW002	0009_MW002_HT_200930	30/09/2020	<0.32	<0.32	<0.32	<0.32	<0.81	<0.32	<0.81	<0.81	<0.32	<0.81	3.73	<1.6	<0.32	<0.32	<0.32	2.95	1.49	10.6	<0.32	<0.32	3.18	2.24	<0.81	<0.32	<0.32	**77.5**	3.63	32.2	138	110
0009_MW002	0009_MW002_LT_200930	30/09/2020	<0.5	<0.5	<0.5	<0.5	<1.25	<0.5	<1.25	<1.25	<0.5	<1.25	2.6	<2.5	<0.5	<0.5	<0.5	2.35	1.5	9.35	<0.5	<0.5	2.5	1.65	<1.25	<0.5	<0.5	**66**	3.35	29.2	118	95.2
0009_MW003	0009_MW003_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.08	<0.03	<0.08	0.33	<0.2	<0.03	<0.03	<0.03	0.15	0.11	0.75	<0.03	<0.03	0.31	0.21	<0.08	<0.03	<0.03	**5.58**	0.24	3.16	10.8	8.74
0009_MW003	0009_MW003_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.08	<0.03	<0.08	0.36	<0.2	<0.03	<0.03	<0.03	0.18	0.12	0.85	<0.03	<0.03	0.35	0.22	<0.08	<0.03	<0.03	**6.62**	0.29	3.59	12.6	10.2
0009_MW004	0009_MW004_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.08	<0.03	<0.08	0.58	0.3	<0.03	<0.03	<0.03	0.37	0.37	1.35	<0.03	<0.03	0.52	0.66	<0.08	<0.03	<0.03	**10.6**	0.72	5.22	20.7	15.8
0009_MW004	0009_MW004_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.08	<0.03	<0.08	0.48	0.2	<0.03	<0.03	<0.03	0.3	0.29	1.09	<0.03	<0.03	0.43	0.56	<0.08	<0.03	<0.03	**8.24**	0.56	4.2	16.4	12.4
0009_MW005	0009_MW005_HT_200930	30/09/2020	<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.16	<0.06	<0.16	0.42	<0.3	<0.06	<0.06	<0.06	0.45	0.24	1.03	0.06	<0.06	0.4	0.79	<0.16	<0.06	<0.06	**24.4**	0.58	5.1	33.5	29.5
0009_MW005	0009_MW005_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.08	<0.03	<0.08	0.39	0.2	<0.03	<0.03	<0.03	0.35	0.22	0.87	0.06	<0.03	0.36	0.62	<0.08	<0.03	<0.03	**20.7**	0.52	4.3	28.6	25
0009_MW007	0009_MW007_HT_200930	30/09/2020	<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.16	<0.06	<0.16	0.28	<0.3	<0.06	<0.06	<0.06	0.28	0.11	0.76	<0.06	<0.06	0.35	0.24	<0.16	<0.06	<0.06	**42.2**	0.33	3.28	47.8	45.5
0009_MW007	0009_MW007_LT_200930	30/09/2020	<0.16	<0.16	<0.16	<0.16	<0.41	<0.16	<0.41	<0.41	<0.16	<0.41	0.39	<0.8	<0.16	<0.16	<0.16	0.32	<0.16	1.02	<0.16	<0.16	0.44	0.29	<0.41	<0.16	<0.16	**51.1**	0.37	4.14	58.1	55.2
0009_MW009	0009_MW009_HT_200930	30/09/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	**0.27**	<0.01	0.12	0.39	0.39
0009_MW009	0009_MW009_LT_200930	30/09/2020	<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	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	**0.25**	<0.01	0.16	0.43	0.41
0009_MW011	0009_MW011_HT_200930	30/09/2020	<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	0.07	0.06	0.03	<0.02	<0.02	0.04	<0.05	<0.02	<0.02	**0.35**	0.36	0.05	0.96	0.4
0009_MW011	0009_MW011_LT_200930	30/09/2020	<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	0.07	0.06	0.03	<0.02	<0.02	0.04	<0.05	<0.02	<0.02	**0.34**	0.38	0.07	0.99	0.41
0009_MW013	0009_MW013_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	0.11	<0.2	<0.05	<0.05	<0.05	<0.05	0.05	0.27	0.09	<0.05	0.09	0.08	<0.12	<0.05	<0.05	**2.27**	0.09	1.1	4.15	3.37
0009_MW013	0009_MW013_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	0.09	<0.2	<0.05	<0.05	<0.05	0.06	0.05	0.25	0.11	<0.05	0.09	0.1	<0.12	<0.05	<0.05	**3.06**	0.11	1.21	5.13	4.27
0009_MW014	0009_MW014_HT_200930	30/09/2020	<0.5	<0.5	<0.5	<0.5	<1.25	<0.5	<1.25	<1.25	<0.5	<1.25	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.8	<0.5	<0.5	<0.5	<0.5	<1.25	<0.5	<0.5	**120**	0.85	7.9	132	128
0009_MW014	0009_MW014_LT_200930	30/09/2020	<0.25	<0.25	<0.25	<0.25	<0.63	<0.25	<0.63	<0.63	<0.25	<0.63	0.3	<1.2	<0.25	<0.25	<0.25	0.43	0.35	3.92	<0.25	0.35	0.33	0.48	<0.63	<0.25	<0.25	**101**	0.93	7.31	115	108
0009_MW015	0009_MW015_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	**1.74**	<0.05	0.35	2.25	2.09
0009_MW015	0009_MW015_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.06	<0.02	<0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.02	**1.17**	<0.02	0.21	1.46	1.38
0009_MW016	0009_MW016_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	0.35	<0.2	<0.05	<0.05	<0.05	<0.05	0.07	0.69	<0.05	<0.05	0.45	0.11	<0.12	<0.05	<0.05	0.07	<0.05	3.2	4.94	3.27
0009_MW016	0009_MW016_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	0.36	<0.2	<0.05	<0.05	<0.05	<0.05	0.07	0.67	<0.05	<0.05	0.44	<0.05	<0.12	<0.05	<0.05	0.1	<0.05	3.08	4.72	3.18
0009_MW017	0009_MW017_HT_200930	30/09/2020	<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	<0.02	0.06	<0.02	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	**1.13**	0.03	0.31	1.58	1.44
0009_MW017	0009_MW017_LT_200930	30/09/2020	<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	<0.02	0.05	<0.02	<0.02	0.02	<0.02	<0.05	<0.02	<0.02	**0.87**	0.02	0.21	1.17	1.08
0009_MW018	0009_MW018_HT_200930	30/09/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.08	<0.01	<0.02	0.08	0.08
0009_MW018	0009_MW018_LT_200930	30/09/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.04	<0.01	<0.02	0.04	0.04
0009_MW019	0009_MW019_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	0.06	<0.2	<0.05	<0.05	<0.05	0.09	<0.05	0.2	<0.05	<0.05	<0.05	0.07	<0.12	<0.05	<0.05	**3.16**	0.12	0.55	4.25	3.71
0009_MW019	0009_MW019_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	0.07	<0.2	<0.05	<0.05	<0.05	0.14	0.06	0.24	<0.05	<0.05	<0.05	0.06	<0.12	<0.05	<0.05	**4.82**	0.18	0.63	6.2	5.45
Former WWII RAN Fuel Installation																																
0009_MW031	0009_MW031_201001	1/10/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	**0.26**	<0.01	0.05	0.31	0.31
0009_MW035	0009_MW035_201001	1/10/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.05	<0.01	0.05	0.1	0.1
0009_MW036	0009_MW036_201001	1/10/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	**0.29**	<0.01	0.11	0.4	0.4

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than
NEMP is National Environmental Management Plan
Denotes first time detection above LOR of PFOS + PFHxS or PFOA
Denotes new exceedance of ecological or human health guideline values

Table T3: Surface Water Field Parameter Results

Property ID	Current Location ID (as of 06/2021)	Location ID at time of sampling	Sample Date	Sample Time	DO (mg/L)	EC (uS/cm)	pH	Redox (mV)	Temp (°C)	Turbidity	Turbidity (NTU)	Water Colour	Odour	Sheen	Sample Method
HMAS Cairns															
0009	SW032	SW021	1/10/2020	11:20	6.15	59333	8.36	54.3	26.8	Low	17.36	Light Olive Brown	No odour	No sheen	Grab
0009	SW030	SW022	30/09/2020	14:45	6.66	62817	8	66.5	30.4	Low	92.47	Dark Olive Brown	No odour	No sheen	Grab
0009	SW031	SW023	1/10/2020	10:45	6.36	63387	8.02	77.4	29.9	Low	14.13	Olive Yellow	No odour	No sheen	Grab
0009	SW033	SW024	1/10/2020	11:40	5.61	59397	7.68	69.8	28.7	Medium	250.02	Light Olive Brown	No odour	No sheen	Grab
0009	SW034	SW025	1/10/2020	12:10	5.63	55352	7.79	65.9	28	Low	16.71	Light Olive Brown	No odour	No sheen	Grab
0009	SW035	SW026	1/10/2020	12:00	5.92	51886	7.82	90.4	28.5	Low	56.98	Dark Olive Brown	No odour	No sheen	Grab
Former WWII RAN Fuel Installation															
0009	SW036	SW008	1/10/2020	09:00	5.34	55489	7.53	161.5	24.3	Low	16.68	Light Olive Brown	No odour	No sheen	Grab
0009	SW101	SW017	1/10/2020	08:10	3.71	1243	7.25	78	22.5	Low	12.23	Light Olive Brown	No odour	No sheen	Grab
0009	SW100	SW020	1/10/2020	08:00	4.37	55941	6.98	149.8	22.8	Low	27.01	Light Olive Brown	No odour	Biosheen Appearance	Grab

DO	Dissolved Oxygen
EC	Electrical Conductivity
Redox	Redox Oxidation Potential
Temp	Temperature
NTU	Nephelometric Turbidity Unit
mg/L	milligrams per litre
µs/cm	microsiemens per centimetre
mV	millivolt
°C	degrees Celcius

Table T4: Surface Water Analytical Results

				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 (MFOSA	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)	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)	Sum of PFAS	Sum of PFHxS and PFOS
		Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.01	0.01	0.02	0.01	0.01
NHMRC (2019) PFAS Recreational Water																														**10**			**2**
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													***0.13***	***220***			
Current Location ID (as of 06/2021)	**Location ID at time of sampling**	**Sample ID**	**Sample Date**																															
HMAS Cairns																																		
0009_SW032	0009_SW021	0009_SW021_201001	1/10/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01
0009_SW030	0009_SW022	0009_SW022_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.06	<0.02	<0.02	0.03	0.02	<0.05	<0.02	<0.02	***1.24***	0.04	0.3	1.74	1.54
0009_SW031	0009_SW023	0009_SW023_201001	1/10/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.01	<0.01	<0.02	0.01	0.01
0009_SW033	0009_SW024	0009_SW024_201001	1/10/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01
0009_SW034	0009_SW025	0009_SW025_201001	1/10/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.02	<0.01	<0.02	0.02	0.02
0009_SW035	0009_SW026	0009_SW026_201001	1/10/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.05	<0.01	<0.02	0.05	0.05
Former WWII RAN Fuel Installation																																		
0009_SW036	0009_SW008	0009_SW008_201001	1/10/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01
0009_SW101	0009_SW017	0009_SW017_201001	1/10/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01
0009_SW100	0009_SW020	0009_SW020_201001	1/10/2020	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than
NEMP is National Environmental Management Plan
NHMRC is National Health Medical Research Council

Denotes first time detection above LOR of PFOS + PFHxS, PFOS or PFOA
Denotes new exceedance of ecological or human health guideline values

Table T5: Sediment Observation Results

Property ID	Current Location ID (as of 06/2021)	Location ID at time of sampling	Sample Date	Sample Time	Sample Description	Odour	Sheen	Sample Method
HMAS Cairns								
0009	SD032	SD019	1/10/2020	11:20	silty CLAY, dark grey/brown, some grey organic mottling and red mottling, trace shells, very soft (low organic content)	No odour	No sheen	Grab
0009	SD030	SD020	30/09/2020	14:45	sandy SILT, black, with fine to medium sands and some shells, wet	No odour	No sheen	Grab
0009	SD031	SD021	1/10/2020	10:45	SAND, yellow/brown, medium grained sands with some shells and shell grit throughout, wet	No odour	No sheen	Grab
0009	SD033	SD022	1/10/2020	11:40	silty CLAY, dark grey/black, with some sub rounded medium grain gravels, very soft (medium organic content)	No odour	No sheen	Grab
0009	SD034	SD023	1/10/2020	12:10	sandy CLAY, dark grey/brown, fine sands, some medium subrounded gravels, some reddish brown mottles	No odour	No sheen	Grab
0009	SD035	SD024	1/10/2020	12:00	silty sandy CLAY, dark grey/brown, fine sands, some medium grain gravels and sbrounded cobbles, trace shells (low organic content)	No odour	No sheen	Grab
Former WWII RAN Fuel Installation								
0009	SD036	SD008	1/10/2020	09:00	CLAY, dark grey, with some medium grain angular gravels, wet (low organic content)	No odour	No sheen	Grab
0009	SD100	SD100	1/10/2020	08:00	gravelly CLAY, redish brown, fine to coarse sub-angular gravels and sands, moist, some sub angular cobbles	No odour	No sheen	Grab
0009	SD101	SD101	1/10/2020	08:10	silty GRAVEL, dark grey/brown, medium grain angular to sub-angular gravels, wet (high organic content)	No odour	No sheen	Grab

	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)	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)	Sum of PFAS	Sum of PFHxS and PFOS
Units	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	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Current Location ID (as of 06/2021)	**Location ID at time of sampling**	**Sample ID**	**Date**																													
HMAS Cairns																																
0009_SD032	0009_SD019	0009_SD019_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	0.0006	0.0006
0009_SD030	0009_SD020	0009_SD020_200930	30/09/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0026	<0.0002	0.0004	0.003	0.003
0009_SD031	0009_SD021	0009_SD021_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.001	<0.0002	<0.0002	0.001	0.001
0009_SD033	0009_SD022	0009_SD022_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	0.0005	0.0005
0009_SD034	0009_SD023	0009_SD023_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	0.0006	0.0006
0009_SD035	0009_SD024	0009_SD024_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0007	<0.0002	<0.0002	0.0007	0.0007
Former WWII RAN Fuel Installation																																
0009_SD036	0009_SD008	0009_SD008_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
0009_SD100	0009_SD100	0009_SD100_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
0009_SD101	0009_SD101	0009_SD101_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

LOR is limit of reporting
mg/kg is milligrams per kilogram
"<" denotes concentration less than
Denotes first time detection above LOR of PFOS + PFHxS or PFOA

Appendix C

Analytical Data Validation

Appendix C Analytical Data Validation

DATA VALIDATION REPORT

Project No.:	60612487	**Validation by:**	[redacted]	**Date:**	18/01/2021
Client:	Department of Defence				
Site:	HMAS Cairns and Former WWII RAN Fuel Installation				
Matrix type:	Groundwater, surface water, sediment	**Data verified by**	[redacted]	**Date:**	18/01/2021
No. of primary samples:	33 groundwater, 9 surface water, 9 sediment				
Laboratory:	ALS (Brisbane), NMI (Sydney)	**Project Manager:**	[redacted]		
Lab reference:	EB2026176, RN1290633				

Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication on data interpretation and therefore decision-making on the project. The data are considered appropriate for use to meet the project objectives and meet the DQOs set out in Section 3.5 of the report.

Field QA/QC

Sampling personnel	Sampling was conducted by [redacted] and [redacted] between 30 September and 1 October 2020.
Sampling Methodology	Samples were collected using appropriate methods as identified within the main body of the report.
Chain of Custody (COC)	COC documents were completed as per AECOM procedures.
Rinsate Blank	Rinsate blank samples were collected at a frequency of one per day of sampling (two in total). Rinsates were collected from the decontaminated interface probe. Concentrations were reported below the LOR for all analytes tested (see **Table C4**).
Trip Blanks	Trip blank samples were collected at a frequency of one per esky of samples submitted to ALS. Three eskies with three associated trip blanks were submitted to the laboratory. All trip blanks reported concentrations below the LOR (see **Table C5**).
Frequency of field QC	Field duplicate (inter-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected at a frequency of one in ten primary samples (four duplicates and triplicates for groundwater, one duplicate and triplicate for both surface water and sediment). The target frequency of 10% for field duplicates and triplicates was achieved for groundwater, surface water and sediment.
Handling and preservation	Primary, duplicate and triplicate samples were received preserved and chilled at the laboratory. Sample receipt temperature was reported between 1.1 and 4.1°C, where reported. All samples were received at the laboratory in appropriate sample containers with no sample container / preservation non-compliances noted.
Equipment Calibration	Calibration of the water quality meter was conducted prior to departure from Townsville to Cairns on 28/09/2020. This is a deviation from the SAQP which states the water quality meter will be calibrated each day before sampling. For future rounds the meter will be calibrated on the day of sampling.

Laboratory QA/QC

Tests requested/reported	Samples were analysed and reported as requested on the COC.

Holding time compliance	Samples were extracted and analysed within recommended holding times.
Laboratory Accreditation	The laboratory analysis was conducted by ALS Environmental Pty Ltd (Brisbane) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate samples were analysed at the national Measurement Institute (Sydney), also a NATA accredited laboratory.
Frequency of laboratory QC	The laboratory reported sufficient frequency of quality control samples to assess whether the results have been reported to an acceptable accuracy and precision.
Method Blank	Method blank concentrations were not detected above the LOR for all analytes tested.
Laboratory duplicate RPDs	Laboratory duplicate Relative Percentage Differences (RPD) were within control limits for all samples.
Laboratory control spike recovery	No non-compliances were reported for Laboratory Control Spikes (LCS).
Matrix spike recovery	All matrix spike (MS) recoveries were within control limits.
Surrogate spike recovery	Surrogate spike recoveries were within control limits.
QA/QC Data Evaluation	
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted.
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.
Limits of reporting	Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted screening levels. LOR values for various analytes were adjusted due to sample matrix interference for the following samples in EB2026176: • 0009_MW002_HT_200930 • 0009_MW002_LT_200930 • 0009_MW003_HT_200930 • 0009_MW003_LT_200930 • 0009_MW004_HT_200930 • 0009_MW004_LT_200930 • 0009_MW005_HT_200930 • 0009_MW005_LT_200930 • 0009_MW007_HT_200930 • 0009_MW007_LT_200930 • 0009_MW013_HT_200930 • 0009_MW013_LT_200930 • 0009_MW014_HT_200930 • 0009_MW014_LT_200930 • 0009_MW015_HT_200930 • 0009_MW015_LT_200930 • 0009_MW016_HT_200930 • 0009_MW016_LT_200930 • 0009_MW019_HT_200930 • 0009_MW019_LT_200930 Adjusted LORs were sufficiently low to enable assessment against adopted screening levels.
Field duplicate RPDs	RPDs for groundwater, surface water, and sediment are reported in **Tables C1**, **C2**, and **C3** respectively. Field duplicate RPDs were reported within control limits.
Field triplicate RPDs	Field triplicate RPDs were reported within control limits with the exception of the following (the sample with the higher concentration is in bold):

	• **0009_MW002_HT_200930** and 0009_QC201_200930 for PFHpS (43%) The non-compliant RPD for MW002_HT (QC201) is likely to be due to different extraction methods used by the laboratories as the duplicate and primary sample are comparable. The minor non-compliance is not considered to affect the interpretation of the data.
Other	
Other observations	No other observations were noted.

Table C1: Groundwater Duplicate and Triplicate Results

Lab Report Number			EB2026176	EB2026176		EB2026176	RN1290633		EB2026176	EB2026176		EB2026176	RN1290633		EB2026176	EB2026176	
Field ID			0009_MW019_HT_200930	0009_QC100_200930	RPD	0009_MW019_HT_200930	0009_QC200_200930	RPD	0009_MW002_HT_200930	0009_QC101_200930	RPD	0009_MW002_HT_200930	0009_QC201_200930	RPD	0009_MW005_LT_200930	0009_QC102_200930	RPD
Date			30/09/2020	30/09/2020		30/09/2020	30/09/2020		30/09/2020	30/09/2020		30/09/2020	30/09/2020		30/09/2020	30/09/2020	
Sample Type			Primary	Duplicate		Primary	Triplicate		Primary	Duplicate		Primary	Triplicate		Primary	Duplicate	
Chemical Name	**Unit**	**EQL**															
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0	<0.32	<0.51	0	<0.32	<0.01	0	<0.05	<0.1	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0	<0.32	<0.51	0	<0.32	<0.01	0	<0.05	<0.1	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	0.064	25	<0.32	<0.51	0	<0.32	0.055	0	<0.05	<0.1	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0	<0.32	<0.51	0	<0.32	0.031	0	<0.05	<0.1	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.12	<0.12	0	<0.12	<0.02	0	<0.81	<1.27	0	<0.81	<0.02	0	<0.08	<0.25	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0	<0.32	<0.51	0	<0.32	<0.01	0	<0.03	<0.1	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.12	<0.12	0	<0.12	<0.05	0	<0.81	<1.27	0	<0.81	<0.05	0	<0.08	<0.25	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.12	<0.12	0	<0.12	<0.02	0	<0.81	<1.27	0	<0.81	<0.02	0	<0.08	<0.25	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0	<0.32	<0.51	0	<0.32	<0.01	0	<0.03	<0.1	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.12	<0.12	0	<0.12	<0.05	0	<0.81	<1.27	0	<0.81	<0.05	0	<0.08	<0.25	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.06	<0.05	18	0.06	0.04	40	3.73	3.15	17	3.73	3	22	0.39	0.41	5
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.2	<0.2	0	<0.2	0.093	0	<1.6	<2.5	0	<1.6	1.5	0	0.2	<0.5	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0	<0.32	<0.51	0	<0.32	<0.01	0	<0.03	<0.1	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0	<0.32	<0.51	0	<0.32	0.014	0	<0.03	<0.1	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0	<0.32	<0.51	0	<0.32	<0.01	0	<0.03	<0.1	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.09	0.1	11	0.09	0.098	9	2.95	2.69	9	**2.95**	**1.9**	**43**	0.35	0.42	18
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	0.063	23	1.49	<0.51	98	1.49	1.6	7	0.22	0.29	27
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.2	0.17	16	0.2	0.15	29	10.6	12.2	14	10.6	8.9	17	0.87	1.05	19
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	0.011	0	<0.32	<0.51	0	<0.32	0.071	0	0.06	<0.1	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0	<0.32	<0.51	0	<0.32	0.048	0	<0.03	<0.1	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	0.044	0	3.18	3.2	1	3.18	2.6	20	0.36	0.37	3
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.07	0.08	13	0.07	0.11	44	2.24	1.88	17	2.24	1.8	22	0.62	0.64	3
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.12	<0.12	0	<0.12	<0.02	0	<0.81	<1.27	0	<0.81	<0.02	0	<0.08	<0.25	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.05	<0.05	0	<0.05	<0.02	0	<0.32	<0.51	0	<0.32	<0.02	0	<0.03	<0.1	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0	<0.32	<0.51	0	<0.32	<0.01	0	<0.03	<0.1	0
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	3.16	3.18	1	3.16	2.9	9	77.5	87	12	77.5	66	16	20.7	21.7	5
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.12	0.14	15	0.12	0.15	22	3.63	4.16	14	3.63	3.5	4	0.52	0.41	24
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	0.55	0.46	18	0.55	0.55	0	32.2	31.9	1	32.2	30	7	4.3	4.4	2

***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: No Limit (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (>20 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**

Table C1: Groundwater Duplicate and Triplicate Results

Lab Report Number		EB2026176	RN1290633		EB2026176	EB2026176		EB2026176	RN1290633	
Field ID		0009_MW005_LT_200930	0009_QC202_200930	RPD	0009_MW009_LT_200930	0009_QC103_200930	RPD	0009_MW009_LT_200930	0009_QC203_200930	RPD
Date		30/09/2020	30/09/2020		30/09/2020	30/09/2020		30/09/2020	30/09/2020	
Sample Type		Primary	Triplicate		Primary	Duplicate		Primary	Triplicate	
Chemical Name	**Unit**	**EQL**								
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	0.021	0	<0.05	<0.05	0	<0.05	0.014	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.08	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.03	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.08	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.08	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.03	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.08	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.39	0.34	14	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	0.2	0.25	22	<0.1	<0.1	0	<0.1	0.1	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.03	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.03	0.016	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.03	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.35	0.3	15	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.22	0.25	13	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.87	0.85	2	0.02	0.02	0	0.02	0.017	16
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	0.06	0.07	15	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.03	0.028	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.36	0.28	25	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.62	0.62	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.08	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.03	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.03	0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	20.7	19	9	0.25	0.26	4	0.25	0.2	22
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.52	0.51	2	<0.01	<0.01	0	<0.01	0.012	18
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	4.3	3.5	21	0.16	0.17	6	0.16	0.13	21

***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: No Limit (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (>20 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**

Table C2: Surface Water Duplicate and Triplicate Results

Lab Report Number	EB2026176	EB2026176	RPD	EB2026176	RN1290633	RPD
Field ID	0009_SW008_201001	0009_QC105_201001		0009_SW008_201001	0009_QC205_201001	
Date	1/10/2020	1/10/2020		1/10/2020	1/10/2020	
Sample Type	Primary	Duplicate		Primary	Triplicate	
Chemical Name	**Unit**	**EQL**				
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<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
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	<0.01	<0.01	0	<0.01	<0.02	0
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	<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: No Limit (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (>20 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**

Table C3: Sediment Duplicate and Triplicate Results

Lab Report Number	EB2026176	EB2026176	RPD	EB2026176	RN1290633	RPD
Field ID	0009_SD008_201001	0009_QC104_201001		0009_SD008_201001	0009_QC204_201001	
Date	1/10/2020	1/10/2020		1/10/2020	1/10/2020	
Sample Type	Primary	Duplicate		Primary	Triplicate	

Chemical Name	Unit	EQL						
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.002	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.001	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.001	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.001	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.002	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.002	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.002	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.002	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorobutanoic acid (PFBA)	mg/kg	0.001	<0.001	<0.001	0	<0.001	<0.002	0
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.002	0
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorononanoic acid (PFNA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.002	0
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.002	0
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.002	0
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.002	0
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002		
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002		
Sum of PFAS	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.002	0
Sum of PFHxS and PFOS	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	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: No Limit (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (>20 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**

Table C4: Rinsate Analytical Results

Lab Report Number	EB2026176	EB2026176
Sample ID	0009_QC300_200930	0009_QC301_201001
Sample Date	30/09/2020	1/10/2020
Sample Type	Rinsate	Rinsate

Chemical Name	Unit	LOR		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02	<0.02	<0.02
Sum of PFAS	µg/L	0.01	<0.01	<0.01
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01

Table C5: Trip Blank Analytical Results

Lab Report Number	EB2026176	EB2026176
Sample ID	0009_QC500_200930	0009_QC501_201001
Sample Date	30/09/2020	1/10/2020
Sample Type	Trip Blank	Trip Blank

Chemical Name	Unit	LOR		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02	<0.02	<0.02
Sum of PFAS	µg/L	0.01	<0.01	<0.01
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01

Appendix D

Chain of Custody Forms

Appendix D Chain of Custody Forms

AECOM

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: AECOM	ADDRESS / OFFICE: AECOM TOWNSVILLE	SAMPLER: [redacted]	**Destination Laboratory**
PROJECT MANAGER (PM): [redacted]	Level 5, 7-13 Tolins St, South Townsville	MOBILE: [redacted] PHONE:	ALS BRISBANE
PROJECT ID: QLD_0009_PFASOMP	P.O. NO.: 60612487_4.1	EMAIL REPORT TO: [redacted]	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.: SY/139/19	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY
COOLER SEAL (if applicable)
Intact: Yes / No / N/A
SAMPLE TEMPERATURE
CHILLED: Yes / No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

ALS ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFORMATION Type / Code	Total bottles	WATER EP213X (PFAS Standard 28 Analytes)	HOLD
1	0009_MW001_LT_200930	W	30.09.2020	12:45	2 x P	2	X	
2	0009_MW002_HT_200930	W	30.09.2020	8:20	2 x P	2	X	
3	0009_MW003_LT_200930	W	30.09.2020	13:10	2 x P	2	X	
4	0009_MW003_HT_200930	W	30.09.2020	8:50	2 x P	2	X	
5	0009_MW004_LT_200930	W	30.09.2020	13:55	2 x P	2	X	
6	0009_MW004_HT_200930	W	30.09.2020	9:25	2 x P	2	X	
7	0009_MW005_LT_200930	W	30.09.2020	13:40	2 x P	2	X	
8	0009_MW005_HT_200930	W	30.09.2020	9:10	2 x P	2	X	
9	0009_MW007_LT_200930	W	30.09.2020	16:10	2 x P	2	X	
10	0009_MW007_HT_200930	W	30.09.2020	10:35	2 x P	2	X	
11	0009_MW009_LT_200930	W	30.09.2020	16:30	2 x P	2	X	
12	0009_MW009_HT_200930	W	30.09.2020	11:05	2 x P	2	X	
13	0009_MW011_LT_200930	W	30.09.2020	12:30	2 x P	2	X	
14	0009_MW011_HT_200930	W	30.09.2020	7:15	2 x P	2	X	
15	0009_MW013_LT_200930	W	30.09.2020	13:30	2 x P	2	X	
16	0009_MW014_LT_200930	W	30.09.2020	15:40	2 x P	2	X	
17	0009_MW014_HT_200930	W	30.09.2020	9:50	2 x P	2	X	
18	0009_MW015_LT_200930	W	30.09.2020	15:50	2 x P	2	X	
19	0009_MW016_HT_200930	W	30.09.2020	10:20	2 x P	2	X	

Environmental Division Brisbane
Work Order Reference
EB2026176

Telephone : +61-7-3243 7222

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Rachel Russell [redacted]	Date: 2/10/20	Name: [redacted]	Date: 07-10-2020	Date: 2/10/20
Of: AECOM	Time: 1305	Of:	Time: 08:30	Time: 13:05
				Con' Note No:
				Transport Co:

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 [redacted] reserved glass jar

COC Page 1 of 4

AECOM

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: AECOM	ADDRESS / OFFICE: AECOM TOWNSVILLE	SAMPLER: [redacted]	**Destination Laboratory**
PROJECT MANAGER (PM): [redacted]	Level 5, 7-13 Tolins St, South Townsville	MOBILE: [redacted] PHONE:	ALS BRISBANE
PROJECT ID: QLD_0009_PFASOMP	P.O. NO.: 60612487_4.1	EMAIL REPORT TO: [redacted]	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.: SY/139/19	ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY:
COOLER SEAL (circle appropriate):
Intact: Yes No N/A
SAMPLE TEMPERATURE:
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

ALS ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFORMATION Type / Code	Total bottles	WATER EP213X (PFAS Standard 28 Analytes)	SOIL - EP213X (PFAS Standard 28 Analytes)	HOLD	
20	0009_MW017_LT_200930	W	30.09.2020	16:20	2 x P	2	X			
21	0009_MW017_HT_200930	W	30.09.2020	10:50	2 x P	2	X			
22	0009_MW018_LT_200930	W	30.09.2020	16:45	2 x P	2	X			
23	0009_MW019_LT_200930	W	30.09.2020	12:15	2 x P	2	X			
24	0009_MW019_HT_200930	W	30.09.2020	6:50	2 x P	2	X			
25	0009_MW002_LT_200930	W	30.09.2020	12:55	4 x P	4	X			Extra vol for lab QC
26	0009_MW001_HT_200930	W	30.09.2020	8:00	4 x P	4	X			Extra vol for lab QC
27	0009_MW018_HT_200930	W	30.09.2020	11:20	4 x P	4	X			Extra vol for lab QC
28	0009_MW015_HT_200930	W	30.09.2020	10:10	4 x P	4	X			Extra vol for lab QC
29	0009_MW013_HT_200930	W	30.09.2020	9:05	4 x P	4	X			Extra vol for lab QC
30	0009_MW016_LT_200930	W	30.09.2020	16:05	4 x P	4	X			Extra vol for lab QC
31	0009_SW022_200930	W	30.09.2020	14:45	2 x P	2	X			
32	0009_SD020_200930	S	30.09.2020	14:45	1 x P	1		X		
33	0009_QC100_200930	W	30.09.2020		2 x P	2	X			
34	0009_QC101_200930	W	30.09.2020		2 x P	2	X			
35	0009_QC102_200930	W	30.09.2020		2 x P	2	X			
36	0009_QC103_200930	W	30.09.2020		2 x P	2	X			
37	0009_QC300_200930	W	30.09.2020		2 x P	2	X			
38	0009_QC500_200930	W	30.09.2020		2 x P	2	X			

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Rachel Russell [redacted]	Date: 2/10/20	Name: [redacted]	Date: 07-10-2020	Con' Note No:
Of: AECOM	Time: 1205	Of: [redacted]	Time: 06:30	Transport Co:

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. **Soil Container Codes**: Jar = Unpreserved glass jar

COC Page 2 of 4

[redacted]

AECOM

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: AECOM	ADDRESS / OFFICE: AECOM TOWNSVILLE	SAMPLER: [redacted]	**Destination Laboratory**
PROJECT MANAGER (PM): [redacted]	Level 5, 7-13 Tolins St, South Townsville	MOBILE: [redacted] PHONE:	ALS BRISBANE
PROJECT ID: QLD_0009_PFASOMP	P.O. NO.: 60612487_4.1	EMAIL REPORT TO: [redacted]	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.: SY/139/19	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	WATER EP213X (PFAS Standard 28 Analytes)	SOIL - EP213X (PFAS Standard 28 Analytes)	HOLD	
39	0009_SD100_201001	S	01.10.2020	8:00	1 x P	1		X		
40	0009_SD101_201001	S	01.10.2020	8:10	1 x P	1		X		
41	0009_SD024_201001	S	01.10.2020	12:00	1 x P	1		X		
42	0009_SD023_201001	S	01.10.2020	12:10	1 x P	1		X		
43	0009_SD008_201001	S	01.10.2020	9:00	1 x P	1		X		
44	0009_SD019_201001	S	01.10.2020	11:20	1 x P	1		X		
45	0009_SD022_201001	S	01.10.2020	11:40	1 x P	1		X		
46	0009_SD021_201001	S	01.10.2020	10:45	1 x P	1		X		
47	0009_MW031_201001	W	01.10.2020	6:45	2 x P	2	X			
48	0009_MW035_201001	W	01.10.2020	7:15	2 x P	2	X			
49	0009_MW036_201001	W	01.10.2020	7:05	2 x P	2	X			
50	0009_SW008_201001	W	01.10.2020	9:00	2 x P	2	X			
51	0009_SW024_201001	W	01.10.2020	11:40	2 x P	2	X			
52	0009_SW021_201001	W	01.10.2020	11:20	2 x P	2	X			
53	0009_SW025_201001	W	01.10.2020	12:10	2 x P	2	X			
54	0009_SW017_201001	W	01.10.2020	8:10	2 x P	2	X			
55	0009_SW020_201001	W	01.10.2020	8:00	2 x P	2	X			
56	0009_SW023_201001	W	01.10.2020	10:45	4 x P	4	X			Extra vol for lab QC
57	0009_SW026_201001	W	01.10.2020	12:00	4 x P	4	X			Extra vol for lab QC

RELINQUISHED BY:	RECEIVED BY		RECEIVED BY	METHOD OF SHIPMENT
Name: Rachel Russell [redacted]	Name: [redacted]	Date: 07.10.2020	Name: [redacted]	Date: 2/10/20 Con' Note No:
Of: AECOM	Of:	Time: 08:30	Of:	Time: 1305 Transport Co:
Date: 2/10/20 Time: 1305				

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 [redacted] **Soil Container Codes:** Jar = Unpreserved glass jar

COC Page 30 of 84

AECOM

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: AECOM	ADDRESS / OFFICE: AECOM TOWNSVILLE	SAMPLER: [redacted]	**Destination Laboratory**
PROJECT MANAGER (PM): [redacted]	Level 5, 7-13 Tolins St, South Townsville	MOBILE: [redacted] PHONE:	ALS BRISBANE
PROJECT ID: QLD_0009_PFASOMP	P.O. NO.: 60612487_4.1	EMAIL REPORT TO [redacted]	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.: SY/139/19	**ANALYSIS REQUIRED Including SUITES** (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY:
COOLER SEAL (circle appropriate) Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		WATER EP213X (PFAS Standard 28 Analytes)	SOIL - EP213X (PFAS Standard 28 Analytes)											HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles													
58	0009_QC104_200930	S	01.10.2020		1 x P	1		X											
59	0009_QC105_200930	W	01.10.2020		2 x P	2	X												
60	0009_QC301_200930	W	01.10.2020		2 x P	2	X												
61	0009_QC501_200930	W	01.10.2020		2 x P	2	X												

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name Rachel Russell [redacted]	Date: 2/10/20	Name: [redacted]	Date 07.10.2020	Name [redacted]	Date: 7/10/20	Con' Note No:
Of: AECOM	Time: 1305	Of:	Time: 08:30	Of:	Time: 13:05	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC [redacted] de/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. **Soil Container Codes:** Jar = Unpreserved glass jar

[redacted]

COC Page 4 of 4

ANZ

FQM - Generic Chain of Custody Form

AECOM 6/201007 Rv due 14/10/20 ✓

AECOM

Q4AN(EV)-007-FM1

CONSULTANT: AECOM	ADDRESS / OFFICE: AECOM TOWNSVILLE	SAMPLER: [redacted]	**Destination Laboratory**
PROJECT MANAGER (PM): [redacted]	Level 5, 7-13 ~~Lime~~ Tenlon St, South Townsville	MOBILE: [redacted] PHONE:	NMI SYDNEY
PROJECT ID: QLD_0009_PFASOMP	P.O. NO.: 60612487_4.1	EMAIL REPORT TO: [redacted]	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.: [redacted]	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		WATER PFAS Standard 28 Analytes	SOIL PFAS Standard 28 Analytes			HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles					
	0009_QC200_200930	W	30.09.2020		2 x P	2	X			N20/023319	
	0009_QC201_200930	W	30.09.2020		2 x P	2	X			N20/023320	
	0009_QC202_200930	W	30.09.2020		2 x P	2	X			N20/023321	
	0009_QC203_200930	W	30.09.2020		2 x P	2	X			N20/023322	
	0009_QC204_200930	S	01.10.2020		1 x P	1		X		N20/023323	
	0009_QC205_200930	W	01.10.2020		2 x P	2	X			N20/023324	

RECEIVED
07 OCT 2020
9:00 C
BY [redacted]

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name Rachel Russel [redacted]	Date: 6/10/20	Name:	Date:	Name:	Date:	Con' Note No:
Of: AECOM	Time: 13:10	Of:	Time:	Of:	Time:	Transport Co:

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. **Soil Container Codes**: Jar = Unpreserved glass jar

COC Page 1 of 2

Appendix E

Laboratory Analytical Certificates and QA/QC Reports

Appendix E Laboratory Analytical Certificates and QA/QC Reports

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2026176**	Page	: 1 of 33
Amendment	: **2**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 5 7-13 TOMLINS STREET SOUTH TOWNSVILLE 4810	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 07-Oct-2020 08:30
Order number	: 60612487_4.1	Date Analysis Commenced	: 07-Oct-2020
C-O-C number	: ----	Issue Date	: 24-Nov-2020 09:38
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3_QLD		
No. of samples received	: 61		
No. of samples analysed	: 61		

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]		

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 Contact 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.
- EP231X-INJ PFAS Direct injection: Sample '0009_QC102_200930' required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly.
- Amendment (24/11/2020): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS from [redacted] on 23/11/2020. All analysis results are as per the previous report.
- Amendment (15/10/2020): This report has been amended to alter the project reference as per email request by [redacted] All analysis results are as per the previous report.
- EP231X PFAS: Particular samples required dilution due to matrix interference and the presence of high level contaminants. LOR values have been adjusted accordingly and surrogate recoveries not determined.
- EP231X-INJ PFAS by LCMSMS: Particular samples have been tested to the legacy QSM 5.1 aligned, NATA accredited method due to sample matrix being unsuitable for SPE extraction (high sediment content).
- 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.
- EP231X-INJ: The direct injection LCMSMS method may be used where the sample matrix is not suitable for Solid Phase Extraction (e.g. significant particulate load) or where only a single sample container is received.

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SD020_200930	0009_SD100_201001	0009_SD101_201001	0009_SD024_201001	0009_SD023_201001
				Sampling date / time	30-Sep-2020 14:45	01-Oct-2020 08:00	01-Oct-2020 08:10	01-Oct-2020 12:00	01-Oct-2020 12:10
					EB2026176-032	EB2026176-039	EB2026176-040	EB2026176-041	EB2026176-042
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**51.6**	**14.7**	**46.3**	**41.7**	**32.9**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0004**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0026**	<0.0002	<0.0002	**0.0007**	**0.0006**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD020_200930	0009_SD100_201001	0009_SD101_201001	0009_SD024_201001	0009_SD023_201001
				Sampling date / time	30-Sep-2020 14:45	01-Oct-2020 08:00	01-Oct-2020 08:10	01-Oct-2020 12:00	01-Oct-2020 12:10
Compound	CAS Number	LOR	Unit		EB2026176-032	EB2026176-039	EB2026176-040	EB2026176-041	EB2026176-042
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0030**	<0.0002	<0.0002	**0.0007**	**0.0006**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0030**	<0.0002	<0.0002	**0.0007**	**0.0006**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0030**	<0.0002	<0.0002	**0.0007**	**0.0006**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**98.5**	**108**	**112**	**123**	**99.5**
13C8-PFOA	----	0.0002	%		**103**	**101**	**100**	**98.5**	**99.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	0009_SD008_201001	0009_SD019_201001	0009_SD022_201001	0009_SD021_201001	0009_QC104_201001
			Sampling date / time	01-Oct-2020 09:00	01-Oct-2020 11:20	01-Oct-2020 11:40	01-Oct-2020 10:45	01-Oct-2020 00:00
Compound	CAS Number	LOR	Unit	EB2026176-043	EB2026176-044	EB2026176-045	EB2026176-046	EB2026176-058
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**53.1**	**55.7**	**56.5**	**34.7**	**50.2**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	**0.0006**	**0.0005**	**0.0010**	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD008_201001	0009_SD019_201001	0009_SD022_201001	0009_SD021_201001	0009_QC104_201001
				Sampling date / time	01-Oct-2020 09:00	01-Oct-2020 11:20	01-Oct-2020 11:40	01-Oct-2020 10:45	01-Oct-2020 00:00
Compound	CAS Number	LOR	Unit		EB2026176-043	EB2026176-044	EB2026176-045	EB2026176-046	EB2026176-058
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	**0.0006**	**0.0005**	**0.0010**	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	**0.0006**	**0.0005**	**0.0010**	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	**0.0006**	**0.0005**	**0.0010**	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**96.5**	**116**	**97.5**	**100**	**102**
13C8-PFOA	----	0.0002	%		**102**	**103**	**102**	**101**	**100**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW001_LT_200930	0009_MW002_HT_200930	0009_MW003_LT_200930	0009_MW003_HT_200930	0009_MW004_LT_200930
				Sampling date / time	30-Sep-2020 12:45	30-Sep-2020 08:20	30-Sep-2020 13:10	30-Sep-2020 08:50	30-Sep-2020 13:55
					EB2026176-001	EB2026176-002	EB2026176-003	EB2026176-004	EB2026176-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.53**	**3.73**	**0.36**	**0.33**	**0.48**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.42**	**3.18**	**0.35**	**0.31**	**0.43**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**2.02**	**32.2**	**3.59**	**3.16**	**4.20**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.08**	**2.95**	**0.18**	**0.15**	**0.30**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.26**	**77.5**	**6.62**	**5.58**	**8.24**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.32	<0.03	<0.03	<0.03
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		**0.1**	<1.6	<0.2	<0.2	**0.2**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.15**	**2.24**	**0.22**	**0.21**	**0.56**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.76**	**10.6**	**0.85**	**0.75**	**1.09**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.11**	**1.49**	**0.12**	**0.11**	**0.29**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.17**	**3.63**	**0.29**	**0.24**	**0.56**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.32	<0.03	<0.03	<0.03
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.32	<0.03	<0.03	<0.03
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.32	<0.03	<0.03	<0.03
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.32	<0.03	<0.03	<0.03
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.32	<0.03	<0.03	<0.03
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.81	<0.08	<0.08	<0.08
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.32	<0.03	<0.03	<0.03
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.81	<0.08	<0.08	<0.08
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.81	<0.08	<0.08	<0.08

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW001_LT_200930	0009_MW002_HT_200930	0009_MW003_LT_200930	0009_MW003_HT_200930	0009_MW004_LT_200930
				Sampling date / time	30-Sep-2020 12:45	30-Sep-2020 08:20	30-Sep-2020 13:10	30-Sep-2020 08:50	30-Sep-2020 13:55
					EB2026176-001	EB2026176-002	EB2026176-003	EB2026176-004	EB2026176-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.81	<0.08	<0.08	<0.08
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.81	<0.08	<0.08	<0.08
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.32	<0.03	<0.03	<0.03
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.32	<0.03	<0.03	<0.03
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.32	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		**0.06**	<0.32	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.32	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.32	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**4.66**	**138**	**12.6**	**10.8**	**16.4**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**2.28**	**110**	**10.2**	**8.74**	**12.4**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**4.16**	**131**	**12.0**	**10.4**	**15.6**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**118**	**Not Determined**	**98.0**	**96.0**	**90.0**
13C8-PFOA	----	0.02	%		**115**	**Not Determined**	**92.0**	**84.0**	**79.0**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW004_HT_200930	0009_MW005_LT_200930	0009_MW005_HT_200930	0009_MW007_LT_200930	0009_MW007_HT_200930
				Sampling date / time	30-Sep-2020 09:25	30-Sep-2020 13:40	30-Sep-2020 09:10	30-Sep-2020 16:10	30-Sep-2020 10:35
					EB2026176-006	EB2026176-007	EB2026176-008	EB2026176-009	EB2026176-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.58**	**0.39**	**0.42**	**0.39**	**0.28**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.52**	**0.36**	**0.40**	**0.44**	**0.35**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**5.22**	**4.30**	**5.10**	**4.14**	**3.28**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.37**	**0.35**	**0.45**	**0.32**	**0.28**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**10.6**	**20.7**	**24.4**	**51.1**	**42.2**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.03	<0.03	<0.06	<0.16	<0.06
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		**0.3**	**0.2**	<0.3	<0.8	<0.3
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.66**	**0.62**	**0.79**	**0.29**	**0.24**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**1.35**	**0.87**	**1.03**	**1.02**	**0.76**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.37**	**0.22**	**0.24**	<0.16	**0.11**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.72**	**0.52**	**0.58**	**0.37**	**0.33**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.03	**0.06**	**0.06**	<0.16	<0.06
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.03	<0.03	<0.06	<0.16	<0.06
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.03	<0.03	<0.06	<0.16	<0.06
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.03	<0.03	<0.06	<0.16	<0.06
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.03	<0.03	<0.06	<0.16	<0.06
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.08	<0.08	<0.16	<0.41	<0.16
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.03	<0.03	<0.06	<0.16	<0.06
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.08	<0.08	<0.16	<0.41	<0.16
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.08	<0.08	<0.16	<0.41	<0.16

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW004_HT_200930	0009_MW005_LT_200930	0009_MW005_HT_200930	0009_MW007_LT_200930	0009_MW007_HT_200930
				Sampling date / time	30-Sep-2020 09:25	30-Sep-2020 13:40	30-Sep-2020 09:10	30-Sep-2020 16:10	30-Sep-2020 10:35
					EB2026176-006	EB2026176-007	EB2026176-008	EB2026176-009	EB2026176-010
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.08	<0.08	<0.16	<0.41	<0.16
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.08	<0.08	<0.16	<0.41	<0.16
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.03	<0.03	<0.06	<0.16	<0.06
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.03	<0.03	<0.06	<0.16	<0.06
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	<0.06	<0.16	<0.06
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.06	<0.16	<0.06
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.06	<0.16	<0.06
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.06	<0.16	<0.06
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**20.7**	**28.6**	**33.5**	**58.1**	**47.8**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**15.8**	**25.0**	**29.5**	**55.2**	**45.5**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**19.8**	**27.8**	**32.6**	**57.3**	**47.2**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**100**	**97.0**	**92.0**	**90.0**	**110**
13C8-PFOA	----	0.02	%		**89.0**	**86.0**	**88.0**	**90.0**	**90.0**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW009_LT_200930	0009_MW009_HT_200930	0009_MW011_LT_200930	0009_MW011_HT_200930	0009_MW013_LT_200930
				Sampling date / time	30-Sep-2020 16:30	30-Sep-2020 11:05	30-Sep-2020 12:30	30-Sep-2020 07:15	30-Sep-2020 13:30
					EB2026176-011	EB2026176-012	EB2026176-013	EB2026176-014	EB2026176-015
					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	**0.09**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**0.09**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**0.16**	**0.12**	**0.07**	**0.05**	**1.21**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**0.06**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.25**	**0.27**	**0.34**	**0.35**	**3.06**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.05
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.2
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	**0.04**	**0.04**	**0.10**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.02**	<0.02	**0.06**	**0.06**	**0.25**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	**0.07**	**0.07**	**0.05**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	**0.38**	**0.36**	**0.11**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	**0.03**	**0.03**	**0.11**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.05
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.05
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.05
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.05
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.12
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.12
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.12

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW009_LT_200930	0009_MW009_HT_200930	0009_MW011_LT_200930	0009_MW011_HT_200930	0009_MW013_LT_200930
				Sampling date / time	30-Sep-2020 16:30	30-Sep-2020 11:05	30-Sep-2020 12:30	30-Sep-2020 07:15	30-Sep-2020 13:30
					EB2026176-011	EB2026176-012	EB2026176-013	EB2026176-014	EB2026176-015
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.12
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.12
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<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		<0.05	<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		**0.43**	**0.39**	**0.99**	**0.96**	**5.13**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.41**	**0.39**	**0.41**	**0.40**	**4.27**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.43**	**0.39**	**0.96**	**0.93**	**4.87**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**107**	**103**	**84.9**	**106**	**107**
13C8-PFOA	----	0.02	%		**94.1**	**91.9**	**83.1**	**93.3**	**104**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW014_LT_200930	0009_MW014_HT_200930	0009_MW015_LT_200930	0009_MW016_HT_200930	0009_MW017_LT_200930
				Sampling date / time	30-Sep-2020 15:40	30-Sep-2020 09:50	30-Sep-2020 15:50	30-Sep-2020 10:20	30-Sep-2020 16:20
					EB2026176-016	EB2026176-017	EB2026176-018	EB2026176-019	EB2026176-020
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.30**	<0.50	<0.02	**0.35**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.33**	<0.50	<0.02	**0.45**	**0.02**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**7.31**	**7.90**	**0.21**	**3.20**	**0.21**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.43**	<0.50	<0.02	<0.05	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**101**	**120**	**1.17**	**0.07**	**0.87**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.25	<0.50	<0.02	<0.05	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<1.2	<2.5	<0.1	<0.2	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.48**	<0.50	<0.02	**0.11**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**3.92**	**3.80**	**0.08**	**0.69**	**0.05**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.35**	<0.50	<0.02	**0.07**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.93**	**0.85**	<0.02	<0.05	**0.02**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.25	<0.50	<0.02	<0.05	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.25	<0.50	<0.02	<0.05	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.25	<0.50	<0.02	<0.05	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.25	<0.50	<0.02	<0.05	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.25	<0.50	<0.02	<0.05	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.63	<1.25	<0.06	<0.12	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		**0.35**	<0.50	<0.02	<0.05	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.63	<1.25	<0.06	<0.12	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.63	<1.25	<0.06	<0.12	<0.05

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW014_LT_200930	0009_MW014_HT_200930	0009_MW015_LT_200930	0009_MW016_HT_200930	0009_MW017_LT_200930
				Sampling date / time	30-Sep-2020 15:40	30-Sep-2020 09:50	30-Sep-2020 15:50	30-Sep-2020 10:20	30-Sep-2020 16:20
					EB2026176-016	EB2026176-017	EB2026176-018	EB2026176-019	EB2026176-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.63	<1.25	<0.06	<0.12	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.63	<1.25	<0.06	<0.12	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.25	<0.50	<0.02	<0.05	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.25	<0.50	<0.02	<0.05	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.25	<0.50	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.25	<0.50	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.25	<0.50	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.25	<0.50	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**115**	**132**	**1.46**	**4.94**	**1.17**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**108**	**128**	**1.38**	**3.27**	**1.08**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**114**	**132**	**1.46**	**4.49**	**1.15**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**110**	**105**	**95.2**	**102**	**98.6**
13C8-PFOA	----	0.02	%		**104**	**101**	**102**	**106**	**104**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW017_HT_200930	0009_MW018_LT_200930	0009_MW019_LT_200930	0009_MW019_HT_200930	0009_MW002_LT_200930
				Sampling date / time	30-Sep-2020 10:50	30-Sep-2020 16:45	30-Sep-2020 12:15	30-Sep-2020 06:50	30-Sep-2020 12:55
					EB2026176-021	EB2026176-022	EB2026176-023	EB2026176-024	EB2026176-025
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.02**	<0.02	**0.07**	**0.06**	**2.60**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.03**	<0.02	<0.05	<0.05	**2.50**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**0.31**	<0.02	**0.63**	**0.55**	**29.2**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	**0.14**	**0.09**	**2.35**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**1.13**	**0.04**	**4.82**	**3.16**	**66.0**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.50
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.2	<0.2	<2.5
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	**0.06**	**0.07**	**1.65**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.06**	<0.02	**0.24**	**0.20**	**9.35**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	**0.06**	<0.05	**1.50**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.03**	<0.01	**0.18**	**0.12**	**3.35**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.50
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.50
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.50
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.50
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.50
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.12	<0.12	<1.25
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.50
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.12	<0.12	<1.25
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.12	<0.12	<1.25

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW017_HT_200930	0009_MW018_LT_200930	0009_MW019_LT_200930	0009_MW019_HT_200930	0009_MW002_LT_200930
				Sampling date / time	30-Sep-2020 10:50	30-Sep-2020 16:45	30-Sep-2020 12:15	30-Sep-2020 06:50	30-Sep-2020 12:55
					EB2026176-021	EB2026176-022	EB2026176-023	EB2026176-024	EB2026176-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.12	<0.12	<1.25
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.12	<0.12	<1.25
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.50
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.05	<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	<0.50
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.50
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		**1.58**	**0.04**	**6.20**	**4.25**	**118**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**1.44**	**0.04**	**5.45**	**3.71**	**95.2**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.55**	**0.04**	**6.06**	**4.16**	**114**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**104**	**105**	**109**	**105**	**107**
13C8-PFOA	----	0.02	%		**103**	**104**	**104**	**105**	**107**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW001_HT_200930	0009_MW018_HT_200930	0009_MW015_HT_200930	0009_MW013_HT_200930	0009_MW016_LT_200930
				Sampling date / time	30-Sep-2020 08:00	30-Sep-2020 11:20	30-Sep-2020 10:10	30-Sep-2020 09:05	30-Sep-2020 16:05
					EB2026176-026	EB2026176-027	EB2026176-028	EB2026176-029	EB2026176-030
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.14**	<0.02	<0.05	**0.11**	**0.36**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.09**	<0.02	<0.05	**0.09**	**0.44**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**0.73**	<0.02	**0.35**	**1.10**	**3.08**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.02**	<0.02	<0.05	<0.05	<0.05
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.16**	**0.08**	**1.74**	**2.27**	**0.10**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.05
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.2	<0.2	<0.2
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.04**	<0.02	<0.05	**0.08**	<0.05
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.24**	<0.02	**0.16**	**0.27**	**0.67**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.04**	<0.02	<0.05	**0.05**	**0.07**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.05**	<0.01	<0.05	**0.09**	<0.05
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.05	**0.09**	<0.05
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.05
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.05
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.05
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.12	<0.12	<0.12
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.12	<0.12	<0.12
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.12	<0.12	<0.12

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW001_HT_200930	0009_MW018_HT_200930	0009_MW015_HT_200930	0009_MW013_HT_200930	0009_MW016_LT_200930
				Sampling date / time	30-Sep-2020 08:00	30-Sep-2020 11:20	30-Sep-2020 10:10	30-Sep-2020 09:05	30-Sep-2020 16:05
					EB2026176-026	EB2026176-027	EB2026176-028	EB2026176-029	EB2026176-030
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.12	<0.12	<0.12
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.12	<0.12	<0.12
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.05	<0.05	<0.05
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		**1.56**	**0.08**	**2.25**	**4.15**	**4.72**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.89**	**0.08**	**2.09**	**3.37**	**3.18**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.45**	**0.08**	**2.25**	**3.97**	**4.28**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**95.9**	**94.5**	**104**	**101**	**95.7**
13C8-PFOA	----	0.02	%		**104**	**92.8**	**102**	**102**	**103**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW022_200930	0009_QC100_200930	0009_QC101_200930	0009_QC102_200930	0009_QC103_200930
				Sampling date / time	30-Sep-2020 14:45	30-Sep-2020 00:00	30-Sep-2020 00:00	30-Sep-2020 00:00	30-Sep-2020 00:00
					EB2026176-031	EB2026176-033	EB2026176-034	EB2026176-035	EB2026176-036
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		----	----	----	**0.41**	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		----	----	----	**0.37**	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		----	----	----	**4.40**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		----	----	----	**0.42**	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		----	----	----	**21.7**	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		----	----	----	<0.10	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.03**	<0.05	**3.15**	----	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.03**	<0.05	**3.20**	----	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**0.30**	**0.46**	**31.9**	----	**0.17**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.02**	**0.10**	**2.69**	----	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**1.24**	**3.18**	**87.0**	----	**0.26**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.05	<0.51	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.10	µg/L		----	----	----	<0.50	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		----	----	----	**0.64**	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		----	----	----	**1.05**	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		----	----	----	**0.29**	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		----	----	----	**0.41**	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		----	----	----	<0.10	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		----	----	----	<0.10	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		----	----	----	<0.10	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		----	----	----	<0.10	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW022_200930	0009_QC100_200930	0009_QC101_200930	0009_QC102_200930	0009_QC103_200930
				Sampling date / time	30-Sep-2020 14:45	30-Sep-2020 00:00	30-Sep-2020 00:00	30-Sep-2020 00:00	30-Sep-2020 00:00
Compound	CAS Number	LOR	Unit		EB2026176-031	EB2026176-033	EB2026176-034	EB2026176-035	EB2026176-036
					Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		----	----	----	<0.10	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		----	----	----	<0.25	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.2	<2.5	----	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.02**	**0.08**	**1.88**	----	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.06**	**0.17**	**12.2**	----	**0.02**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.05	<0.51	----	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.04**	**0.14**	**4.16**	----	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.05	<0.51	----	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.05	<0.51	----	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.05	<0.51	----	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.05	<0.51	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.05	<0.51	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.12	<1.27	----	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		----	----	----	<0.10	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		----	----	----	<0.25	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		----	----	----	<0.25	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		----	----	----	<0.25	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		----	----	----	<0.25	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		----	----	----	<0.10	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		----	----	----	<0.10	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW022_200930	0009_QC100_200930	0009_QC101_200930	0009_QC102_200930	0009_QC103_200930
				Sampling date / time	30-Sep-2020 14:45	30-Sep-2020 00:00	30-Sep-2020 00:00	30-Sep-2020 00:00	30-Sep-2020 00:00
Compound	CAS Number	LOR	Unit		EB2026176-031	EB2026176-033	EB2026176-034	EB2026176-035	EB2026176-036
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.05	<0.51	----	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.12	<1.27	----	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.12	<1.27	----	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.12	<1.27	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.12	<1.27	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.05	<0.51	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.05	<0.51	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		----	----	----	<0.10	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		----	----	----	<0.10	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		----	----	----	<0.10	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		----	----	----	<0.10	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.51	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.51	----	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.51	----	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.51	----	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		----	----	----	**29.7**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW022_200930	0009_QC100_200930	0009_QC101_200930	0009_QC102_200930	0009_QC103_200930
				Sampling date / time	30-Sep-2020 14:45	30-Sep-2020 00:00	30-Sep-2020 00:00	30-Sep-2020 00:00	30-Sep-2020 00:00
Compound	CAS Number	LOR	Unit		EB2026176-031	EB2026176-033	EB2026176-034	EB2026176-035	EB2026176-036
					Result	Result	Result	Result	Result
EP231P: PFAS Sums - Continued									
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**----**	**----**	**----**	**26.1**	**----**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**----**	**----**	**----**	**28.9**	**----**
Sum of PFAS	----	0.01	µg/L		**1.74**	**4.13**	**146**	**----**	**0.45**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**1.54**	**3.64**	**119**	**----**	**0.43**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.69**	**4.03**	**140**	**----**	**0.45**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**114**	**109**	**109**	**----**	**107**
13C4-PFOS	----	0.02	%		**----**	**----**	**----**	**94.4**	**----**
13C8-PFOA	----	0.02	%		**105**	**105**	**105**	**----**	**90.6**
13C8-PFOA	----	0.02	%		**----**	**----**	**----**	**100**	**----**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_QC300_200930	0009_QC500_200930	0009_MW031_201001	0009_MW035_201001	0009_MW036_201001
				Sampling date / time	30-Sep-2020 00:00	30-Sep-2020 00:00	01-Oct-2020 06:45	01-Oct-2020 07:15	01-Oct-2020 07:05
					EB2026176-037	EB2026176-038	EB2026176-047	EB2026176-048	EB2026176-049
					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
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		----	----	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		----	----	**0.05**	**0.05**	**0.11**
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		----	----	**0.26**	**0.05**	**0.29**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	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	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	<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	0.10	µg/L		----	----	<0.10	<0.10	<0.10
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

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_QC300_200930	0009_QC500_200930	0009_MW031_201001	0009_MW035_201001	0009_MW036_201001
				Sampling date / time	30-Sep-2020 00:00	30-Sep-2020 00:00	01-Oct-2020 06:45	01-Oct-2020 07:15	01-Oct-2020 07:05
					EB2026176-037	EB2026176-038	EB2026176-047	EB2026176-048	EB2026176-049
					Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
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
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	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC300_200930	0009_QC500_200930	0009_MW031_201001	0009_MW035_201001	0009_MW036_201001
				Sampling date / time	30-Sep-2020 00:00	30-Sep-2020 00:00	01-Oct-2020 06:45	01-Oct-2020 07:15	01-Oct-2020 07:05
Compound	CAS Number	LOR	Unit		EB2026176-037	EB2026176-038	EB2026176-047	EB2026176-048	EB2026176-049
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	----	----	----
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	<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
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		----	----	**0.31**	**0.10**	**0.40**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC300_200930	0009_QC500_200930	0009_MW031_201001	0009_MW035_201001	0009_MW036_201001
				Sampling date / time	30-Sep-2020 00:00	30-Sep-2020 00:00	01-Oct-2020 06:45	01-Oct-2020 07:15	01-Oct-2020 07:05
Compound	CAS Number	LOR	Unit		EB2026176-037	EB2026176-038	EB2026176-047	EB2026176-048	EB2026176-049
					Result	Result	Result	Result	Result
EP231P: PFAS Sums - Continued									
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**----**	**----**	**0.31**	**0.10**	**0.40**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**----**	**----**	**0.31**	**0.10**	**0.40**
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	%		**103**	**106**	**----**	**----**	**----**
13C4-PFOS	----	0.02	%		**----**	**----**	**94.1**	**99.0**	**103**
13C8-PFOA	----	0.02	%		**99.2**	**97.9**	**----**	**----**	**----**
13C8-PFOA	----	0.02	%		**----**	**----**	**94.0**	**93.3**	**91.8**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW008_201001	0009_SW024_201001	0009_SW021_201001	0009_SW025_201001	0009_SW017_201001
				Sampling date / time	01-Oct-2020 09:00	01-Oct-2020 11:40	01-Oct-2020 11:20	01-Oct-2020 12:10	01-Oct-2020 08:10
					EB2026176-050	EB2026176-051	EB2026176-052	EB2026176-053	EB2026176-054
					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	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<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	**0.02**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW008_201001	0009_SW024_201001	0009_SW021_201001	0009_SW025_201001	0009_SW017_201001
				Sampling date / time	01-Oct-2020 09:00	01-Oct-2020 11:40	01-Oct-2020 11:20	01-Oct-2020 12:10	01-Oct-2020 08:10
Compound	CAS Number	LOR	Unit		EB2026176-050	EB2026176-051	EB2026176-052	EB2026176-053	EB2026176-054
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.02**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	**0.02**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	<0.01	**0.02**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**107**	**98.8**	**103**	**106**	**103**
13C8-PFOA	----	0.02	%		**98.2**	**96.5**	**99.5**	**99.5**	**98.9**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW020_201001	0009_SW023_201001	0009_SW026_201001	0009_QC105_201001	0009_QC301_201001
				Sampling date / time	01-Oct-2020 08:00	01-Oct-2020 10:45	01-Oct-2020 12:00	01-Oct-2020 00:00	01-Oct-2020 00:00
					EB2026176-055	EB2026176-056	EB2026176-057	EB2026176-059	EB2026176-060
					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	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<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**	**0.05**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW020_201001	0009_SW023_201001	0009_SW026_201001	0009_QC105_201001	0009_QC301_201001
				Sampling date / time	01-Oct-2020 08:00	01-Oct-2020 10:45	01-Oct-2020 12:00	01-Oct-2020 00:00	01-Oct-2020 00:00
Compound	CAS Number	LOR	Unit		EB2026176-055	EB2026176-056	EB2026176-057	EB2026176-059	EB2026176-060
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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**	**0.05**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.01**	**0.05**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.01**	**0.05**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**108**	**99.8**	**97.0**	**93.7**	**104**
13C8-PFOA	----	0.02	%		**99.5**	**99.8**	**98.1**	**100**	**101**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC501_201001	----	----	----	----
				Sampling date / time	01-Oct-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2026176-061	--------	--------	--------	--------	
				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	0.02	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	<0.01	----	----	----	----	
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	----	----	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC501_201001	----	----	----	----
				Sampling date / time	01-Oct-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2026176-061	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB2026176**	Page	: 1 of 23
Amendment	: **2**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 5 7-13 TOMLINS STREET SOUTH TOWNSVILLE 4810	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 07-Oct-2020
Order number	: 60612487_4.1	Date Analysis Commenced	: 07-Oct-2020
C-O-C number	: ----	Issue Date	: 24-Nov-2020
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3_QLD		
No. of samples received	: 61		
No. of samples analysed	: 61		

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]	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
[redacted]	2IC Organic Chemist	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

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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3295292)									
EB2026176-032	0009_SD020_200930	EA055: Moisture Content	----	0.1	%	51.6	50.3	2.55	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3295291)									
EB2026176-032	0009_SD020_200930	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0004	0.0004	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0026	0.0020	27.3	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3295291)									
EB2026176-032	0009_SD020_200930	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3295291)									
EB2026176-032	0009_SD020_200930	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3295291) - continued									
EB2026176-032	0009_SD020_200930	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3295291)									
EB2026176-032	0009_SD020_200930	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	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 (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3295264)									
EB2026176-056	0009_SW023_201001	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3295495)									
EB2026176-025	0009_MW002_LT_200930	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	66.0	70.2	6.16	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	2.60	2.60	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	2.50	2.35	6.18	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	29.2	28.2	3.31	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	2.35	2.45	4.17	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.50	<0.50	0.00	No Limit
EB2026176-027	0009_MW018_HT_200930	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.08	0.07	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	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 (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3295495) - continued									
EB2026176-027	0009_MW018_HT_200930	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3295496)									
EB2026176-028	0009_MW015_HT_200930	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.74	1.85	6.32	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.35	0.31	10.3	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.05	<0.05	0.00	No Limit
EB2026176-030	0009_MW016_LT_200930	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.10	0.14	37.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.36	0.32	11.5	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.44	0.36	18.3	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	3.08	2.92	5.31	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.05	<0.05	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3297178)									
EB2026159-005	Anonymous	EP231X-INJ: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.08	0.09	0.00	No Limit
		EP231X-INJ: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	<0.02	0.00	No Limit
		EP231X-INJ: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X-INJ: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.11	0.12	10.4	No Limit
		EP231X-INJ: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X-INJ: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3300275)									
EB2026176-035	0009_QC102_200930	EP231X-INJ: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	21.7	21.7	0.0922	0% - 20%
		EP231X-INJ: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.41	0.40	2.47	No Limit
		EP231X-INJ: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.37	0.37	0.00	No Limit
		EP231X-INJ: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	4.40	4.44	0.905	0% - 20%
		EP231X-INJ: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.42	0.42	0.00	No Limit
		EP231X-INJ: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.10	<0.10	0.00	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 (%)	Recovery Limits (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3295264)									
EB2026176-056	0009_SW023_201001	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3295495)									
EB2026176-025	0009_MW002_LT_200930	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	3.35	3.30	1.50	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	1.65	1.70	2.98	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	9.35	9.10	2.71	0% - 50%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	1.50	1.40	6.90	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.50	<0.50	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.50	<0.50	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.50	<0.50	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.50	<0.50	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.50	<0.50	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<1.25	<1.25	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<2.5	<2.5	0.00	No Limit
EB2026176-027	0009_MW018_HT_200930	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3295496)									
EB2026176-028	0009_MW015_HT_200930	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.16	0.12	28.3	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.05	<0.05	0.00	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 (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3295496) - continued									
EB2026176-028	0009_MW015_HT_200930	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.12	<0.12	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.2	<0.2	0.00	No Limit
EB2026176-030	0009_MW016_LT_200930	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.67	0.62	8.93	0% - 50%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.07	0.05	23.7	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.12	<0.12	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.2	<0.2	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3297178)									
EB2026159-005	Anonymous	EP231X-INJ: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X-INJ: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X-INJ: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.03	0.03	0.00	No Limit
		EP231X-INJ: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X-INJ: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X-INJ: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X-INJ: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X-INJ: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X-INJ: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X-INJ: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X-INJ: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.10	<0.10	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3300275)									
EB2026176-035	0009_QC102_200930	EP231X-INJ: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.41	0.43	4.76	No Limit
		EP231X-INJ: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.64	0.64	0.00	No Limit
		EP231X-INJ: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	1.05	1.03	1.92	0% - 50%
		EP231X-INJ: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.29	0.30	3.39	No Limit
		EP231X-INJ: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X-INJ: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X-INJ: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X-INJ: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X-INJ: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.10	<0.10	0.00	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 (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3300275) - continued									
EB2026176-035	0009_QC102_200930	EP231X-INJ: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.25	<0.25	0.00	No Limit
		EP231X-INJ: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.50	<0.50	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3295264)									
EB2026176-056	0009_SW023_201001	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3295495)									
EB2026176-025	0009_MW002_LT_200930	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.50	<0.50	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.50	<0.50	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.50	<0.50	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<1.25	<1.25	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<1.25	<1.25	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<1.25	<1.25	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<1.25	<1.25	0.00	No Limit
EB2026176-027	0009_MW018_HT_200930	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	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 (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3295495) - continued									
EB2026176-027	0009_MW018_HT_200930	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3295496)									
EB2026176-028	0009_MW015_HT_200930	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.12	<0.12	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.12	<0.12	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.12	<0.12	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.12	<0.12	0.00	No Limit
EB2026176-030	0009_MW016_LT_200930	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.12	<0.12	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.12	<0.12	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.12	<0.12	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.12	<0.12	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3297178)									
EB2026159-005	Anonymous	EP231X-INJ: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X-INJ: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X-INJ: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X-INJ: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	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 (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3297178) - continued									
EB2026159-005	Anonymous	EP231X-INJ: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X-INJ: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X-INJ: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3300275)									
EB2026176-035	0009_QC102_200930	EP231X-INJ: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X-INJ: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X-INJ: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X-INJ: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.25	<0.25	0.00	No Limit
		EP231X-INJ: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.25	<0.25	0.00	No Limit
		EP231X-INJ: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.25	<0.25	0.00	No Limit
		EP231X-INJ: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.25	<0.25	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3295264)									
EB2026176-056	0009_SW023_201001	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3295495)									
EB2026176-025	0009_MW002_LT_200930	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.50	<0.50	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.50	<0.50	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.50	<0.50	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.50	<0.50	0.00	No Limit
EB2026176-027	0009_MW018_HT_200930	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	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 (%)*	*Recovery Limits (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3295495) - continued									
EB2026176-027	0009_MW018_HT_200930	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3295496)									
EB2026176-028	0009_MW015_HT_200930	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EB2026176-030	0009_MW016_LT_200930	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3297178)									
EB2026159-005	Anonymous	EP231X-INJ: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X-INJ: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X-INJ: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X-INJ: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3300275)									
EB2026176-035	0009_QC102_200930	EP231X-INJ: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X-INJ: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X-INJ: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X-INJ: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.10	<0.10	0.00	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 (%)*	*Recovery Limits (%)*
EP231P: PFAS Sums (QC Lot: 3295264)									
EB2026176-056	0009_SW023_201001	EP231X: Sum of PFAS	----	0.01	µg/L	0.01	0.01	0.00	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	0.01	0.00	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.01	0.01	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 3295495)									
EB2026176-025	0009_MW002_LT_200930	EP231X: Sum of PFAS	----	0.01	µg/L	118	121	2.34	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	95.2	98.4	3.30	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	114	116	2.48	0% - 20%
EB2026176-027	0009_MW018_HT_200930	EP231X: Sum of PFAS	----	0.01	µg/L	0.08	0.07	13.3	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	0.07	13.3	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.08	0.07	13.3	No Limit
EP231P: PFAS Sums (QC Lot: 3295496)									
EB2026176-028	0009_MW015_HT_200930	EP231X: Sum of PFAS	----	0.01	µg/L	2.25	2.28	1.32	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	2.09	2.16	3.29	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	2.25	2.28	1.32	0% - 20%
EB2026176-030	0009_MW016_LT_200930	EP231X: Sum of PFAS	----	0.01	µg/L	4.72	4.41	6.79	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	3.18	3.06	3.85	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	4.28	4.05	5.52	0% - 20%
EP231P: PFAS Sums (QC Lot: 3297178)									
EB2026159-005	Anonymous	EP231X-INJ: Sum of PFAS	----	0.01	µg/L	0.24	0.24	0.00	0% - 20%
		EP231X-INJ: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.19	0.21	10.0	0% - 20%
		EP231X-INJ: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.24	0.24	0.00	0% - 20%
EP231P: PFAS Sums (QC Lot: 3300275)									
EB2026176-035	0009_QC102_200930	EP231X-INJ: Sum of PFAS	----	0.01	µg/L	29.7	29.7	0.135	0% - 20%
		EP231X-INJ: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	26.1	26.1	0.153	0% - 20%
		EP231X-INJ: Sum of PFAS (WA DER List)	----	0.01	µg/L	28.9	28.9	0.138	0% - 20%

Method Blank (MB) and Laboratory Control Spike (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 Spike (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: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3295291)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0011 mg/kg	85.4	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00117 mg/kg	92.7	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	102	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	97.5	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	76.7	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0012 mg/kg	78.8	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3295291)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	102	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.4	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.8	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.8	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.0	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.8	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3295291)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	84.9	59.6	143
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	80.6	62.8	140
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	80.1	61.5	139
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.8	61.9	137
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.8	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3295291)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	84.6	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00118 mg/kg	110	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	110	65.0	137

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3295291) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.0012 mg/kg	83.3	54.8	124

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3295264)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	108	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	103	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.2373 µg/L	101	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	96.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	86.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	99.2	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3295495)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	92.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	93.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.2373 µg/L	79.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	85.7	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	92.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	94.0	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3295496)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	80.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	77.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.2373 µg/L	74.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	76.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	82.8	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	74.1	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3297178)								
EP231X-INJ: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.444 µg/L	114	72.0	130
EP231X-INJ: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.47 µg/L	115	71.0	127
EP231X-INJ: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.475 µg/L	110	68.0	131
EP231X-INJ: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.477 µg/L	113	69.0	134
EP231X-INJ: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.4646 µg/L	126	65.0	140
EP231X-INJ: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	118	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3300275)								
EP231X-INJ: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.444 µg/L	88.5	72.0	130
EP231X-INJ: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.47 µg/L	87.0	71.0	127
EP231X-INJ: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.475 µg/L	86.7	68.0	131
EP231X-INJ: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.477 µg/L	93.7	69.0	134
EP231X-INJ: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.4646 µg/L	90.8	65.0	140

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3300275) - continued								
EP231X-INJ: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	84.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3295264)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	85.2	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	96.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.0	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	92.8	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	93.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	95.2	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	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	99.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3295495)								
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	84.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	83.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	74.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	86.8	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	82.8	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	77.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	73.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	81.4	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3295496)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	74.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	78.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	73.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	83.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	79.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	73.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	80.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	74.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	65.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	80.6	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3297178)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3297178) - continued								
EP231X-INJ: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.10	2.5 µg/L	111	73.0	129
EP231X-INJ: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	119	72.0	129
EP231X-INJ: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	116	72.0	129
EP231X-INJ: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	111	72.0	130
EP231X-INJ: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	99.8	71.0	133
EP231X-INJ: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	110	69.0	130
EP231X-INJ: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	115	71.0	129
EP231X-INJ: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	107	69.0	133
EP231X-INJ: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	107	72.0	134
EP231X-INJ: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	111	65.0	144
EP231X-INJ: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	111	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3300275)								
EP231X-INJ: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.10	2.5 µg/L	79.6	73.0	129
EP231X-INJ: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	90.0	72.0	129
EP231X-INJ: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	87.4	72.0	129
EP231X-INJ: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	89.0	72.0	130
EP231X-INJ: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	72.8	71.0	133
EP231X-INJ: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	87.0	69.0	130
EP231X-INJ: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	93.0	71.0	129
EP231X-INJ: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	83.6	69.0	133
EP231X-INJ: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	89.4	72.0	134
EP231X-INJ: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	96.0	65.0	144
EP231X-INJ: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	92.3	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3295264)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	74.0	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	108	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	95.7	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	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: 3295495)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	96.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	82.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	75.3	60.5	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3295495) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	69.8	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	68.2	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	86.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	80.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3295496)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	82.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	69.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	68.4	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	72.4	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	67.7	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	83.8	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	70.2	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3297178)								
EP231X-INJ: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	112	67.0	137
EP231X-INJ: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	111	68.0	141
EP231X-INJ: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	128	62.1	136
EP231X-INJ: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	1.25 µg/L	119	65.2	135
EP231X-INJ: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	121	63.2	135
EP231X-INJ: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	110	65.0	136
EP231X-INJ: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	111	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3300275)								
EP231X-INJ: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	104	67.0	137
EP231X-INJ: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	92.5	68.0	141
EP231X-INJ: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	95.7	62.1	136

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3300275) - continued								
EP231X-INJ: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	1.25 µg/L	99.5	65.2	135
EP231X-INJ: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	98.9	63.2	135
EP231X-INJ: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	119	65.0	136
EP231X-INJ: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	90.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3295264)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	95.8	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	109	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	104	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	101	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3295495)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	81.1	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	93.6	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	80.4	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	75.9	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3295496)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	72.8	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	84.7	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	76.4	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	67.0	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3297178)								
EP231X-INJ: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.469 µg/L	119	63.0	143
EP231X-INJ: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.476 µg/L	122	64.0	140
EP231X-INJ: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.48 µg/L	110	67.0	138
EP231X-INJ: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.483 µg/L	114	62.2	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3300275)								
EP231X-INJ: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.469 µg/L	95.9	63.0	143
EP231X-INJ: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.476 µg/L	84.4	64.0	140
EP231X-INJ: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.48 µg/L	89.2	67.0	138
EP231X-INJ: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.483 µg/L	86.5	62.2	139
EP231P: PFAS Sums (QCLot: 3295264)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231P: PFAS Sums (QCLot: 3295495)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3295496)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3297178)								
EP231X-INJ: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X-INJ: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X-INJ: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3300275)								
EP231X-INJ: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X-INJ: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X-INJ: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

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: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3295291)							
EB2026176-039	0009_SD100_201001	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0011 mg/kg	82.3	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00117 mg/kg	96.2	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00118 mg/kg	99.6	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	101	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	70.3	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0012 mg/kg	75.0	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3295291)							
EB2026176-039	0009_SD100_201001	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	113	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	98.4	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	97.2	70.0	132

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Recovery Limits (%) Low	Matrix Spike (MS) Report: Recovery Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3295291) - continued							
EB2026176-039	0009_SD100_201001	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	88.4	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	92.8	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	93.6	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	83.6	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	91.2	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	90.8	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	98.0	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	85.4	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3295291)							
EB2026176-039	0009_SD100_201001	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	90.0	48.0	128
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	86.4	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	87.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	90.9	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	95.2	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	100.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	93.6	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3295291)							
EB2026176-039	0009_SD100_201001	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	85.9	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00118 mg/kg	103	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	108	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0012 mg/kg	110	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Recovery Limits (%) Low	Matrix Spike (MS) Report: Recovery Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3295264)							
EB2026176-057	0009_SW026_201001	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	116	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	98.7	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	106	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	107	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	106	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	113	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3295495)							
EB2026176-026	0009_MW001_HT_200930	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	91.9	72.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3295495) - continued							
EB2026176-026	0009_MW001_HT_200930	EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	72.9	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	77.2	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	85.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	97.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	86.9	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3295496)							
EB2026176-029	0009_MW013_HT_200930	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	85.7	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	88.1	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	87.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	91.0	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	98.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	91.1	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3297178)							
EB2026159-007	Anonymous	EP231X-INJ: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.443 µg/L	120	70.0	130
		EP231X-INJ: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.47 µg/L	116	70.0	130
		EP231X-INJ: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.475 µg/L	109	70.0	130
		EP231X-INJ: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.477 µg/L	122	70.0	130
		EP231X-INJ: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	113	70.0	130
		EP231X-INJ: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.482 µg/L	118	70.0	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3295264)							
EB2026176-057	0009_SW026_201001	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	111	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	93.4	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	103	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	111	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	105	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	99.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	115	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3295495)							
EB2026176-026	0009_MW001_HT_200930	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	90.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	83.6	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	76.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	80.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	84.2	69.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3295495) - continued							
EB2026176-026	0009_MW001_HT_200930	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	80.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	79.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	77.6	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	77.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79.5	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3295496)							
EB2026176-029	0009_MW013_HT_200930	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	73.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	89.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	88.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	77.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	78.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.2	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	73.6	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	72.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	88.2	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3297178)							
EB2026159-007	Anonymous	EP231X-INJ: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	105	70.0	130
		EP231X-INJ: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	119	70.0	130
		EP231X-INJ: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	119	70.0	130
		EP231X-INJ: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	110	70.0	130
		EP231X-INJ: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	103	70.0	130
		EP231X-INJ: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	114	70.0	130
		EP231X-INJ: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	115	70.0	130
		EP231X-INJ: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	112	70.0	130
		EP231X-INJ: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	107	70.0	130
		EP231X-INJ: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.5 µg/L	108	70.0	130
		EP231X-INJ: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	122	70.0	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3295264)							
EB2026176-057	0009_SW026_201001	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	72.4	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	98.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	109	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.2	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	92.4	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3295264) - continued							
EB2026176-057	0009_SW026_201001	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	123	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	86.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3295495)							
EB2026176-026	0009_MW001_HT_200930	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	83.6	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.4	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	81.8	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	79.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	79.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	78.2	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3295496)							
EB2026176-029	0009_MW013_HT_200930	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	87.2	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	72.2	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	79.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	74.0	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	75.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	96.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	89.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3297178)							
EB2026159-007	Anonymous	EP231X-INJ: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	107	70.0	130
		EP231X-INJ: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	104	70.0	130
		EP231X-INJ: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	128	70.0	130
		EP231X-INJ: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	1.25 µg/L	127	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3297178) - continued							
EB2026159-007	Anonymous	EP231X-INJ: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	125	70.0	130
		EP231X-INJ: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	119	70.0	130
		EP231X-INJ: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	111	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3295264)							
EB2026176-057	0009_SW026_201001	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	102	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	114	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	123	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	120	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3295495)							
EB2026176-026	0009_MW001_HT_200930	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	75.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	79.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	97.1	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	114	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3295496)							
EB2026176-029	0009_MW013_HT_200930	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	81.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	90.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	85.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	76.8	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3297178)							
EB2026159-007	Anonymous	EP231X-INJ: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.468 µg/L	114	70.0	130
		EP231X-INJ: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.475 µg/L	126	70.0	130
		EP231X-INJ: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.48 µg/L	115	70.0	130
		EP231X-INJ: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.483 µg/L	110	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2026176**	Page	: 1 of 10
Amendment	: **2**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 07-Oct-2020
Site	: ----	Issue Date	: 24-Nov-2020
Sampler	: [redacted]	No. of samples received	: 61
Order number	: 60612487_4.1	No. of samples analysed	: 61

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, 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: **SOIL**

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
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
0009_SD100_201001, 0009_SD101_201001, 0009_SD024_201001, 0009_SD023_201001, 0009_SD008_201001, 0009_SD019_201001, 0009_SD022_201001, 0009_SD021_201001, 0009_QC104_201001	**01-Oct-2020**	**----**	----	----	**07-Oct-2020**	15-Oct-2020	✓
HDPE Soil Jar (EA055)							
0009_SD020_200930	**30-Sep-2020**	**----**	----	----	**07-Oct-2020**	14-Oct-2020	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0009_SD100_201001, 0009_SD101_201001, 0009_SD024_201001, 0009_SD023_201001, 0009_SD008_201001, 0009_SD019_201001, 0009_SD022_201001, 0009_SD021_201001, 0009_QC104_201001	**01-Oct-2020**	**08-Oct-2020**	30-Mar-2021	✓	**08-Oct-2020**	17-Nov-2020	✓
HDPE Soil Jar (EP231X)							
0009_SD020_200930	**30-Sep-2020**	**08-Oct-2020**	29-Mar-2021	✓	**08-Oct-2020**	17-Nov-2020	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
0009_SD100_201001, 0009_SD101_201001, 0009_SD024_201001, 0009_SD023_201001, 0009_SD008_201001, 0009_SD019_201001, 0009_SD022_201001, 0009_SD021_201001, 0009_QC104_201001	**01-Oct-2020**	**08-Oct-2020**	30-Mar-2021	✓	**08-Oct-2020**	17-Nov-2020	✓
HDPE Soil Jar (EP231X)							
0009_SD020_200930	**30-Sep-2020**	**08-Oct-2020**	29-Mar-2021	✓	**08-Oct-2020**	17-Nov-2020	✓

Matrix: **SOIL**

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 Soil Jar (EP231X)							
0009_SD100_201001, 0009_SD101_201001, 0009_SD024_201001, 0009_SD023_201001, 0009_SD008_201001, 0009_SD019_201001, 0009_SD022_201001, 0009_SD021_201001, 0009_QC104_201001	**01-Oct-2020**	**08-Oct-2020**	30-Mar-2021	✓	**08-Oct-2020**	17-Nov-2020	✓
HDPE Soil Jar (EP231X)							
0009_SD020_200930	**30-Sep-2020**	**08-Oct-2020**	29-Mar-2021	✓	**08-Oct-2020**	17-Nov-2020	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0009_SD100_201001, 0009_SD101_201001, 0009_SD024_201001, 0009_SD023_201001, 0009_SD008_201001, 0009_SD019_201001, 0009_SD022_201001, 0009_SD021_201001, 0009_QC104_201001	**01-Oct-2020**	**08-Oct-2020**	30-Mar-2021	✓	**08-Oct-2020**	17-Nov-2020	✓
HDPE Soil Jar (EP231X)							
0009_SD020_200930	**30-Sep-2020**	**08-Oct-2020**	29-Mar-2021	✓	**08-Oct-2020**	17-Nov-2020	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
0009_SD100_201001, 0009_SD101_201001, 0009_SD024_201001, 0009_SD023_201001, 0009_SD008_201001, 0009_SD019_201001, 0009_SD022_201001, 0009_SD021_201001, 0009_QC104_201001	**01-Oct-2020**	**08-Oct-2020**	30-Mar-2021	✓	**08-Oct-2020**	17-Nov-2020	✓
HDPE Soil Jar (EP231X)							
0009_SD020_200930	**30-Sep-2020**	**08-Oct-2020**	29-Mar-2021	✓	**08-Oct-2020**	17-Nov-2020	✓

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

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)							
0009_SW008_201001, 0009_SW024_201001, 0009_SW021_201001, 0009_SW025_201001, 0009_SW017_201001, 0009_SW020_201001, 0009_SW023_201001, 0009_SW026_201001, 0009_QC105_201001, 0009_QC301_201001, 0009_QC501_201001	**01-Oct-2020**	**07-Oct-2020**	30-Mar-2021	✓	**07-Oct-2020**	30-Mar-2021	✓
HDPE (no PTFE) (EP231X-INJ)							
0009_MW031_201001, 0009_MW035_201001, 0009_MW036_201001	**01-Oct-2020**	**09-Oct-2020**	30-Mar-2021	✓	**09-Oct-2020**	30-Mar-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW001_LT_200930, 0009_MW002_HT_200930, 0009_MW003_LT_200930, 0009_MW003_HT_200930, 0009_MW004_LT_200930, 0009_MW004_HT_200930, 0009_MW005_LT_200930, 0009_MW005_HT_200930, 0009_MW007_LT_200930, 0009_MW007_HT_200930, 0009_MW009_LT_200930, 0009_MW009_HT_200930, 0009_MW011_LT_200930, 0009_MW011_HT_200930, 0009_MW002_LT_200930, 0009_MW001_HT_200930, 0009_MW018_HT_200930, 0009_QC103_200930, 0009_QC300_200930, 0009_QC500_200930	**30-Sep-2020**	**07-Oct-2020**	29-Mar-2021	✓	**07-Oct-2020**	29-Mar-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW013_LT_200930, 0009_MW014_LT_200930, 0009_MW014_HT_200930, 0009_MW015_LT_200930, 0009_MW016_HT_200930, 0009_MW017_LT_200930, 0009_MW017_HT_200930, 0009_MW018_LT_200930, 0009_MW019_LT_200930, 0009_MW019_HT_200930, 0009_MW015_HT_200930, 0009_MW013_HT_200930, 0009_MW016_LT_200930, 0009_SW022_200930, 0009_QC100_200930, 0009_QC101_200930	**30-Sep-2020**	**08-Oct-2020**	29-Mar-2021	✓	**09-Oct-2020**	29-Mar-2021	✓
HDPE (no PTFE) (EP231X-INJ)							
0009_QC102_200930	**30-Sep-2020**	**09-Oct-2020**	29-Mar-2021	✓	**09-Oct-2020**	29-Mar-2021	✓

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)							
0009_SW008_201001, 0009_SW024_201001, 0009_SW021_201001, 0009_SW025_201001, 0009_SW017_201001, 0009_SW020_201001, 0009_SW023_201001, 0009_SW026_201001, 0009_QC105_201001, 0009_QC301_201001, 0009_QC501_201001	**01-Oct-2020**	**07-Oct-2020**	30-Mar-2021	✓	**07-Oct-2020**	30-Mar-2021	✓
HDPE (no PTFE) (EP231X-INJ)							
0009_MW031_201001, 0009_MW035_201001, 0009_MW036_201001	**01-Oct-2020**	**09-Oct-2020**	30-Mar-2021	✓	**09-Oct-2020**	30-Mar-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW001_LT_200930, 0009_MW002_HT_200930, 0009_MW003_LT_200930, 0009_MW003_HT_200930, 0009_MW004_LT_200930, 0009_MW004_HT_200930, 0009_MW005_LT_200930, 0009_MW005_HT_200930, 0009_MW007_LT_200930, 0009_MW007_HT_200930, 0009_MW009_LT_200930, 0009_MW009_HT_200930, 0009_MW011_LT_200930, 0009_MW011_HT_200930, 0009_MW002_LT_200930, 0009_MW001_HT_200930, 0009_MW018_HT_200930, 0009_QC103_200930, 0009_QC300_200930, 0009_QC500_200930	**30-Sep-2020**	**07-Oct-2020**	29-Mar-2021	✓	**07-Oct-2020**	29-Mar-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW013_LT_200930, 0009_MW014_LT_200930, 0009_MW014_HT_200930, 0009_MW015_LT_200930, 0009_MW016_HT_200930, 0009_MW017_LT_200930, 0009_MW017_HT_200930, 0009_MW018_LT_200930, 0009_MW019_LT_200930, 0009_MW019_HT_200930, 0009_MW015_HT_200930, 0009_MW013_HT_200930, 0009_MW016_LT_200930, 0009_SW022_200930, 0009_QC100_200930, 0009_QC101_200930	**30-Sep-2020**	**08-Oct-2020**	29-Mar-2021	✓	**09-Oct-2020**	29-Mar-2021	✓
HDPE (no PTFE) (EP231X-INJ)							
0009_QC102_200930	**30-Sep-2020**	**09-Oct-2020**	29-Mar-2021	✓	**09-Oct-2020**	29-Mar-2021	✓

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)							
0009_SW008_201001, 0009_SW024_201001, 0009_SW021_201001, 0009_SW025_201001, 0009_SW017_201001, 0009_SW020_201001, 0009_SW023_201001, 0009_SW026_201001, 0009_QC105_201001, 0009_QC301_201001, 0009_QC501_201001	**01-Oct-2020**	**07-Oct-2020**	30-Mar-2021	✓	**07-Oct-2020**	30-Mar-2021	✓
HDPE (no PTFE) (EP231X-INJ)							
0009_MW031_201001, 0009_MW035_201001, 0009_MW036_201001	**01-Oct-2020**	**09-Oct-2020**	30-Mar-2021	✓	**09-Oct-2020**	30-Mar-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW001_LT_200930, 0009_MW002_HT_200930, 0009_MW003_LT_200930, 0009_MW003_HT_200930, 0009_MW004_LT_200930, 0009_MW004_HT_200930, 0009_MW005_LT_200930, 0009_MW005_HT_200930, 0009_MW007_LT_200930, 0009_MW007_HT_200930, 0009_MW009_LT_200930, 0009_MW009_HT_200930, 0009_MW011_LT_200930, 0009_MW011_HT_200930, 0009_MW002_LT_200930, 0009_MW001_HT_200930, 0009_MW018_HT_200930, 0009_QC103_200930, 0009_QC300_200930, 0009_QC500_200930	**30-Sep-2020**	**07-Oct-2020**	29-Mar-2021	✓	**07-Oct-2020**	29-Mar-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW013_LT_200930, 0009_MW014_LT_200930, 0009_MW014_HT_200930, 0009_MW015_LT_200930, 0009_MW016_HT_200930, 0009_MW017_LT_200930, 0009_MW017_HT_200930, 0009_MW018_LT_200930, 0009_MW019_LT_200930, 0009_MW019_HT_200930, 0009_MW015_HT_200930, 0009_MW013_HT_200930, 0009_MW016_LT_200930, 0009_SW022_200930, 0009_QC100_200930, 0009_QC101_200930	**30-Sep-2020**	**08-Oct-2020**	29-Mar-2021	✓	**09-Oct-2020**	29-Mar-2021	✓
HDPE (no PTFE) (EP231X-INJ)							
0009_QC102_200930	**30-Sep-2020**	**09-Oct-2020**	29-Mar-2021	✓	**09-Oct-2020**	29-Mar-2021	✓

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)							
0009_SW008_201001, 0009_SW024_201001, 0009_SW021_201001, 0009_SW025_201001, 0009_SW017_201001, 0009_SW020_201001, 0009_SW023_201001, 0009_SW026_201001, 0009_QC105_201001, 0009_QC301_201001, 0009_QC501_201001	**01-Oct-2020**	**07-Oct-2020**	30-Mar-2021	✓	**07-Oct-2020**	30-Mar-2021	✓
HDPE (no PTFE) (EP231X-INJ)							
0009_MW031_201001, 0009_MW035_201001, 0009_MW036_201001	**01-Oct-2020**	**09-Oct-2020**	30-Mar-2021	✓	**09-Oct-2020**	30-Mar-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW001_LT_200930, 0009_MW002_HT_200930, 0009_MW003_LT_200930, 0009_MW003_HT_200930, 0009_MW004_LT_200930, 0009_MW004_HT_200930, 0009_MW005_LT_200930, 0009_MW005_HT_200930, 0009_MW007_LT_200930, 0009_MW007_HT_200930, 0009_MW009_LT_200930, 0009_MW009_HT_200930, 0009_MW011_LT_200930, 0009_MW011_HT_200930, 0009_MW002_LT_200930, 0009_MW001_HT_200930, 0009_MW018_HT_200930, 0009_QC103_200930, 0009_QC300_200930, 0009_QC500_200930	**30-Sep-2020**	**07-Oct-2020**	29-Mar-2021	✓	**07-Oct-2020**	29-Mar-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW013_LT_200930, 0009_MW014_LT_200930, 0009_MW014_HT_200930, 0009_MW015_LT_200930, 0009_MW016_HT_200930, 0009_MW017_LT_200930, 0009_MW017_HT_200930, 0009_MW018_LT_200930, 0009_MW019_LT_200930, 0009_MW019_HT_200930, 0009_MW015_HT_200930, 0009_MW013_HT_200930, 0009_MW016_LT_200930, 0009_SW022_200930, 0009_QC100_200930, 0009_QC101_200930	**30-Sep-2020**	**08-Oct-2020**	29-Mar-2021	✓	**09-Oct-2020**	29-Mar-2021	✓
HDPE (no PTFE) (EP231X-INJ)							
0009_QC102_200930	**30-Sep-2020**	**09-Oct-2020**	29-Mar-2021	✓	**09-Oct-2020**	29-Mar-2021	✓

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)							
0009_SW008_201001, 0009_SW024_201001, 0009_SW021_201001, 0009_SW025_201001, 0009_SW017_201001, 0009_SW020_201001, 0009_SW023_201001, 0009_SW026_201001, 0009_QC105_201001, 0009_QC301_201001, 0009_QC501_201001	**01-Oct-2020**	**07-Oct-2020**	30-Mar-2021	✓	**07-Oct-2020**	30-Mar-2021	✓
HDPE (no PTFE) (EP231X-INJ)							
0009_MW031_201001, 0009_MW035_201001, 0009_MW036_201001	**01-Oct-2020**	**09-Oct-2020**	30-Mar-2021	✓	**09-Oct-2020**	30-Mar-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW001_LT_200930, 0009_MW002_HT_200930, 0009_MW003_LT_200930, 0009_MW003_HT_200930, 0009_MW004_LT_200930, 0009_MW004_HT_200930, 0009_MW005_LT_200930, 0009_MW005_HT_200930, 0009_MW007_LT_200930, 0009_MW007_HT_200930, 0009_MW009_LT_200930, 0009_MW009_HT_200930, 0009_MW011_LT_200930, 0009_MW011_HT_200930, 0009_MW002_LT_200930, 0009_MW001_HT_200930, 0009_MW018_HT_200930, 0009_QC103_200930, 0009_QC300_200930, 0009_QC500_200930	**30-Sep-2020**	**07-Oct-2020**	29-Mar-2021	✓	**07-Oct-2020**	29-Mar-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW013_LT_200930, 0009_MW014_LT_200930, 0009_MW014_HT_200930, 0009_MW015_LT_200930, 0009_MW016_HT_200930, 0009_MW017_LT_200930, 0009_MW017_HT_200930, 0009_MW018_LT_200930, 0009_MW019_LT_200930, 0009_MW019_HT_200930, 0009_MW015_HT_200930, 0009_MW013_HT_200930, 0009_MW016_LT_200930, 0009_SW022_200930, 0009_QC100_200930, 0009_QC101_200930	**30-Sep-2020**	**08-Oct-2020**	29-Mar-2021	✓	**09-Oct-2020**	29-Mar-2021	✓
HDPE (no PTFE) (EP231X-INJ)							
0009_QC102_200930	**30-Sep-2020**	**09-Oct-2020**	29-Mar-2021	✓	**09-Oct-2020**	29-Mar-2021	✓

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: **SOIL**

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)							
Moisture Content	EA055	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
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

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	5	47	**10.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-INJ	2	6	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	47	**6.38**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-INJ	2	6	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	47	**6.38**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-INJ	2	6	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	47	**6.38**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-INJ	1	6	**16.67**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed 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 soil 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 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 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-INJ	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with mobile phase solvent. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. 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.

Preparation Methods	Method	Matrix	Method Descriptions
Sample Extraction for PFAS in solid matrices	ORG73	SOIL	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil 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.
Preparation for PFAS in water.	EP231-PR	WATER	Method presumes direct injection without workup. Preparation includes addition of internal standard and surrogate, and filtration prior to analysis.
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	: **EB2026176**		
Amendment	: **2**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 5 7-13 TOMLINS STREET SOUTH TOWNSVILLE 4810	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	[redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: QLD_0009_PFASOMP_20	Page	: 1 of 5
Order number	: 60612487_4.1	Quote number	: ES2020AECOMAU0024 (SY/139/19 V3_QLD)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 07-Oct-2020 08:30	Issue Date	: 24-Nov-2020
Client Requested Due Date	: 14-Oct-2020	Scheduled Reporting Date	: **14-Oct-2020**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 4.1, 1.1°C - Ice present
Receipt Detail	: SMALL	No. of samples received / analysed	: 61 / 61

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 Townsville on 2/10/2020, and forwarded to ALS Brisbane for analysis.**
- ***15/10/2020*: SRN has been resent to acknowledge the update of the project ID as per email request by [redacted] For any further information regarding these adjustments please contact client services at [redacted]**
- ***24/11/2020*: SRN has been resent to acknowledge the update to sample IDs and dates as per email request by [redacted] 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.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **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.

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.

EB2026176-001	: 30-Sep-2020 12:45	: 0009_MW001_LT_200930
EB2026176-002	: 30-Sep-2020 08:20	: 0009_MW002_HT_200930
EB2026176-003	: 30-Sep-2020 13:10	: 0009_MW003_LT_200930
EB2026176-004	: 30-Sep-2020 08:50	: 0009_MW003_HT_200930
EB2026176-005	: 30-Sep-2020 13:55	: 0009_MW004_LT_200930
EB2026176-006	: 30-Sep-2020 09:25	: 0009_MW004_HT_200930
EB2026176-007	: 30-Sep-2020 13:40	: 0009_MW005_LT_200930
EB2026176-008	: 30-Sep-2020 09:10	: 0009_MW005_HT_200930
EB2026176-009	: 30-Sep-2020 16:10	: 0009_MW007_LT_200930
EB2026176-010	: 30-Sep-2020 10:35	: 0009_MW007_HT_200930
EB2026176-011	: 30-Sep-2020 16:30	: 0009_MW009_LT_200930
EB2026176-012	: 30-Sep-2020 11:05	: 0009_MW009_HT_200930
EB2026176-013	: 30-Sep-2020 12:30	: 0009_MW011_LT_200930
EB2026176-014	: 30-Sep-2020 07:15	: 0009_MW011_HT_200930
EB2026176-015	: 30-Sep-2020 13:30	: 0009_MW013_LT_200930
EB2026176-016	: 30-Sep-2020 15:40	: 0009_MW014_LT_200930
EB2026176-017	: 30-Sep-2020 09:50	: 0009_MW014_HT_200930
EB2026176-018	: 30-Sep-2020 15:50	: 0009_MW015_LT_200930
EB2026176-019	: 30-Sep-2020 10:20	: 0009_MW016_HT_200930
EB2026176-020	: 30-Sep-2020 16:20	: 0009_MW017_LT_200930
EB2026176-021	: 30-Sep-2020 10:50	: 0009_MW017_HT_200930
EB2026176-022	: 30-Sep-2020 16:45	: 0009_MW018_LT_200930
EB2026176-023	: 30-Sep-2020 12:15	: 0009_MW019_LT_200930
EB2026176-024	: 30-Sep-2020 06:50	: 0009_MW019_HT_200930
EB2026176-025	: 30-Sep-2020 12:55	: 0009_MW002_LT_200930
EB2026176-026	: 30-Sep-2020 08:00	: 0009_MW001_HT_200930
EB2026176-027	: 30-Sep-2020 11:20	: 0009_MW018_HT_200930
EB2026176-028	: 30-Sep-2020 10:10	: 0009_MW015_HT_200930
EB2026176-029	: 30-Sep-2020 09:05	: 0009_MW013_HT_200930
EB2026176-030	: 30-Sep-2020 16:05	: 0009_MW016_LT_200930

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: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
EB2026176-032	30-Sep-2020 14:45	0009_SD020_200930	✓	✓
EB2026176-039	01-Oct-2020 08:00	0009_SD100_201001	✓	✓
EB2026176-040	01-Oct-2020 08:10	0009_SD101_201001	✓	✓
EB2026176-041	01-Oct-2020 12:00	0009_SD024_201001	✓	✓
EB2026176-042	01-Oct-2020 12:10	0009_SD023_201001	✓	✓
EB2026176-043	01-Oct-2020 09:00	0009_SD008_201001	✓	✓
EB2026176-044	01-Oct-2020 11:20	0009_SD019_201001	✓	✓
EB2026176-045	01-Oct-2020 11:40	0009_SD022_201001	✓	✓

			SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
EB2026176-046	01-Oct-2020 10:45	0009_SD021_201001	✓	✓
EB2026176-058	01-Oct-2020 00:00	0009_QC104_201001	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - EP231X-INJ PFAS - Full Suite (28 analytes)
EB2026176-001	30-Sep-2020 12:45	0009_MW001_LT_200930	✓	
EB2026176-002	30-Sep-2020 08:20	0009_MW002_HT_200930	✓	
EB2026176-003	30-Sep-2020 13:10	0009_MW003_LT_200930	✓	
EB2026176-004	30-Sep-2020 08:50	0009_MW003_HT_200930	✓	
EB2026176-005	30-Sep-2020 13:55	0009_MW004_LT_200930	✓	
EB2026176-006	30-Sep-2020 09:25	0009_MW004_HT_200930	✓	
EB2026176-007	30-Sep-2020 13:40	0009_MW005_LT_200930	✓	
EB2026176-008	30-Sep-2020 09:10	0009_MW005_HT_200930	✓	
EB2026176-009	30-Sep-2020 16:10	0009_MW007_LT_200930	✓	
EB2026176-010	30-Sep-2020 10:35	0009_MW007_HT_200930	✓	
EB2026176-011	30-Sep-2020 16:30	0009_MW009_LT_200930	✓	
EB2026176-012	30-Sep-2020 11:05	0009_MW009_HT_200930	✓	
EB2026176-013	30-Sep-2020 12:30	0009_MW011_LT_200930	✓	
EB2026176-014	30-Sep-2020 07:15	0009_MW011_HT_200930	✓	
EB2026176-015	30-Sep-2020 13:30	0009_MW013_LT_200930	✓	
EB2026176-016	30-Sep-2020 15:40	0009_MW014_LT_200930	✓	
EB2026176-017	30-Sep-2020 09:50	0009_MW014_HT_200930	✓	
EB2026176-018	30-Sep-2020 15:50	0009_MW015_LT_200930	✓	
EB2026176-019	30-Sep-2020 10:20	0009_MW016_HT_200930	✓	
EB2026176-020	30-Sep-2020 16:20	0009_MW017_LT_200930	✓	
EB2026176-021	30-Sep-2020 10:50	0009_MW017_HT_200930	✓	
EB2026176-022	30-Sep-2020 16:45	0009_MW018_LT_200930	✓	
EB2026176-023	30-Sep-2020 12:15	0009_MW019_LT_200930	✓	
EB2026176-024	30-Sep-2020 06:50	0009_MW019_HT_200930	✓	
EB2026176-025	30-Sep-2020 12:55	0009_MW002_LT_200930	✓	
EB2026176-026	30-Sep-2020 08:00	0009_MW001_HT_200930	✓	
EB2026176-027	30-Sep-2020 11:20	0009_MW018_HT_200930	✓	

			WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - EP231X-INJ PFAS - Full Suite (28 analytes)
EB2026176-028	30-Sep-2020 10:10	0009_MW015_HT_200930	✓	
EB2026176-029	30-Sep-2020 09:05	0009_MW013_HT_200930	✓	
EB2026176-030	30-Sep-2020 16:05	0009_MW016_LT_200930	✓	
EB2026176-031	30-Sep-2020 14:45	0009_SW022_200930	✓	
EB2026176-033	30-Sep-2020 00:00	0009_QC100_200930	✓	
EB2026176-034	30-Sep-2020 00:00	0009_QC101_200930	✓	
EB2026176-035	30-Sep-2020 00:00	0009_QC102_200930		✓
EB2026176-036	30-Sep-2020 00:00	0009_QC103_200930	✓	
EB2026176-037	30-Sep-2020 00:00	0009_QC300_200930	✓	
EB2026176-038	30-Sep-2020 00:00	0009_QC500_200930	✓	
EB2026176-047	01-Oct-2020 06:45	0009_MW031_201001		✓
EB2026176-048	01-Oct-2020 07:15	0009_MW035_201001		✓
EB2026176-049	01-Oct-2020 07:05	0009_MW036_201001		✓
EB2026176-050	01-Oct-2020 09:00	0009_SW008_201001	✓	
EB2026176-051	01-Oct-2020 11:40	0009_SW024_201001	✓	
EB2026176-052	01-Oct-2020 11:20	0009_SW021_201001	✓	
EB2026176-053	01-Oct-2020 12:10	0009_SW025_201001	✓	
EB2026176-054	01-Oct-2020 08:10	0009_SW017_201001	✓	
EB2026176-055	01-Oct-2020 08:00	0009_SW020_201001	✓	
EB2026176-056	01-Oct-2020 10:45	0009_SW023_201001	✓	
EB2026176-057	01-Oct-2020 12:00	0009_SW026_201001	✓	
EB2026176-059	01-Oct-2020 00:00	0009_QC105_201001	✓	
EB2026176-060	01-Oct-2020 00:00	0009_QC301_201001	✓	
EB2026176-061	01-Oct-2020 00:00	0009_QC501_201001	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/201007
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 07-OCT-2020
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N20/023323	0009_QC204_201001	SOIL 01/10/2020

Lab Reg No.		N20/023323				
Date Sampled		01-OCT-2020				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	mg/kg	<0.002				NR70
PFPeA (2706-90-3)	mg/kg	<0.002				NR70
PFHxA (307-24-4)	mg/kg	<0.001				NR70
PFHpA (375-85-9)	mg/kg	<0.001				NR70
PFOA (335-67-1)	mg/kg	<0.001				NR70
PFNA (375-95-1)	mg/kg	<0.001				NR70
PFDA (335-76-2)	mg/kg	<0.001				NR70
PFUdA (2058-94-8)	mg/kg	<0.002				NR70
PFDoA (307-55-1)	mg/kg	<0.002				NR70
PFTrDA (72629-94-8)	mg/kg	<0.002				NR70
PFTeDA (376-06-7)	mg/kg	<0.002				NR70
PFHxDA (67905-19-5)	mg/kg	<0.002				NR70
PFODA (16517-11-6)	mg/kg	<0.005				NR70
FOUEA (70887-84-2)	mg/kg	<0.001				NR70
PFBS (375-73-5)	mg/kg	<0.001				NR70
PFPeS (2706-91-4)	mg/kg	<0.001				NR70
PFHxS (355-46-4)	mg/kg	<0.001				NR70
PFHpS (375-92-8)	mg/kg	<0.001				NR70
PFOS (1763-23-1)	mg/kg	<0.002				NR70
PFNS (68259-12-1)	mg/kg	<0.001				NR70
PFDS (335-77-3)	mg/kg	<0.001				NR70
PFOSA (754-91-6)	mg/kg	<0.001				NR70
N-MeFOSA (31506-32-8)	mg/kg	<0.002				NR70
N-EtFOSA (4151-50-2)	mg/kg	<0.002				NR70
N-MeFOSAA (2355-31-9)	mg/kg	<0.002				NR70
N-EtFOSAA(2991-50-6)	mg/kg	<0.002				NR70
N-MeFOSE (24448-09-7)	mg/kg	<0.005				NR70
N-EtFOSE (1691-99-2)	mg/kg	<0.005				NR70
4:2 FTS (757124-72-4)	mg/kg	<0.001				NR70
6:2 FTS (27619-97-2)	mg/kg	<0.001				NR70

REPORT OF ANALYSIS

Lab Reg No.		N20/023323				
Date Sampled		01-OCT-2020				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
8:2 FTS (39108-34-4)	mg/kg	<0.001				NR70
10:2 FTS (120226-60-0)	mg/kg	<0.002				NR70
8:2 diPAP (678-41-1)	mg/kg	<0.002				NR70
PFBA (Surrogate Recovery)	%	97				NR70
PFPeA (Surrogate Recovery)	%	99				NR70
PFHxA (Surrogate Recovery)	%	110				NR70
PFHpA (Surrogate Recovery)	%	101				NR70
PFOA (Surrogate Recovery)	%	97				NR70
PFNA (Surrogate Recovery)	%	104				NR70
PFDA (Surrogate Recovery)	%	113				NR70
PFUdA (Surrogate Recovery)	%	103				NR70
PFDoA (Surrogate Recovery)	%	100				NR70
PFTeDA (Surrogate Recovery)	%	110				NR70
PFHxDA (Surrogate Recovery)	%	120				NR70
FOUEA (Surrogate Recovery)	%	71				NR70
PFBS (Surrogate Recovery)	%	96				NR70
PFHxS (Surrogate Recovery)	%	102				NR70
PFOS (Surrogate Recovery)	%	111				NR70
PFOSA (Surrogate Recovery)	%	101				NR70
N-MeFOSA (Surrogate Recovery)	%	108				NR70
N-EtFOSA (Surrogate Recovery)	%	105				NR70
N-MeFOSAA (Surrogate Recovery)	%	86				NR70
N-EtFOSAA (Surrogate Recovery)	%	84				NR70
N-MeFOSE (Surrogate Recovery)	%	92				NR70
N-EtFOSE (Surrogate Recovery)	%	94				NR70
4:2 FTS (Surrogate Recovery)	%	65				NR70
6:2 FTS (Surrogate Recovery)	%	65				NR70
8:2 FTS (Surrogate Recovery)	%	60				NR70
8:2 diPAP (Surrogate Recovery)	%	122				NR70
Dates						
Date extracted		12-OCT-2020				
Date analysed		12-OCT-2020				

N20/023323
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

Lab Reg No.		N20/023323				
Date Sampled		01-OCT-2020				
	Units					Method

[redacted]

19-OCT-2020

Lab Reg No.		N20/023323				
Date Sampled		01-OCT-2020				
	Units					Method
Trace Elements						
Total Solids	%	51.6				NT2_49
Dates						
Date extracted		7-OCT-2020				
Date analysed		8-OCT-2020				

[redacted]

19-OCT-2020

All results are expressed on a dry weight basis.

REPORT OF ANALYSIS

Report No. RN1291041

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/201007
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 07-OCT-2020
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N20/023319	0009_QC200_200930	WATER 30/09/2020
N20/023320	0009_QC201_200930	WATER 30/09/2020
N20/023321	0009_QC202_200930	WATER 30/09/2020
N20/023322	0009_QC203_200930	WATER 30/09/2020

Lab Reg No.			N20/023319	N20/023320	N20/023321	N20/023322	
Date Sampled			30-SEP-2020	30-SEP-2020	30-SEP-2020	30-SEP-2020	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
PFBA (375-22-4)		ug/L	0.093	1.5	0.25	0.10	NR70
PFPeA (2706-90-3)		ug/L	0.11	1.8	0.62	<0.02	NR70
PFHxA (307-24-4)		ug/L	0.15	8.9	0.85	0.017	NR70
PFHpA (375-85-9)		ug/L	0.063	1.6	0.25	<0.01	NR70
PFOA (335-67-1)		ug/L	0.15	3.5	0.51	0.012	NR70
PFNA (375-95-1)		ug/L	0.011	0.071	0.070	<0.01	NR70
PFDA (335-76-2)		ug/L	<0.01	0.014	0.016	<0.01	NR70
PFUdA (2058-94-8)		ug/L	<0.01	<0.01	0.010	<0.01	NR70
PFDoA (307-55-1)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFTrDA (72629-94-8)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFTeDA (376-06-7)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFHxDA (67905-19-5)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFODA (16517-11-6)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70
FOUEA (70887-84-2)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDS (335-77-3)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFPeS (2706-91-4)		ug/L	0.044	2.6	0.28	<0.01	NR70
PFHxS (355-46-4)		ug/L	0.55	30	3.5	0.13	NR70
PFHpS (375-92-8)		ug/L	0.098	1.9	0.30	<0.01	NR70
PFOS (1763-23-1)		ug/L	2.9	66	19	0.20	NR70
PFNS (68259-12-1)		ug/L	<0.01	0.068	0.026	<0.01	NR70
PFBS (375-73-5)		ug/L	0.040	3.0	0.34	<0.01	NR70
PFOSA (754-91-6)		ug/L	<0.01	0.048	0.028	<0.01	NR70
N-MeFOSA (31506-32-8)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-EtFOSA (4151-50-2)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-MeFOSAA (2355-31-9)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-EtFOSAA(2991-50-6)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSE (24448-09-7)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70

REPORT OF ANALYSIS

Lab Reg No.			N20/023319	N20/023320	N20/023321	N20/023322	
Date Sampled			30-SEP-2020	30-SEP-2020	30-SEP-2020	30-SEP-2020	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
N-EtFOSE (1691-99-2)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70
4:2 FTS (757124-72-4)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
6:2 FTS (27619-97-2)		ug/L	0.064	0.055	0.021	0.014	NR70
8:2 FTS (39108-34-4)		ug/L	<0.01	0.031	<0.01	<0.01	NR70
10:2 FTS (120226-60-0)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 diPAP (678-41-1)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFBA (Surrogate Recovery)		%	100	102	97	91	NR70
PFPeA (Surrogate Recovery)		%	88	113	93	94	NR70
PFHxA (Surrogate Recovery)		%	100	110	95	90	NR70
PFHpA (Surrogate Recovery)		%	105	113	103	96	NR70
PFOA (Surrogate Recovery)		%	93	99	94	101	NR70
PFNA (Surrogate Recovery)		%	93	70	96	94	NR70
PFDA (Surrogate Recovery)		%	99	84	129	75	NR70
PFUdA (Surrogate Recovery)		%	78	84	110	83	NR70
PFDoA (Surrogate Recovery)		%	66	74	110	67	NR70
PFTeDA (Surrogate Recovery)		%	79	89	116	83	NR70
PFHxDA (Surrogate Recovery)		%	71	58	78	86	NR70
FOUEA (Surrogate Recovery)		%	96	101	88	102	NR70
PFBS (Surrogate Recovery)		%	100	104	97	92	NR70
PFHxS (Surrogate Recovery)		%	100	102	97	94	NR70
PFOS (Surrogate Recovery)		%	107	101	98	95	NR70
PFOSA (Surrogate Recovery)		%	65	66	110	76	NR70
N-MeFOSA (Surrogate Recovery)		%	48	64	56	80	NR70
N-EtFOSA (Surrogate Recovery)		%	49	55	81	73	NR70
N-MeFOSAA (Surrogate Recovery)		%	61	67	101	69	NR70
N-EtFOSAA (Surrogate Recovery)		%	61	69	102	74	NR70
N-MeFOSE (Surrogate Recovery)		%	75	91	111	92	NR70
N-EtFOSE (Surrogate Recovery)		%	57	53	69	104	NR70
4:2 FTS (Surrogate Recovery)		%	73	85	50	61	NR70
6:2 FTS (Surrogate Recovery)		%	63	71	71	66	NR70
8:2 FTS (Surrogate Recovery)		%	55	63	75	54	NR70
8:2 diPAP (Surrogate Recovery)		%	53	65	49	57	NR70
Dates							
Date extracted			12-OCT-2020	12-OCT-2020	12-OCT-2020	12-OCT-2020	
Date analysed			12-OCT-2020	12-OCT-2020	12-OCT-2020	12-OCT-2020	

N20/023319
to
N20/023324

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.

PFAS LORs raised if total solids value is below 20%.
Selected PFAS surrogate recoveries are biased due to matrix effects.
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.

N20/023322

19-OCT-2020

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/201007
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 07-OCT-2020
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N20/023324	0009_QC205_201001	WATER 01/10/2020

Lab Reg No.			N20/023324				
Date Sampled			01-OCT-2020				
		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	<0.01				NR70
PFHpS (375-92-8)		ug/L	<0.01				NR70
PFOS (1763-23-1)		ug/L	<0.02				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

Lab Reg No.			N20/023324				
Date Sampled			01-OCT-2020				
		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)		%	97				NR70
PFPeA (Surrogate Recovery)		%	92				NR70
PFHxA (Surrogate Recovery)		%	96				NR70
PFHpA (Surrogate Recovery)		%	96				NR70
PFOA (Surrogate Recovery)		%	96				NR70
PFNA (Surrogate Recovery)		%	93				NR70
PFDA (Surrogate Recovery)		%	94				NR70
PFUdA (Surrogate Recovery)		%	106				NR70
PFDoA (Surrogate Recovery)		%	85				NR70
PFTeDA (Surrogate Recovery)		%	106				NR70
PFHxDA (Surrogate Recovery)		%	60				NR70
FOUEA (Surrogate Recovery)		%	94				NR70
PFBS (Surrogate Recovery)		%	89				NR70
PFHxS (Surrogate Recovery)		%	96				NR70
PFOS (Surrogate Recovery)		%	85				NR70
PFOSA (Surrogate Recovery)		%	87				NR70
N-MeFOSA (Surrogate Recovery)		%	75				NR70
N-EtFOSA (Surrogate Recovery)		%	56				NR70
N-MeFOSAA (Surrogate Recovery)		%	91				NR70
N-EtFOSAA (Surrogate Recovery)		%	98				NR70
N-MeFOSE (Surrogate Recovery)		%	108				NR70
N-EtFOSE (Surrogate Recovery)		%	85				NR70
4:2 FTS (Surrogate Recovery)		%	50				NR70
6:2 FTS (Surrogate Recovery)		%	63				NR70
8:2 FTS (Surrogate Recovery)		%	66				NR70
8:2 diPAP (Surrogate Recovery)		%	45				NR70
Dates							
Date extracted			12-OCT-2020				
Date analysed			12-OCT-2020				

19-OCT-2020

REPORT OF ANALYSIS

This Report supersedes reports: *RN1290616* *RN1290617* *RN1290633*

Measurement Uncertainty is available upon request.

Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

Australian Government
Department of Industry, Science, Energy and Resources

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [redacted]

Customer: AECOM AUSTRALIA PTY LTD

Address: LEVEL 8
FORTITUDE VALLEY QLD 4006

Email: [redacted]

Telephone:

Fax:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: [redacted]

Address: 105 Delhi Road, North Ryde, NSW
NSW 2113

Email: [redacted]

Telephone: [redacted]

Fax:

SAMPLE DETAILS

NMI Job Name: **AECO06/201007**

Total No. of Samples: **6**

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N20/023319	14-OCT-2020	0009_QC200_200930	WATER 30/09/2020
N20/023320	14-OCT-2020	0009_QC201_200930	WATER 30/09/2020
N20/023321	14-OCT-2020	0009_QC202_200930	WATER 30/09/2020
N20/023322	14-OCT-2020	0009_QC203_200930	WATER 30/09/2020
N20/023323	14-OCT-2020	0009_QC204_201001	SOIL 01/10/2020
N20/023324	14-OCT-2020	0009_QC205_201001	WATER 01/10/2020

SAMPLE RECEIVED CONDITION

Date samples received:	7-OCT-2020
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	60612487_4_1
Temperature of samples:	Chilled
Comments:	Project name and sample ID's were corrected as per advised.
Mode of Delivery:	Courier

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.

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

Appendix F

Equipment Calibration Certificates

Appendix F Equipment Calibration Certificates

AirMet Scientific P/L
135 Sydney Street
Mackay
QLD 4740, Australia
Tel: 07 4951 7500
Fax: 07 4951 7575

Calibration Certificate

This document certifies that the instrument detailed has been calibrated to the parameters

Certificate Print Date: 13-Nov-2019
Calibration Date: 08-Nov-2019
Next Calibration Due: 7-Nov-2020

Call ID / Order No: 240179
Job No / Pack No: S2401790001

Customer: AECOM Australia Pty Ltd (Townsville)-ID 407250 **Serial No:** 18K102334
Description: Xylem ProDSS Handheld, No GPS

Calibration Summary

Frequency: 365 Use Days **Temp:** 21.8°C **As Found:** Out of Tolerance **Result:** Pass
Humidity: 45% **Certificate:** S2401790001

Desc	As Found Actual	As Found Result	As Left (Cal Status) Actual	As Left (Cal Status) Result
PH4	3.96	Pass	4.01	Pass
PH7	7.0	Pass	7.01	Pass
Specific Conductivity	2749.0	Fail	2758.0	Pass
DO	0.1	Pass	0.0	Pass
Turbidity	118.0	Fail	100.02	Pass
ORP	226.0	Pass	236.0	Pass

Standard Used			
Equip ID	Description	Valid Until	Cert

Completed By: [redacted]

Signed: [redacted]

Oil / Water Interface Meter

Instrument Interface Meter (30M)
Serial No. 349190

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
		✓	
Tape Check	Cleaned	✓	
	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Calibrated by: [redacted]

Calibration date: 1/09/2020

Next calibration due: 1/11/2020

ANZ

AECOM

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	~~60~~ HMAS CAIRNS	**Project Number:**	60612487-4.1
Project Location:	CAIRNS	**Client:**	DEFENCE
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	
Make and Model:	PRO DSS 451
Serial Number:	

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	28.09.2020 1530				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	~~ppm~~ %	~~ppm~~ % OR
Calibration Standard Concentration:	4.0	7.0	~~35000 34857~~	100	268
Calibration Reading:	3.51	6.9	34859	100.1	265.8
Calibration Temperature:	21.5	22.6	22.4	22.6	9.8

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☑ Each individual ins[redacted] daily and bump tested as required by fieldwork staff.

28.09.2020
Date

Distribution: Project Central File

Prepared for
Department of Defence
ABN: 68 706 814 312

AECOM

Sampling Event Factual Report- April 2021

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

27-Jul-2021
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Sampling Event Factual Report- April 2021

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

Client: Department of Defence

ABN: 68 706 814 312

Prepared by

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AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

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Table of Contents

List of Tables (in Text)

List of Figures (in Appendix A)

List of Tables (in Appendix B)

Abbreviations

Term	Description
AECOM	AECOM Australia Pty Ltd
ALS	Australian Laboratory Services
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure, as amended (2013)
DCMM	Defence Contamination Management Manual
DO	Dissolved oxygen
DoH	Department of Health
EC	Electrical conductivity
HEPA	Heads of Environmental Protection Agencies
HMAS	Her Majesty's Australian Ship
LOR	Limit of reporting
mAHD	metres Australian Height Datum
mbtoc	metres below top of casing
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPC	National Environment Protection Council
NHMRC	National Health and Medical Research Council
NMI	National Measurement Institute
NSW	New South Wales
OMP	Ongoing Monitoring Program
ORP	Oxidation-reduction potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance/Quality Control
QLD	Queensland
RAN	Royal Australian Navy
SAQP	Sampling Analysis Quality Plan
SWL	Standing Water Level
WWII	World War II
DFI	Defence Fuel Installation

Units of Measurement			
L	Litres	m	Metres
mg	Milligram	ha	Hectares
kg	Kilogram	µg	Microgram
mV	Millivolts		

1.0 Introduction

1.1 General

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Program (OMP) outlined in the *PFAS Management Area Plan (PMAP)* (Department of Defence, 2020) at Her Majesty's Australian Ship (HMAS) Cairns and the Former World War II Royal Australian Navy (WWII RAN) Fuel Installation (the 'Site') located in Cairns, Queensland. The Management Areas comprise the Site, land situated down hydraulic gradient of HMAS Cairns (including Trinity Inlet), the Cairns Botanic Gardens, Centenary Lakes, Saltwater Creek and private residential properties along Greenslopes Street and Collins Avenue, as defined in the PMAP (Department of Defence, 2020).

The location of the Site and the Management Areas are shown in **Figure 1** in **Appendix A**. The OMP for Cairns (Department of Defence, 2020) includes biannual groundwater, surface water and sediment sampling events in October 2020, April 2021, October 2021, April 2022, October 2022 and April 2023.

These sampling events include the following:

- High and low tide groundwater sampling of 15 monitoring wells on Base at HMAS Cairns
- Groundwater sampling of three monitoring wells off-Base within the Former WWII RAN Fuel Installation Management Area
- Sediment sampling at six locations on-Base at HMAS Cairns with co-located surface water sampling when water is present
- Sediment sampling at three locations off-Base within the Former WWII RAN Fuel Installation Management Area with co-located surface water sampling when water is present.

Following each sampling event, factual reports will be prepared. Annual interpretative reports will be prepared following the completion of each 12-month sampling period. This sampling event factual report has been prepared to report the results of the post-wet season sampling event completed in late April 2021, specifically highlighting first time detections and/or first-time exceedances of human health and ecological screening criteria for perfluorooctane sulfonate (PFOS) + perfluorohexane sulfonic acid (PFHxS) and / or perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the *Defence (2020) PFAS OMP factual reports – interim guidance for preparation,* v0.2, May 2021 (Department of Defence, 2021).

1.2 Objectives

The objectives of the OMP program are to:

- Implement the OMP prepared as part of the PMAP
- Collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration and transport of PFAS at HMAS Cairns and the Former WWII RAN Fuel Installation.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PMAP.

The objective of this phase of works is to implement the scope of works for the April 2021 sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2021).

2.0 Scope of Work

The sampling event at HMAS Cairns and the Former WWII RAN Fuel Installation was completed in general accordance with the SAQP (AECOM, 2021). In summary, the scope of works for this sampling event included:

- Obtaining permission to work in public spaces where some sampling locations are situated
- Review of the SAQP prior to monitoring event to ensure compliance with the following:
  - PFAS National Environmental Management Plan (NEMP) (2020)
  - National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (ASC NEPM, 2013)
  - Defence Routine Environment Water Quality Monitoring Manual (2018)
  - AS/NZ 5667:1998 Water quality – Sampling
  - Australian and New Zealand Guidelines for Fresh and Marine Water Quality; and
  - Relevant State regulatory guidelines.
- Gauging of groundwater level in monitoring wells prior to collection of samples (refer to **Table 1** below, and **Figure 2A** and **Figure 2B** in **Appendix A** for specific locations)
- Collection of groundwater samples from 18 locations including 15 locations at HMAS Cairns at both high and low tides, and three locations at the Former WWII RAN Fuel Installation. (Refer to **Table 1** below, and **Figure 2A** and **Figure 2B** in **Appendix A**)
- Collection of co-located surface water and sediment samples at nine locations including six locations at HMAS Cairns and three locations at the Former WWII RAN Fuel Installation (refer to **Table 2** and **Table 3** below, and **Figure 2A** and **Figure 2B** in **Appendix A**)
- Collecting intra- and inter-laboratory duplicate samples at a rate of one in 10 primary samples, one rinsate sample per fieldwork day, and one trip blank per sample batch
- Analysis of all samples for a suite of 28 PFAS analytes at the standard limit of reporting (LOR)
- Data management of all OMP field and laboratory data in the Defence ESdat database
- Preparation of this Sampling Event Factual Report.

Table 1 Groundwater Sampling Locations

Locations	Monitoring Well ID
HMAS Cairns Management Area	MW001, MW002, MW003, MW004, MW005, MW007, MW009, MW011, MW013, MW014, MW015, MW016, MW017, MW018, MW019
Former WWII RAN Fuel Installation Management Area	MW031, MW035, MW036

Table 2 Surface Water Sampling Locations

Locations	Location ID
HMAS Cairns Management Area	SW030, SW031, SW032, SW033, SW034, SW035
Former WWII RAN Fuel Installation Management Area	SW036, SW100, SW101

Table 3 Sediment Sampling Locations

Locations	Location ID
HMAS Cairns Management Area	SD030, SD031, SD032, SD033, SD034, SD035
Former WWII RAN Fuel Installation Management Area	SD036, SD100, SD101

3.0 Methodology

The methodology used for the April 2021 sampling event was in accordance with the SAQP (AECOM, 2021) and is summarised below.

3.1 Groundwater Sampling Methodology

Table 4 Groundwater Sampling Methodology

Item	Details
Groundwater gauging	The depth to groundwater was measured in each monitoring well prior to the installation of HydraSleeves™ and immediately prior to collection of groundwater samples using an interface probe (IP).
Water quality parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and water quality observations were recorded for all groundwater samples. Equipment calibration certificates are provided in **Appendix F**.
Sampling methodology	Groundwater samples were collected from monitoring wells using no-purge methodology HydraSleeves™, which were installed within the screened interval of each well (based on a review of the well construction log) for a minimum of 24 hours prior to the sampling round (as stated in **Table T1**, **Appendix B**). Once the first tidal sampling round was completed at HMAS Cairns, new HydraSleeves™ were deployed at the screened interval depth in preparation for the second tidal sampling round. New HydraSleeves™ were not deployed following the second tidal sampling round at HMAS Cairns or following the single sampling round at the Former WWII RAN Fuel Installation to avoid conflict with other monitoring programs. A groundwater sample was collected from MW036 using a decontaminated steel bailer from the screened interval due to insufficient volume of water collected from the HydraSleeve™.
Quality Assurance/Quality Control (QA/QC) Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits), trip blanks, and rinsate samples. Refer to **Appendix C** for assessment of QA/QC sample data.
Sample analysis	All primary samples were submitted for analysis for the PFAS suite using the standard levels of detection. Australian Laboratory Services (ALS) Environmental Brisbane, Queensland (QLD) was used as the primary laboratory. The National Measurement Institute (NMI) of Sydney, New South Wales (NSW) was used as the secondary laboratory. ALS and NMI methods for groundwater analyses are certified by the National Association of Testing Authorities (NATA). Chain of Custody Forms are presented in **Appendix D**. Laboratory certificates are presented in **Appendix E**.

3.2 Surface Water Sampling Methodology

Table 5 Surface Water Sampling Methodology

Item	Details
Water quality parameters	Temperature, EC, DO, ORP, pH and observations of water quality were recorded for all surface water samples.
Sampling methodology	Samples were collected from immediately below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a decontaminated, stainless steel sampling cup was lowered into the water and collected surface water was poured into a new, laboratory-supplied container with the cap immediately applied once the container was full.

Item	Details
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and trip blanks samples. Refer to **Appendix C** for assessment of QA/QC sample data.
Sample analysis	All primary samples were submitted for PFAS suite using the standard levels of detection. ALS Brisbane, QLD was used as the primary laboratory. NMI of Sydney, NSW was used as the secondary laboratory. Chain of Custody Forms are presented in **Appendix D**. Laboratory certificates are presented in **Appendix E**.

3.3 Sediment Sampling Methodology

Table 6 Sediment Sampling Methodology

Item	Details
Sampling Collection Methodology	Samples representative of potentially deposited sediments were collected from within the water body (if possible) using a decontaminated steel trowel. At each location, a new, laboratory supplied container was used for each sample with the cap immediately applied once the container was full.
Logging	Sediment characteristics were recorded for each sample.
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits). Refer to **Appendix C** for assessment of QA/QC sample data.
Sample analysis	All primary samples were submitted for PFAS suite using the standard levels of detection. ALS Brisbane, Queensland was used as the primary laboratory. The NMI of Sydney, NSW was used as the secondary laboratory. Chain of Custody Forms are presented in **Appendix D**. Laboratory certificates are presented in **Appendix E**.

3.4 Adopted Screening Criteria

Adopted screening criteria references national guidance in the form of the PFAS NEMP, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset include the following:

- PFAS NEMP, (HEPA, 2020)
- Department of Health (DoH), 2019. *Health Based Guidance Values for PFAS for use in site investigations in Australia.* April 2017 [updated September 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 1999, Schedule B1*, as amended in 2013 (ASC NEPM, 2013).

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in **Table 7** below.

Table 7 Summary of Adopted Screening Criteria

Pathway	Compound	Criteria	Comment / Reference
Human Health Receptors			
Recreational use – surface water	PFOS + PFHxS	2 µg/L	The values are from NHMRC (2019). *All surface water results will be compared to these criteria.*
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater and marine (95% species protection values)	PFOS	0.13µg/L	The values are from the PFAS NEMP (HEPA, 2020). *All surface water and groundwater results will be compared to these criteria.*
	PFOA	220 µg/L	

There are no human health or ecological guideline values available for sediment.

3.5 Data Quality Objectives and Data Validation

The data quality objectives and data quality indicators adopted for these works are presented in the SAQP (AECOM, 2021).

Data validation assessment is provided in **Appendix C**.

Data validation procedures employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) (Defence, 2018 as amended 2019) Annex L requirements.

3.6 Deviations from the SAQP

No deviations from the SAQP (AECOM, 2021) were recorded during this sampling event.

4.0 Field Observations and Results

The April 2021 sampling event was completed between 07 April 2021 and 09 April 2021, commencing with groundwater gauging and deployment of HydraSleeves™. The results are summarised in following sections.

4.1 Groundwater

4.1.1 Observations and Field Measurements

Table 8 Groundwater Observations and Field Measurements

Compound	Criteria
Access	All monitoring wells were accessible, and samples were collected from all locations.
Monitoring Well Network	No monitoring wells were noted to be damaged during the fieldworks. Two monitoring wells (MW031 and MW036) at the Former WWII RAN Fuel Installation were blocked by tree roots. The tree roots were cleared using a decontaminated steel bailer however insufficient water was present at MW036 for HydraSleeve™ deployment. A grab sample was collected using a decontaminated steel bailer, following attempted removal of the tree roots. Sufficient water depth was achieved at MW031 for a sample to be retrieved using a HydraSleeve™.
Tidal Summary	Tidal samples were collected on 8 April 2021 (high tide) and 9 April 2021 (low tide). The Bureau of Meteorology (BOM, 2020) tidal summary for Cairns, located at (16°56'S, 145°47'E) was: • High tide at 07:49 8 April 2021 with a height of 3.11 m • Low tide at 14:05 9 April 2021 with a height of 0.86 m.
Field Observations	Groundwater from six monitoring well locations at HMAS Cairns at high tide (MW001, MW011, MW013, MW014, MW018 and MW019) had a sulphurous odour. Groundwater from six monitoring well locations at HMAS Cairns at low tide (MW007, MW011, MW013, MW014, MW018 and MW019) had a sulphurous odour. Groundwater colour ranged from clear, to brown and black. No other visible or olfactory indications of contamination were observed during the sampling of the monitoring wells. Field observations are presented **Table T1** in **Appendix B**.
Depth to Groundwater	At HMAS Cairns, depth to groundwater at high tide was between 0.587 and 1.976 metres below top of casing (mbtoc) and groundwater elevations were between 0.692 and 2.702 metres Australian Height Datum (mAHD). Depth to groundwater at low tide was between 0.569 and 3.046 mbtoc and groundwater elevations were between -0.548 and 2.09 mAHD. At the Former WWII RAN Fuel Installation depth to groundwater was between 0.753 and 2.921 mbtoc and groundwater elevations were between 1.434 and 4.139 mAHD. Groundwater gauging data are presented in **Table T1** in **Appendix B**.
Groundwater Flow Direction	Groundwater contours and inferred groundwater flow directions at HMAS Cairns at both high and low tide, and the Former WWII RAN Fuel Installation in April 2021 are shown on **Figure 3A** and **Figure 3B** in **Appendix A**. Groundwater is inferred to flow predominantly in an easterly direction at HMAS Cairns towards Trinity Inlet with some tidal influence observed between high and low tides. The inferred groundwater flow direction at the Former WWII RAN Fuel Installation is to the south-east towards Lily Creek.

Compound	Criteria
Water quality parameters	Groundwater quality parameters were measured prior to collecting groundwater samples. The readings are presented in **Table T1** in **Appendix B** and are summarised below. At HMAS Cairns: • DO results ranged between 0.01 mg/L (MW001 and MW014) and 6.61 mg/L (MW017) at high tide, and between 0.0 mg/L (MW001) and 5.78 mg/L (MW015) at low tide indicating low to well oxygenated conditions. • EC ranged from 2,038 µS/cm (MW011) to 44,946 µS/cm (MW016) at high tide, and from 839 µS/cm (MW011) to 56,289 µS/cm (MW016) at low tide indicating saline conditions in groundwater. • pH ranged from 6.56 (MW017) to 7.44 (MW015) at high tide, and from 6.64 (MW002 and MW016) to 7.41 (MW015 and MW018) at low tide indicating slightly acidic to neutral conditions. • ORP ranged from -279.5 mV (MW014) to 235.3 mV (MW017) at high tide, and from -327.0 mV (MW014) to 141.8 mV (MW017) at low tide, indicating mildly oxidising to mildly reducing conditions. • Temperature ranged from 27.4°C (MW004) to 31.7°C (MW016) at high tide, and from 29.7°C (MW009 and MW015) to 33.6°C (MW016) at low tide. At the Former WWII RAN Fuel Installation: • DO results ranged between 2.81 mg/L (MW031) and 3.53 mg/L (MW036) indicating moderate oxygenated conditions. • EC ranged from 382 µS/cm (MW031) to 918 µS/cm (MW035) indicating fresh to brackish groundwater conditions. • pH ranged from 5.89 (MW031) to 6.46 (MW035 and MW036) indicating slightly acidic conditions. • ORP ranged from -8.1 mV (MW031) to 54.1 mV (MW035) indicating slightly reducing to oxidising conditions. • Temperature ranged from 25.2°C (MW031) to 26.3°C (MW036).
Weather Conditions	Weather was clear, hot, and humid during the sampling event.
Estate Management Works or Training Activities	During the sampling event recent construction works were noted in the vicinity of MW011. A concrete plinth has also been installed on MW011. There was also maintenance works occurring within the Defence Fuel Installation (DFI) located at the northern extent of HMAS Cairns. These works are not expected to have any impact on the results of this report. Works that were noted in the September/October 2020 sampling event near MW014 have been completed and it appears that an underground service has now been installed beside the well.

4.1.2 Analytical Results

All of the 33 groundwater samples collected during this event reported concentrations of PFAS compounds above the laboratory LOR. The groundwater analytical results from this sampling event are presented in **Table T2** in **Appendix B**. 26 samples from HMAS Cairns and three samples from the Former WWII RAN Fuel Installation exceeded the adopted ecological guideline values for PFOS.

Concentrations between high and low tide sampling were generally within the same order of magnitude with the exception of samples collected at MW001 and MW019.

Historical groundwater results presented in **Table T7**, **Appendix B**. There were no first-time detections or first-time exceedances of guideline values detected in groundwater during this sampling event.

4.2 Surface Water

4.2.1 Observations and Field Measurements

Table 9 Surface Water Observations and Field Measurements

Compound	Criteria
Access	All surface water sampling locations were accessible, and samples were collected from all locations.
Field Observations	Surface water colour ranged from dark olive brown, light olive brown, yellowish brown and dark reddish brown.No visual or olfactory indications of contamination were observed during the sampling of the surface water sampling locations. Field observations are presented in **Table T3** in **Appendix B**.
Water quality parameters	Surface water quality parameters were measured prior to collecting surface water samples. The readings are presented in **Table T3** in **Appendix B** and are summarised below. At HMAS Cairns: • DO ranged from 1.85 mg/L (SW033) to 4.06 mg/L (SW032) indicating well oxygenated conditions. • EC ranged from 36,172 µS/cm (SW034) to 51,516 µS/cm (SW030) indicating saline conditions. • pH ranged from 6.92 (SW034) to 7.88 (SW032) indicating near neutral to slightly alkaline conditions. • ORP ranged from 96.5 mV (SW033) to 232.4 mV (SW034) indicating moderately oxidising conditions. • Temperature ranged from 27.8°C (SW034) and 31.2°C (SW022). At the Former WWII RAN Fuel Installation: • DO ranged from 3.65 mg/L (SW101) to 6.07 mg/L (SW100) indicating moderate to well oxygenated conditions. • EC ranged from 1,568 µS/cm (SW101) to 42,157 µS/cm (SW100) indicating brackish to saline conditions. • pH ranged from 6.84 (SW036) to 8.04 (SW101) indicating near neutral conditions. • ORP ranged from 109.6 mV (SW101) to 263.7 mV (SW036) indicating mildly oxidising conditions. • Temperature ranged from 26.4°C (SW101) and 27.8°C (SW100).
Weather Conditions	Weather was clear, hot and humid during the sampling event.
Estate Management Works or Training Activities	During the sampling event, no notable estate works or training activities were observed in the vicinity of sampling locations.

4.2.2 Analytical Results

Of the nine surface water samples collected during this event, six samples reported concentrations of PFAS compounds above the laboratory LOR. The surface water analytical results from this sampling event are presented in **Table T4** in **Appendix B**. One surface water sample from HMAS Cairns exceeded the adopted ecological guideline value for PFOS. There were no exceedances of guideline values at the Former WWII RAN Fuel Installation.

Historical surface water results presented in **Table T8**, **Appendix B**. There were no first-time detections or first-time exceedances of guideline values detected in surface water during this sampling event.

4.3 Sediment

4.3.1 Observations and Field Measurements

Table 10 Sediment Observations and Field Measurements

Compound	Criteria
Access	All sediment sampling locations were accessible, and samples were collected from all locations.
Field Observations	An organic odour was noted for the sediment locations SD032 and SD035. No other visible or olfactory indications of contamination were observed during the sampling of the sediment locations. Sediment logging data are presented in **Table T5** in **Appendix B**.
Weather Conditions	Weather was clear, hot and humid during the sampling event.
Estate Management Works or Training Activities	During the sampling event no notable estate works or training activities were observed in the vicinity of sampling locations.

4.3.2 Analytical Results

Of the nine sediment samples collected during this event, seven samples reported concentrations of PFAS compounds above the laboratory LOR. The sediment analytical results from this sampling event are presented in **Table T6** in **Appendix B**.

Historical sediment results presented in **Table T9**, **Appendix B**. First-time detections of PFOS+PFHxS in sediment are presented in **Table 11** below and on **Figure 4A** in **Appendix A**.

Table 11 First Time Detections of PFAS in Sediment

Sediment Locations	PFOA concentration (mg/kg)	PFOS+PFHxS concentration (mg/kg)
SD100	<0.0002	0.0003

Concentrations have been rounded to four decimal places.
*Blue cells denote first time detection above LOR.

5.0 Summary and Next Sampling Event

5.1 Summary of Monitoring Event

A groundwater, surface water and sediment monitoring event was completed at HMAS Cairns and the Former WWII RAN Fuel Installation between 7 April and 9 April 2021. The program included sampling of 18 groundwater monitoring wells including 15 wells at HMAS Cairns at both high and low tides and three wells at the Former WWII RAN Fuel Installation, and collection of co-located surface water and sediment samples at nine locations including six locations at HMAS Cairns and three locations at the Former WWII RAN Fuel Installation.

Table 12 summarises the findings of the April 2021 sampling event and the recommended actions.

Table 12 Summary of Sampling Event

Item	Comment	Recommended Actions
Groundwater: Access to sampling locations and monitoring well network condition.	All of the 18 monitoring well locations were accessible and able to be sampled.	Ongoing monitoring in accordance with the OMP.
	No issues were identified in 15 of the 18 monitoring wells sampled. Sediment from the surrounding ground surface was discovered in the gatic of MW001 above the top of casing level. Sediment was removed from gatic before well cap was removed to prevent sediment from falling into sample. Two monitoring wells (MW031 and MW036) at the Former WWII RAN Fuel Installation were obstructed by tree roots. The well at MW036 was unable to be sampled via HydraSleeve™ and a groundwater sample was collected via decontaminated steel bailer. Sufficient groundwater was able to be retrieved using a HydraSleeve™ at MW031.	Replace gatic seal at MW001. Field staff to continue to collect sample at MW031 and MW036 via decontaminated steel bailer as necessary.
Sediment/Surface Water: Access to sampling locations.	All nine surface water and sediment locations were accessible and able to be sampled.	Ongoing monitoring in accordance with the OMP.
Analytical Results	PFAS compounds were detected above laboratory LOR in all 33 groundwater samples. PFAS compounds were detected above laboratory LOR in six surface water samples. PFAS compounds were detected above laboratory LOR in seven sediment samples.	Ongoing monitoring in accordance with the OMP.
First-time detections of PFOA or PFOS+PFHxS	One first time detection above the LOR was detected for PFOS at SD100. No other first-time detections of PFAS above the laboratory limit of reporting were recorded in any of the groundwater, surface water or sediment samples collected.	Ongoing monitoring in accordance with the OMP.

Item	Comment	Recommended Actions
First-time exceedances of screening criteria for PFOS, PFOA or PFOS+PFHxS	There were no first-time exceedances of the NHMRC (2019) recreational use guidelines or the 95% species protection ecological guidelines (HEPA, 2020) for surface water or groundwater.	Ongoing monitoring in accordance with the OMP.

5.2 Upcoming Sampling Events

The next biannual sampling event is scheduled for September/October 2021.

5.3 Upcoming Annual Interpretive Report

The next annual interpretative report is scheduled for January 2022.

6.0 References

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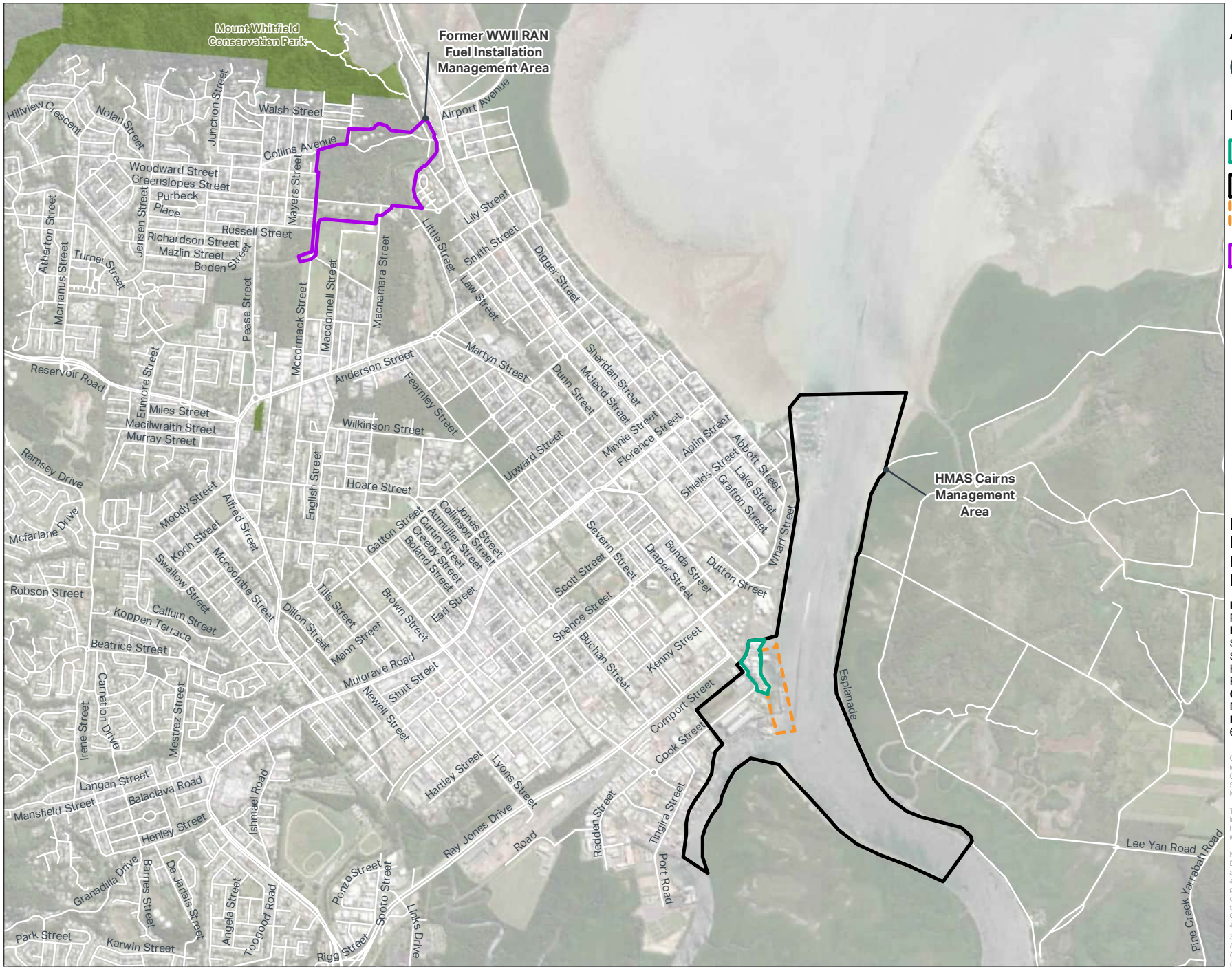
Appendix A

Figures

Appendix A Figures



Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area
- Former WWII RAN Fuel Installation Management Area

FIGURE 1:
HMAS CAIRNS AND FORMER WWII RAN FUEL INSTALLATION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, September/October 2020 - PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns
- Management Area
- Seabed Area
- Groundwater Monitoring Location
- Combined Surface and Sediment Location

FIGURE 2A: HMAS CAIRNS - SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2021 – OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Surface Water and Sediment Location

FIGURE 2B:
FORMER WWII RAN FUEL INSTALLATION – SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2021 – PFAS OMP - HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns
- Management Area
- Seabed Area
- Groundwater Contours at High Tide (mAHD)
- Groundwater Contours at Low Tide (mAHD)
- Groundwater Monitoring Location
- Inferred Groundwater Flow Direction

FIGURE 3A: HMAS CAIRNS - GROUNDWATER ELEVATION AND INFERRED GROUNDWATER FLOW DIRECTION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2021 – OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Groundwater Contours (mAHD)
- Inferred Groundwater Flow Direction

FIGURE 3B: FORMER WWII RAN FUEL GROUNDWATER ELEVATION AND INFERRED GROUNDWATER FLOW DIRECTION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2021 – PFAS OMP - HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- First time detect of PFOS+PFHxS

FIGURE 4A:
SEDIMENT DEVIATIONS FROM HISTORICAL DATA SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2021 - PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Appendix B

Tables

Appendix B Tables

Table T1: Groundwater Gauging and Water Quality Parameter Results

Property ID	Location ID	HydraSleeve Deployment Date	HydraSleeve Deployment Time	Screen Interval (mbgl)	Hydrasleeve Deployment Collar Depth* (mbgl)	Sample Date	Sample Time	Well Depth (mbtoc)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Condition of Gatic	DO (mg/L)	EC (µS/cm)	pH	Eh/Redox (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method
HMAS Cairns High Tide																						
0009	MW001	08/04/2021	7:35	2.5 – 5.5	4.04	09/04/2021	08:43	5.34	0.624	2.494	1.87	Damaged	0.01	41817	6.76	-234.5	30.6	Medium	Yellow / Brown	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW002	08/04/2021	7:38	1.5 – 4.5	2.94	09/04/2021	08:28	4.24	0.853	2.564	1.711	Good	1.18	2480	6.76	-43.7	29.8	Low	Yellow / Brown	No odour	No sheen	Hydrasleeve
0009	MW003	08/04/2021	7:41	2.5 – 5.5	3.6	09/04/2021	08:15	4.9	0.999	2.542	1.543	Good	0.79	17136	6.97	-38.5	30.1	Low	Yellow / Brown	No odour	No sheen	Hydrasleeve
0009	MW004	08/04/2021	7:45	2.0 – 4.0	2.6	09/04/2021	07:31	3.9	1.186	2.543	1.357	Good	2.55	15289	7.06	56.6	27.4	Low	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW005	08/04/2021	7:55	2.0 – 4.0	2.29	09/04/2021	07:45	3.59	1.263	2.548	1.285	Good	1.62	9153	7.08	57.8	28.6	Low	Clear	No odour	No sheen	Hydrasleeve
0009	MW007	08/04/2021	7:15	1.5 – 4.0	2.31	09/04/2021	08:52	3.61	0.969	2.602	1.633	Good	2.31	4706	7.24	-153.9	31.7	Medium	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW009	08/04/2021	7:35	1.5 – 4.5	3.12	09/04/2021	08:07	4.42	0.587	2.659	2.072	Good	1.93	4397	6.92	-30.7	28.1	Low	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW011	08/04/2021	7:25	2.0 – 3.0	1.63	09/04/2021	07:52	2.93	1.288	2.376	1.088	Good	1.96	2038	7.13	-91	27.9	Low	Light Yellow	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW013	08/04/2021	7:50	2.0 – 5.0	3.67	09/04/2021	08:02	4.97	1.098	2.437	1.339	Good	0.76	8814	7.2	-164.2	29.3	Low	Grey / Brown	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW014	08/04/2021	7:15	2.0 – 5.0	3.71	09/04/2021	09:13	5.01	1.259	2.395	1.136	Good	0.01	24800	7.08	-279.5	28.7	Low	Clear	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW015	08/04/2021	7:20	2.0 – 5.0	3.74	09/04/2021	09:04	5.04	1.094	2.515	1.421	Good	6.41	36755	7.44	-29.8	28.2	Clear	Clear	No odour	No sheen	Hydrasleeve
0009	MW016	08/04/2021	7:32	2.0 – 5.0	3.75	09/04/2021	08:40	5.05	0.81	2.702	1.892	Good	1.87	44946	6.89	-165.4	31.6	Medium	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW017	08/04/2021	7:18	2.0 – 5.0	3.61	09/04/2021	07:23	4.91	1.086	2.498	1.412	Good	6.61	30221	6.56	235.3	27.7	Low	Light Yellow	No odour	No sheen	Hydrasleeve
0009	MW018	08/04/2021	7:23	2.0 – 5.0	3.63	09/04/2021	07:40	4.93	1.976	2.668	0.692	Good	1.86	8842	7.31	-109.8	28.4	Low	Light Brown	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW019	08/04/2021	7:40	2.0 – 5.0	3.71	09/04/2021	08:29	5.01	1.172	1.913	0.741	Good	0.05	30820	6.63	-269.3	28.2	Medium	Black / Grey	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
HMAS Cairns Low Tide																						
0009	MW001	07/04/2021	12:15	2.5 – 5.5	4.04	08/04/2021	14:47	5.34	0.621	2.494	1.873	Damaged	0	31217	6.82	-194.9	33	Low	Grey / Brown	No odour	No sheen	Hydrasleeve
0009	MW002	07/04/2021	12:21	1.5 – 4.5	2.94	08/04/2021	14:35	4.24	0.913	2.564	1.651	Good	0.4	4726	6.64	-73.4	32.4	Low	Yellow / Brown	No odour	No sheen	Hydrasleeve
0009	MW003	07/04/2021	12:25	2.5 – 5.5	3.6	08/04/2021	14:22	4.9	0.988	2.542	1.554	Good	0.62	19791	6.86	-61.7	32.7	Low	Yellow / Brown	No odour	No sheen	Hydrasleeve
0009	MW004	07/04/2021	12:32	2.0 – 4.0	2.6	08/04/2021	13:25	3.9	1.994	2.543	0.549	Good	0.48	31105	7.18	-234.8	31.5	Low	Clear	No odour	No sheen	Hydrasleeve
0009	MW005	07/04/2021	12:38	2.0 – 4.0	2.29	08/04/2021	13:37	3.59	2.068	2.548	0.48	Good	1.29	17024	7.19	-78.2	32.6	Low	Clear	No odour	No sheen	Hydrasleeve
0009	MW007	07/04/2021	12:32	1.5 – 4.0	2.31	08/04/2021	14:29	3.61	0.97	2.602	1.632	Good	1.74	4321	7.16	-129.3	33.3	Low	Light Yellow	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW009	07/04/2021	12:42	1.5 – 4.5	3.12	08/04/2021	13:44	4.42	0.569	2.659	2.09	Good	2.48	3523	6.9	9.2	29.7	Clear	Clear	No odour	No sheen	Hydrasleeve
0009	MW011	07/04/2021	13:03	2.0 – 3.0	1.63	08/04/2021	13:30	2.93	1.321	2.376	1.055	Good	2.09	839	7.12	-60.4	30.5	Clear	Clear	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW013	07/04/2021	12:52	2.0 – 5.0	3.67	08/04/2021	13:59	4.97	1.954	2.437	0.483	Good	0.16	8940	6.96	-184.1	32.4	Low	Grey / Brown	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW014	07/04/2021	12:20	2.0 – 5.0	3.71	08/04/2021	13:03	5.01	1.263	2.395	1.132	Good	0.09	48301	6.89	-327.1	31.2	Low	Light Brown	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW015	07/04/2021	12:24	2.0 – 5.0	3.74	08/04/2021	14:47	5.04	2.855	2.515	-0.34	Good	5.78	40361	7.41	37.1	29.7	Clear	Clear	No odour	No sheen	Hydrasleeve
0009	MW016	07/04/2021	13:31	2.0 – 5.0	3.75	08/04/2021	14:17	5.05	0.777	2.702	1.925	Good	1.51	56289	6.64	-65.2	33.6	Low	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW017	07/04/2021	13:20	2.0 – 5.0	3.61	08/04/2021	12:51	4.91	3.046	2.498	-0.548	Good	3.67	46243	6.93	141.8	32	Low	Light Brown	No odour	No sheen	Hydrasleeve
0009	MW018	07/04/2021	12:57	2.0 – 5.0	3.63	08/04/2021	13:08	4.93	1.98	2.668	0.688	Good	1.13	10571	7.41	-181.9	30.8	Clear	Clear	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW019	07/04/2021	13:32	2.0 – 5.0	3.71	08/04/2021	14:05	5.01	1.206	1.913	0.707	Good	0.14	15738	6.68	-139.7	31.7	Medium	Yellow / Brown	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
Former WWII RAN Fuel Installation																						
0009	MW031	07/04/2021	10:01	2.5 – 4.5	4.08	08/04/2021	10:14	5.38	2.921	7.06	4.139	Good	2.81	382	6.46	-8.1	25.2	Medium	Light Brown	Rotten egg smell (sulfurous)	No sheen	Hydrasleeve
0009	MW035	07/04/2021	10:25	1.0 – 2.0	1.45	08/04/2021	10:39	2.75	0.753	2.426	1.673	Good	2.93	918	5.89	54.1	25.6	Medium	Yellow / Brown	No odour	No sheen	Hydrasleeve
0009	MW036	07/04/2021	10:15	0.7 – 1.7	-	08/04/2021	10:36	2.05	1.444	2.878	1.434	Good	3.53	446.6	6.05	-7.6	26.3	Medium	Light Brown	No odour	No sheen	Bailer

*HydraSleeves were installed with bottom weight touching the bottom of the well, HydraSleeve installation depth was claculated based on HydraSleeve length of 1.3 m full length and 0.3 m if installed with a top weight.

mbtoc	metres below top of casing
mAHD	metres above Australian Height Datum
DO	Dissolved Oxygen
EC	Electrical Conductivity
ORP	Oxidation Reduction Potential
Temp	Temperature
mg/L	milligrams per litre
µS/cm	microsiemens per centimetre
mV	millivolt
°C	degrees Celcius
-	no data collected

Table T2: Groundwater Analytical Results

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																														
HMAS Cairns																																
MW001	0009_MW001_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.11	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.22	0.54	0.04	0.10	<0.05	<0.02	<0.02	<0.02	0.09	0.04	0.63	1.17
	0009_MW001_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.13	0.32	0.03	0.05	<0.05	<0.02	<0.02	<0.02	**0.23**	0.03	0.55	0.88
MW002	0009_MW002_HT_210409	9/04/2021	<0.38	<0.38	<0.38	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	1.34	<1.9	<0.38	<0.38	<0.38	1.03	1.80	6.04	14.10	1.38	1.45	<0.96	<0.38	<0.38	<0.38	**78.60**	2.25	92.70	108.00
	0009_MW002_LT_210408	8/04/2021	<0.37	<0.37	<0.37	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	1.59	<1.8	<0.37	<0.37	<0.37	1.07	2.11	6.55	18.10	1.37	1.59	<0.92	<0.37	<0.37	<0.37	**85.10**	2.40	103.00	120.00
MW003	0009_MW003_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.94	0.30	<0.02	0.02	<0.02	0.33	0.32	2.58	6.59	0.53	0.86	<0.05	<0.02	<0.02	<0.02	**4.84**	0.64	11.40	18.00
	0009_MW003_LT_210408	8/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.69	0.20	<0.02	<0.02	<0.02	0.25	0.24	1.79	5.43	0.41	0.60	<0.05	<0.02	<0.02	0.02	**4.45**	0.46	9.88	14.60
MW004	0009_MW004_HT_210409	9/04/2021	<0.19	<0.19	<0.19	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	0.90	<0.9	<0.19	<0.19	<0.19	0.73	0.92	2.56	7.93	1.27	0.73	<0.47	<0.19	<0.19	<0.19	**31.50**	1.51	39.40	48.00
	0009_MW004_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	0.66	<0.9	<0.18	<0.18	<0.18	0.53	0.59	1.67	7.01	0.81	0.52	<0.46	<0.18	<0.18	<0.18	**27.00**	1.16	34.00	40.00
MW005	0009_MW005_HT_210409	9/04/2021	<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	0.65	<1	<0.19	<0.19	<0.19	0.49	0.80	1.96	6.94	1.04	0.55	<0.48	<0.19	<0.19	<0.19	**47.30**	1.08	54.20	60.80
	0009_MW005_LT_210408	8/04/2021	<0.08	<0.08	<0.08	<0.08	<0.19	<0.08	<0.19	<0.08	<0.19	<0.08	<0.19	0.49	0.40	<0.08	<0.08	<0.08	0.40	0.65	1.48	6.70	0.84	0.50	<0.19	<0.08	<0.08	0.13	**40.60**	0.89	47.30	53.10
MW007	0009_MW007_HT_210409	9/04/2021	<0.24	<0.24	<0.24	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	0.39	<1.2	<0.24	<0.24	<0.24	<0.32	0.36	1.29	4.27	0.34	0.66	<0.61	<0.24	<0.24	<0.24	**45.50**	0.58	49.80	53.40
	0009_MW007_LT_210408	8/04/2021	<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	0.19	<1	<0.19	<0.19	<0.19	<0.19	0.34	0.71	2.58	0.23	0.29	<0.48	<0.19	<0.19	<0.19	**35.00**	0.38	37.60	39.70
MW009	0009_MW009_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.18**	<0.01	0.26	0.26
	0009_MW009_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.10	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.10	<0.01	0.20	0.20
MW011	0009_MW011_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.04	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**0.23**	0.18	0.23	0.52
	0009_MW011_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	0.07	0.14	0.27
MW013	0009_MW013_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.05	0.05	0.15	0.55	0.07	0.05	<0.05	<0.02	<0.02	0.08	**2.49**	0.08	3.04	3.63
	0009_MW013_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.05	0.06	0.17	0.97	0.10	0.08	<0.05	<0.02	<0.02	0.24	**3.58**	0.09	4.55	5.40
MW014	0009_MW014_HT_210409	9/04/2021	<0.18	<0.18	<0.18	<0.18	<0.45	<0.18	<0.45	<0.18	<0.45	<0.18	<0.45	0.58	<0.9	<0.18	<0.18	<0.18	0.36	0.54	2.89	7.99	0.65	0.49	<0.45	<0.18	<0.18	<0.18	**42.00**	0.73	50.00	56.20
	0009_MW014_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	0.69	<0.9	<0.18	<0.18	<0.18	0.46	0.69	3.03	11.50	0.64	0.51	<0.46	<0.18	<0.18	<0.18	**48.50**	0.91	60.00	66.90
MW015	0009_MW015_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.10	0.27	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	**2.52**	0.03	2.79	2.98
	0009_MW015_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.21	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**1.44**	0.02	1.65	1.78
MW016	0009_MW016_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.20	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.42	1.72	0.09	0.34	<0.05	<0.02	<0.02	<0.02	**0.22**	0.01	1.94	3.05
	0009_MW016_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.31	<0.1	<0.02	<0.02	<0.02	0.08	<0.02	0.58	2.59	0.16	0.38	<0.05	<0.02	<0.02	<0.02	**0.15**	0.02	2.74	4.27
MW017	0009_MW017_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.23	0.02	0.02	<0.05	<0.02	<0.02	<0.02	**0.97**	0.02	1.20	1.31
	0009_MW017_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.34	0.03	0.04	<0.05	<0.02	<0.02	<0.02	**1.67**	0.03	2.01	2.22
MW018	0009_MW018_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_MW018_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
MW019	0009_MW019_HT_210409	9/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.07	0.13	0.16	0.47	0.10	0.05	<0.05	<0.02	<0.02	<0.02	**4.21**	0.14	4.68	5.43
	0009_MW019_LT_210408	8/04/2021	<0.1	0.31	<0.1	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.5	<0.1	<0.1	<0.1	0.11	0.24	0.26	0.86	0.15	<0.1	<0.24	<0.1	<0.1	<0.1	**11.70**	0.26	12.60	13.90
Former WWII RAN Fuel Installation																																
MW031	0009_MW031_210408	8/04/2021	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.24**	<0.01	0.30	0.37
MW035	0009_MW035_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.50	<0.02	0.16	<0.05	<0.02	<0.02	<0.02	**0.13**	<0.01	0.63	0.96
MW036	0009_MW036_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.25	<0.02	0.06	<0.05	<0.02	<0.02	<0.02	**0.29**	0.01	0.54	0.71

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than
NEMP is National Environmental Management Plan
Denotes first time detection above LOR of PFOS + PFHxS or PFOA
Denotes new exceedance of ecological or human health guideline values

Table T3: Surface Water Quality Parameter Results

Property ID	Sample ID	Sample Date	Sample Time	DO (mg/L)	EC (uS/cm)	pH	Redox (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method
HMAS Cairns													
0009	SW030	07/04/2021	14:40	2.4	51516	7.69	108.1	32.2	Turbid	Dark Olive Brown	No odour	No sheen	Grab
0009	SW031	07/04/2021	14:50	2.93	50693	7.74	114	30.7	Turbid	Dark Olive Brown	No odour	No sheen	Grab
0009	SW032	07/04/2021	15:18	4.06	50778	7.88	103.9	31.2	Turbid	Dark Olive Brown	No odour	No sheen	Grab
0009	SW033	07/04/2021	15:30	1.85	40003	7.62	96.5	29.3	Turbid	Dark Olive Brown	No odour	No sheen	Grab
0009	SW034	07/04/2021	11:35	3.17	36172	6.92	232.4	27.8	Medium	Light Olive Brown	No odour	No sheen	Grab
0009	SW035	07/04/2021	11:46	3.04	39778	7.25	183.3	29.2	Medium	Light Olive Brown	No odour	No sheen	Grab
Former WWII RAN Fuel Installation													
0009	SW036	07/04/2021	08:29	5.7	41952	6.84	263.7	27.6	Turbid	Light Olive Brown	No odour	No sheen	Grab
0009	SW100	07/04/2021	09:05	6.07	42157	7.72	166	27.8	Turbid	Yellowish Brown	No odour	No sheen	Grab
0009	SW101	07/04/2021	09:10	3.65	1568	8.04	109.6	26.4	Low	Dark Reddish Brown	No odour	No sheen	Grab

DO	Dissolved Oxygen
EC	Electrical Conductivity
Redox	Redox Oxidation Potential
Temp	Temperature
mg/L	milligrams per litre
µs/cm	microsiemens per centimetre
mV	millivolt
°C	degrees Celcius

Table T4: Surface Water Analytical Results

		4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
NHMRC (2019) PFAS Recreational Water																													**10**		**2**
PFAS NEMP 2020 Freshwater and Interim Marine 95%																												***0.13***	***220***		
Location ID	**Sample ID**	**Sample Date**																													
HMAS Cairns																															
SW030	0009_SW030_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	***0.15***	<0.01	0.20	0.20
SW031	0009_SW031_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW032	0009_SW032_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
SW033	0009_SW033_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.03	0.03
SW034	0009_SW034_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.09	<0.01	0.12	0.12
SW035	0009_SW035_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
Former WWII RAN Fuel Installation																															
SW036	0009_SW036_210408	8/04/2021	<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	0.08
SW100	0009_SW100_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW101	0009_SW101_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than
NEMP is National Environmental Management Plan
NHMRC is National Health Medical Research Council
Denotes first time detection above LOR of PFOS + PFHxS, PFOS or PFOA
Denotes new exceedance of ecological or human health guideline values

Table T5: Sediment Observation Results

Property ID	Location ID	Sample Date	Sample Time	Sample Description	Odour	Sheen	Sample Method
HMAS Cairns							
0009	SD030	07/04/2021	14:40	sandy CLAY,medium plasticity, medium sands, grey, soft, shell presence, low organic content, saturated	none	none	Grab
0009	SD031	07/04/2021	14:50	Clayey SAND, medium sands, brown orange, loose, shell presence, low organic content, no odur, saturated	none	none	Grab
0009	SD032	07/04/2021	15:18	clayey SILT, grey/brown, soft, trace fine sands, low organic content, organic odour, saturated	organic odour	none	Grab
0009	SD033	07/04/2021	15:30	clayey SILT, grey/black, soft, trace fine sand, high organic content, saturated	none	none	Grab
0009	SD034	07/04/2021	11:35	sandy gravelly SILT and sandy gravelly CLAY, low plasticity with coarse medium grained gravels, dark grey/brown, soft, some organics and shell grit, medium organic content, wet	none	none	Grab
0009	SD035	07/04/2021	11:46	silty gravelly CLAY,medium plasticity, grey/brown, soft	organic odour	none	Grab
Former WWII RAN Fuel Installation							
0009	SD036	07/04/2021	08:29	gravelly CLAY, medium to corse angular gravels, low to medium plasticity, grey brown, high organic content, decaying leaves and organic matter	none	none	Grab
0009	SD100	07/04/2021	09:05	silty clayey GRAVEL, medium to coarse angular gravels, yellowish brown, saturated, loose	none	none	Grab
0009	SD101	07/04/2021	09:10	GRAVEL, fine to medium angular gravels, grey, loose	none	none	Grab

Table T6: Sediment Analytical Results

	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
Units	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	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Location ID	**Sample ID**	**Date**																													
HMAS Cairns																															
SD030	0009_SD030_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0115	<0.0002	0.0121	0.0129
SD031	0009_SD031_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0024	<0.0002	0.0024	0.0027
SD032	0009_SD032_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0024	<0.0002	0.0024	0.0024
SD033	0009_SD033_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
SD034	0009_SD034_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.001	<0.0002	0.0012	0.0012
SD035	0009_SD035_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0009	<0.0002	0.0009	0.0009
Former WWII RAN Fuel Installation																															
SD036	0009_SD036_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD100	0009_SD100_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	0.0003	0.0003
SD101	0009_SD101_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

LOR is limit of reporting
mg/kg is milligrams per kilogram
"<" denotes concentration less than
Denotes first time detection above LOR of PFOS + PFHxS or PFOA

Table T7: Historical Ground Water Results

Location ID	Sample ID	Sample Date	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
HMAS Cairns																																
MW001	MW01_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	<0.05	<0.01	<0.01	<0.01	0.042	0.031	0.29	0.71	0.038	0.11	<0.01	<0.01	<0.01	<0.01	0.025	0.067	0.735	1.529
	MW01_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.066	0.027	<0.001	<0.001	<0.001	0.023	0.039	0.16	0.37	0.027	0.054	<0.001	<0.001	<0.001	<0.001	0.022	0.035	0.392	0.873
	MW01_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.045	0.011	<0.001	<0.001	<0.001	0.013	0.025	0.058	0.25	0.014	0.032	<0.001	<0.001	<0.001	<0.001	0.038	0.019	0.288	0.555
	MW01_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.049	0.02	<0.001	<0.001	<0.001	0.016	0.006	0.1	0.33	0.021	0.046	<0.001	<0.001	<0.001	<0.001	0.1	0.016	0.43	0.734
	0009_MW001_200430	29/04/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.1	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.16	0.4	<0.02	0.08	<0.05	<0.02	<0.02	<0.02	0.31	0.02	0.71	1.07
	0009_MW001_HT_200930	30/09/2020	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	0.04	0.02	0.24	0.73	0.04	0.09	<0.05	<0.02	<0.02	<0.02	0.16	0.05	0.89	1.56
	0009_MW001_LT_200930	30/09/2020	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.53	0.1	<0.02	<0.02	<0.02	0.11	0.08	0.76	2.02	0.15	0.42	<0.05	<0.02	<0.02	<0.02	0.26	0.17	2.28	4.66
	0009_MW001_210322	22/03/2021	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.50	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.18	<0.10	<0.10	<0.25	<0.10	<0.10	<0.10	<0.10	<0.10	0.18	0.18
	0009_MW001_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.13	0.32	0.03	0.05	<0.05	<0.02	<0.02	<0.02	0.23	0.03	0.55	0.88
	0009_MW001_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.11	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.22	0.54	0.04	0.10	<0.05	<0.02	<0.02	<0.02	0.09	0.04	0.63	1.17
MW002	MW02_HIGH_190522	22/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	3.2	1.4	<0.1	<0.1	<0.1	1.9	2.2	14	36	2.4	3	<0.1	<0.1	<0.1	<0.1	46	4.1	82	-
	MW02_LOW_190523	23/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	3.2	1.4	<0.1	<0.1	<0.1	1.6	1.4	12	32	2	2.7	<0.1	<0.1	<0.1	<0.1	41	3.8	73	-
	MW02_LOW_20190618	18/06/2019	<0.001	0.046	0.02	<0.001	<0.005	<0.005	<0.005	0.052	<0.005	<0.005	<0.005	3.2	1.4	0.013	0.009	<0.001	1.8	2.4	11	31	2.4	3.3	<0.001	<0.001	<0.001	0.067	49	3.8	80	112.407
	MW02_LOW_20190618_TOPA	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	3.5	2.3	0.02	0.02	<0.01	2.4	2.1	37	31	5.7	3.3	<0.01	<0.01	<0.01	0.07	55	3.7	86	148.32
	MW02_HIGH_20190619	19/06/2019	<0.001	0.064	0.024	<0.001	<0.005	<0.005	<0.005	0.056	<0.005	<0.005	<0.005	3.6	1.4	0.013	0.006	<0.001	1.9	1.9	11	26	1.1	2.4	<0.001	<0.001	<0.001	0.062	53	3.8	79	108.825
	0009_MW002_200430	30/04/2020	<0.49	<0.49	<0.49	<0.49	<1.22	<0.49	<1.22	<0.49	<1.22	<0.49	<1.22	3.5	<2.4	<0.49	<0.49	<0.49	2	3.75	12.3	34	2.14	4.33	<1.22	<0.49	<0.49	<0.49	82.1	3.75	116	148
	0009_MW002_HT_200930	30/09/2020	<0.32	<0.32	<0.32	<0.32	<0.81	<0.32	<0.81	<0.32	<0.81	<0.32	<0.81	3.73	<1.6	<0.32	<0.32	<0.32	1.49	2.95	10.6	32.2	2.24	3.18	<0.81	<0.32	<0.32	<0.32	77.5	3.63	110	138
	0009_MW002_LT_200930	30/09/2020	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	2.6	<2.5	<0.50	<0.50	<0.50	1.5	2.35	9.35	29.2	1.65	2.5	<1.25	<0.50	<0.50	<0.50	66	3.35	95.2	118
	0009_MW002_210322	22/03/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.14	<0.05	<0.02	<0.05	3.17	1.01	<0.02	0.17	<0.02	1.86	3.64	11.2	33.5	2.35	3.31	<0.05	<0.02	<0.02	0.1	96.9	4.38	130	162
	0009_MW002_LT_210408	8/04/2021	<0.37	<0.37	<0.37	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	1.59	<1.8	<0.37	<0.37	<0.37	1.07	2.11	6.55	18.10	1.37	1.59	<0.92	<0.37	<0.37	<0.37	85.1	2.40	103.00	120.00
	0009_MW002_HT_210409	9/04/2021	<0.38	<0.38	<0.38	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	1.34	<1.9	<0.38	<0.38	<0.38	1.03	1.80	6.04	14.10	1.38	1.45	<0.96	<0.38	<0.38	<0.38	78.6	2.25	92.70	108.00
MW003	MW03_HIGH_190522	22/05/2019	<0.001	<0.005	0.002	<0.001	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	<0.005	0.21	0.09	0.008	<0.001	<0.001	0.11	0.24	0.54	2.4	0.18	0.42	<0.001	<0.001	0.001	0.021	7.8	0.23	10.2	12.453
	MW03_LOW_190523	23/05/2019	<0.001	0.007	0.002	<0.001	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.16	0.083	0.008	<0.001	<0.001	0.1	0.35	0.59	2.1	0.13	0.4	<0.001	<0.001	0.001	0.019	5.4	0.24	7.5	9.8
	MW03_LOW_20190618	18/06/2019	<0.001	0.011	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.9	0.27	0.003	<0.001	<0.001	0.3	0.57	2.5	8.8	0.42	1	<0.001	<0.001	<0.001	0.012	2	0.61	10.8	17.906
	MW03_HIGH_20190619	19/06/2019	<0.001	0.012	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1.1	0.28	0.003	<0.001	<0.001	0.33	0.6	3	9.4	0.81	1	<0.001	<0.001	<0.001	0.014	1.9	0.62	11.3	19.629
	0009_MW003_200430	30/04/2020	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	1.57	0.4	<0.02	<0.02	<0.02	0.38	0.25	3.25	8.3	0.75	1.43	<0.06	<0.02	<0.02	<0.02	2.93	0.72	11.2	20
	0009_MW003_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.33	<0.2	<0.03	<0.03	<0.03	0.11	0.15	0.75	3.16	0.21	0.31	<0.08	<0.03	<0.03	<0.03	5.58	0.24	8.74	10.8
	0009_MW003_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.36	<0.2	<0.03	<0.03	<0.03	0.12	0.18	0.85	3.59	0.22	0.35	<0.08	<0.03	<0.03	<0.03	6.62	0.29	10.2	12.6
	0009_MW003_210322	22/03/2021	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	1.67	<0.50	<0.10	<0.10	<0.10	0.54	0.66	4.51	12.7	0.95	1.71	<0.25	<0.10	<0.10	<0.10	2.01	1.05	14.7	25.8
	0009_MW003_LT_210408	8/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.69	0.20	<0.02	<0.02	<0.02	0.25	0.24	1.79	5.43	0.41	0.60	<0.05	<0.02	<0.02	0.02	4.45	0.46	9.88	14.60
	0009_MW003_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.94	0.30	<0.02	0.02	<0.02	0.33	0.32	2.58	6.59	0.53	0.86	<0.05	<0.02	<0.02	<0.02	4.84	0.64	11.40	18.00
MW004	MW04_HIGH_190522	22/05/2019	<0.001	0.006	0.015	<0.001	<0.005	<0.005	<0.005	0.034	<0.005	<0.005	<0.005	0.4	0.22	0.01	<0.001	<0.001	0.28	0.44	1	3.5	0.54	0.81	<0.001	<0.001	<0.001	0.018	9.5	0.47	13	17.483
	MW04_LOW_190523	23/05/2019	<0.001	0.005	0.012	<0.001	<0.005	<0.005	<0.005	0.045	<0.005	<0.005	<0.005	0.41	0.25	0.008	<0.001	<0.001	0.34	0.93	1.2	3.7	0.5	0.89	<0.001	<0.001	<0.001	0.022	8.5	0.65	12.2	17.782
	MW04_LOW_20190618	18/06/2019	<0.001	0.008	0.011	<0.001	<0.005	<0.005	<0.005	0.05	<0.005	<0.005	<0.005	0.41	0.23	0.01	<0.001	<0.001	0.32	0.41	1.2	4.9	0.44	0.57	<0.001	<0.001	0.001	0.017	11	0.56	15.9	20.497
	MW04_HIGH_20190619	19/06/2019	<0.001	0.006	0.007	<0.001	<0.005	<0.005	<0.005	0.046	<0.005	<0.005	<0.005	0.44	0.26	0.007	<0.001	<0.001	0.35	0.45	1.4	5	0.53	0.66	<0.001	<0.001	<0.001	0.015	7.7	0.56	12.7	17.721
	0009_MW004_200430	1/05/2020	<0.07	<0.07	<0.07	<0.07	<0.17	<0.07	<0.17	<0.07	<0.17	<0.07	<0.17	0.55	<0.3	<0.07	<0.07	<0.07	0.51	0.5	1.62	5.08	0.7	0.66	<0.17	<0.07	<0.07	<0.07	14.7	0.74	19.8	25.1
	0009_MW004_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.58	0.3	<0.03	<0.03	<0.03	0.37	0.37	1.35	5.22	0.66	0.52	<0.08	<0.03	<0.03	<0.03	10.6	0.72	15.8	20.7
	0009_MW004_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.48	0.2	<0.03	<0.03	<0.03	0.29	0.3	1.09	4.2	0.56	0.43	<0.08	<0.03	<0.03	<0.03	8.24	0.56	12.4	16.4
	0009_MW004_210322	22/03/2021	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	1.07	<0.50	<0.10	<0.10	<0.10	0.87	0.9	2.85	10.2	1.23	1.01	<0.25	<0.10	<0.10	<0.10	34.3	1.78	44.5	54.2
	0009_MW004_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	0.66	<0.9	<0.18	<0.18	<0.18	0.53	0.59	1.67	7.01	0.81	0.52	<0.46	<0.18	<0.18	<0.18	27	1.16	34.00	40.00
	0009_MW004_HT_210409	9/04/2021	<0.19	<0.19	<0.19	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	0.90	<0.9	<0.19	<0.19	<0.19	0.73	0.92	2.56	7.93	1.27	0.73	<0.47	<0.19	<0.19	<0.19	31.5	1.51	39.40	48.00
MW005	MW05_HIGH_190522	22/05/2019	<0.001	0.011	0.011	<0.001	<0.005	<0.005	<0.005	0.027	<0.005	<0.005	<0.005	0.32	0.22	0.012	0.004	<0.001	0.26	0.8	1.1	3.8	0.61	0.78	<0.001	<0.001	0.003	0.05	23	0.62	26.8	31.888
	MW05_LOW_190523	23/05/2019	<0.001	0.011	0.022	<0.001	<0.005	<0.005	<0.005	0.043	<0.005	<0.005	<0.005	0.31	0.19	0.026	0.005	<0.001	0.3	0.59	1.2	3.8	0.5	0.72	<0.001	<0.001	0.006	0.056	31	0.67	34.8	-
	MW05_LOW_20190618	18/06/2019	<0.001	0.009	0.007	<0.001	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	0.25	0.15	0.009	0.003	<0.001	0.21	0.58	0.97	4.1	0.42	0.4	<0.001	<0.001	0.002	0.035	18	0.48	22.1	25.983
	MW05_HIGH_20190619	19/06/2019	<0.001	0.009	0.005	<0.001	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	0.26	0.14	0.008	0.002	<0.001	0.19	0.56	0.92	3.6	0.4	0.41	<0.001	<0.001	0.002	0.033	14	0.43	17.6	21.317
	0009_MW005_200430	30/04/2020	<0.17	<0.17	<0.17	<0.17	<0.43	<0.17	<0.43	<0.17	<0.43	<0.17	<0.43	0.55	<0.9	<0.17	<0.17	<0.17	0.43	0.81	1.66	6.4	0.79	0.67	<0.43	<0.17	<0.17	<0.17	37.4	0.81	43.8	49.5
	0009_MW005_HT_200930	30/09/2020	<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	0.42	<0.3	<0.06	<0.06	<0.06	0.24	0.45	1.03	5.1	0.79	0.4	<0.16	<0.06	<0.06	0.06	24.4	0.58	29.5	33.5
	0009_MW005_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.39	0.2	<0.03	<0.03	<0.03	0.22	0.35	0.87	4.3	0.62	0.36	<0.08	<0.03	<0.03	0.06	20.7	0.52	25	28.6
	0009_MW005_210322	22/03/2021	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	0.8	<0.50	<0.10	<0.10	<0.10	0.51	0.97	2.33	9.2	0.99	0.74	<0.25	<0.10	<0.10	<0.10	55.8	1.34	65	72.7
	0009_MW005_LT_210408	8/04/2021	<0.08	<0.08	<0.08	<0.08	<0.19	<0.08	<0.19	<0.08	<0.19	<0.08	<0.19	0.49	0.40	<0.08	<0.08	<0.08	0.40	0.65	1.48	6.70	0.84	0.50	<0.19	<0.08	<0.08	0.13	40.6	0.89	47.30	53.10
	0009_MW005_HT_210409	9/04/2021	<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	0.65	<1	<0.19	<0.19	<0.19	0.49	0.80	1.96	6.94	1.04	0.55	<0.48	<0.19	<0.19	<0.19	47.3	1.08	54.20	60.80
MW007	MW07_HIGH_190522	22/05/2019	<0.001	0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.19	0.079	<0.001	<0.001	<0.001	0.079	0.28	0.53	2	0.14	0.42	<0.001	<0.001	<0.001	0.003	30	0.24	32	34.092
	MW07_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	0.23	0.1	0.003	0.003	<0.001	0.1	0.65	0.7	2.3	0.14	0.58	<0.001	<0.001	<0.001	0.004	36	0.34	38.3	41.818
	MW07_LOW_20190618	18/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.86	0.31	<0.1	<0.1	<0.1	0.35	0.84	2.2	9.9	0.48	1.1	0.21	<0.1	<0.1	<0.1	110	0.99	119.9	127.49
	MW07_HIGH_20190619	19/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.65	0.24	<0.1	<0.1	<0.1	0.3	0.74	2	7.8	0.36	0.93	<0.1	<0.1	<0.1	<0.1	88	0.95	95.8	102.16
	0009_MW007_200429	29/04/2020	<0.18	<0.18	<0.18	<0.18	<0.44	<0.18	<0.44	<0.18	<0.44	<0.18	<0.44	<0.18	<0.9	<0.18	<0.18	<0.18	<0.18	0.3	0.71	2.31	0.2	0.3	<0.44	<0.18	<0.18	<0.18	37.7	0.25	40	41.8
	0009_MW007_HT_200930	30/09/2020	<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	0.28	<0.3	<0.06	<0.06	<0.06	0.11	0.28	0.76	3.28	0.24	0.35	<0.16	<0.06	<0.06	<0.06	42.2	0.33	45.5	47.8
	0009_MW007_LT_200930	30/09/2020	<0.16	<0.16	<0.16	<0.16	<0.41	<0.16	<0.41	<0.16	<0.41	<0.16	<0.41	0.39	<0.8	<0.16	<0.16	<0.16	<0.16	0.32	1.02	4.14	0.29	0.44	<0.41	<0.16	<0.16	<0.16	51.1	0.37	55.2	58.1
	0009_MW007_210322	22/03/2021	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.88	0.25	<0.02	<0.02	<0.02	0.36	0.75	2.12	7.54	0.47	1.13	<0.05	<0.02	<0.02	<0.02	88.6	0.92	96.1	103
	0009_MW007_LT_210408	8/04/2021	<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	0.19	<1	<0.19	<0.19	<0.19	0.34	0.71	2.58	8.23	0.29	0.48	<0.19	<0.19	<0.19	<0.19	35	0.38	37.60	39.70
	0009_MW007_HT_210409	9/04/2021	<0.24	<0.24	<0.24	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	0.39	<1.2	<0.24	<0.24	<0.24	<0.32	0.36	1.29	4.27	0.34	0.66	<0.61	<0.24	<0.24	<0.24	45.5	0.58	49.80	53.40
MW009	MW09_LOW_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.2	0.064	<0.01	<0.01	<0.01	0.15	0.023	0.98	1.8	0.08	0.33	<0.01	<0.01	<0.01	<0.01	0.19	0.1	1.99	3.968
	MW09_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	0.065	<0.01	<0.01	<0.01	0.16	0.031	0.93	2	0.091	0.34	<0.01	<0.01	<0.01	<0.01	0.32	0.12	2.32	4.319
	MW09_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	<0.001	0.003	0.002	0.021	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	0.071	0.002	0.092	0.104
	MW09_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.005	<0.001	<0.001	<0.001	0.001	0.003	0.005	0.056	0.002	0.003	<0.001	<0.001	<0.001	<0.001	0.093	0.002	0.149	0.168
	0009_MW009_200429	29/04/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.14	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	1.66	<0.01	1.8	1.8
	0009_MW009_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.12	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.27	<0.01	0.39	0.39
	0009_MW009_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.16	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.25	<0.01	0.41	0.43
	0009_MW009_210322	22/03/2021	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.50	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.17	<0.10	<0.10	<0.25	<0.10	<0.10	<0.10	<0.10	<0.10	0.17	0.17
	0009_MW009_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.10	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.10	<0.01	0.20	0.20
	0009_MW009_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.18	<0.01	0.26	0.26
MW011	MW11_HIGH_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.019	<0.01	0.021	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	0.12	0.078	0.27

Table T7: Historical Ground Water Results

Location ID	Sample ID	Sample Date	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
MW014	MW14_HIGH_190522	22/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.16	<0.1	<0.1	<0.1	0.45	0.51	<0.1	<0.1	<0.1	0.61	0.59	4.3	11	1.1	0.53	<0.1	<0.1	<0.1	<0.1	77	1.3	88	-
	MW14_LOW_190523	23/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	0.24	<0.1	0.11	<0.1	<0.1	<0.1	0.38	0.54	<0.1	<0.1	<0.1	0.34	0.66	3.6	8.9	0.6	0.44	<0.1	<0.1	<0.1	<0.1	65	1.1	73.9	-
	MW14_LOW_20190618	18/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.4	0.25	<0.1	<0.1	<0.1	0.35	0.61	2.6	9.7	0.32	0.38	0.018	<0.1	<0.1	<0.1	86	0.76	95.7	101.768
	MW14_LOW_20190618_TOPA	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.58	0.83	0.04	0.05	<0.01	1	1.5	54	18	2.4	1.1	<0.01	<0.01	0.01	0.08	120	2.8	138	202.46
	MW14_HIGH_20190619	19/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.27	<0.1	<0.1	<0.1	0.34	0.22	<0.1	<0.1	<0.1	0.33	0.6	2.7	8.8	0.42	0.38	0.016	<0.1	<0.1	<0.1	84	0.69	92.8	98.916
	0009_MW014_HT_200930	30/09/2020	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	7.9	<0.50	<0.50	<1.25	<0.50	<0.50	<0.50	120	0.85	128	132
	0009_MW014_LT_200930	30/09/2020	<0.25	<0.25	<0.25	<0.25	<0.63	<0.25	<0.63	0.35	<0.63	<0.25	<0.63	0.3	<1.2	<0.25	<0.25	<0.25	0.35	0.43	3.92	7.31	0.48	0.33	<0.63	<0.25	<0.25	<0.25	101	0.93	108	115
	0009_MW014_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	0.69	<0.9	<0.18	<0.18	<0.18	0.46	0.69	3.03	11.50	0.64	0.51	<0.46	<0.18	<0.18	<0.18	48.5	0.91	60.00	66.90
	0009_MW014_HT_210409	9/04/2021	<0.18	<0.18	<0.18	<0.18	<0.45	<0.18	<0.45	<0.18	<0.45	<0.18	<0.45	0.58	<0.9	<0.18	<0.18	<0.18	0.36	0.54	2.89	7.99	0.65	0.49	<0.45	<0.18	<0.18	<0.18	42	0.73	50.00	56.20
MW015	MW15_HIGH_190522	22/05/2019	<0.001	0.009	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.012	<0.001	<0.001	<0.001	0.012	0.014	0.069	0.22	0.028	0.016	<0.001	<0.001	<0.001	0.002	2.1	0.022	2.32	2.515
	MW15_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.016	0.016	<0.001	<0.001	<0.001	0.018	0.029	0.095	0.33	0.036	0.029	<0.001	<0.001	<0.001	0.003	3	0.034	3.33	-
	MW15_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.012	0.014	<0.001	<0.001	<0.001	0.013	0.016	0.096	0.25	0.034	0.016	<0.001	<0.001	<0.001	0.001	1	0.021	1.25	1.473
	MW15_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.014	0.015	<0.001	<0.001	<0.001	0.017	0.02	0.097	0.28	0.035	0.019	<0.001	<0.001	<0.001	0.002	1.7	0.024	1.98	2.249
	0009_MW015_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	0.35	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	1.74	<0.05	2.09	2.25
	0009_MW015_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.21	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	1.17	<0.02	1.38	1.46
	0009_MW015_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.21	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	1.44	0.02	1.65	1.78
	0009_MW015_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.10	0.27	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	2.52	0.03	2.79	2.98
MW016	MW16_LOW_190521	21/05/2019	<0.001	0.058	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.17	0.049	<0.001	<0.001	<0.001	0.033	0.11	0.34	1.5	0.098	0.27	<0.001	<0.001	<0.001	0.002	1.6	0.075	3.1	4.355
	MW16_HIGH_190522	22/05/2019	<0.001	0.048	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.2	0.054	<0.001	<0.001	<0.001	0.036	0.1	0.41	1.4	0.11	0.36	<0.001	<0.001	<0.001	0.002	1.6	0.067	3	4.447
	MW16_LOW_20190618	18/06/2019	<0.001	0.017	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.18	0.047	<0.001	<0.001	<0.001	0.029	0.035	0.4	1.1	0.12	0.23	<0.001	<0.001	<0.001	<0.001	0.57	0.027	1.67	2.825
	MW16_HIGH_20190619	19/06/2019	<0.001	0.02	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.19	0.051	<0.001	<0.001	<0.001	0.033	0.042	0.42	1.3	0.089	0.23	<0.001	<0.001	<0.001	<0.001	0.53	0.024	1.83	3.009
	0009_MW016_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.35	<0.2	<0.05	<0.05	<0.05	0.07	<0.05	0.69	3.2	0.11	0.45	<0.12	<0.05	<0.05	<0.05	0.07	<0.05	3.27	4.94
	0009_MW016_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.36	<0.2	<0.05	<0.05	<0.05	0.07	<0.05	0.67	3.08	<0.05	0.44	<0.12	<0.05	<0.05	<0.05	0.1	<0.05	3.18	4.72
	0009_MW016_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.31	<0.1	<0.02	<0.02	<0.02	0.08	<0.02	0.58	2.59	0.16	0.38	<0.05	<0.02	<0.02	<0.02	0.15	0.02	2.74	4.27
	0009_MW016_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.20	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.42	1.72	0.09	0.34	<0.05	<0.02	<0.02	<0.02	0.22	0.01	1.94	3.05
MW017	MW17_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.014	<0.05	<0.01	<0.01	<0.01	0.014	0.013	0.056	0.22	0.026	0.026	<0.01	<0.01	<0.01	<0.01	1.1	0.033	1.32	1.516
	MW17_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.019	0.014	<0.001	<0.001	<0.001	0.016	0.026	0.064	0.31	0.025	0.035	<0.001	<0.001	<0.001	0.001	1	0.03	1.31	1.54
	MW17_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.008	<0.001	<0.001	<0.001	0.008	0.007	0.037	0.16	0.018	0.017	<0.001	<0.001	<0.001	<0.001	0.38	0.013	0.54	0.659
	MW17_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.034	0.019	<0.001	<0.001	<0.001	0.021	0.03	0.094	0.5	0.034	0.051	<0.001	<0.001	<0.001	0.002	1.3	0.041	1.8	2.126
	0009_MW017_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.31	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	1.13	0.03	1.44	1.58
	0009_MW017_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.21	<0.02	0.02	<0.05	<0.02	<0.02	<0.02	0.87	0.02	1.08	1.17
	0009_MW017_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.34	0.03	0.04	<0.05	<0.02	<0.02	<0.02	1.67	0.03	2.01	2.22
	0009_MW017_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.23	0.02	0.02	<0.05	<0.02	<0.02	<0.02	0.97	0.02	1.20	1.31
MW018	MW18_LOW_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.013	0.016	0.025	0.059
	MW18_HIGH_190522	22/05/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	0.003	0.001	0.004	0.014	0.003	0.001	<0.001	<0.001	<0.001	<0.001	0.068	0.012	0.082	0.107
	MW18_LOW_20190619	19/06/2019	<0.001	0.007	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	0.002	<0.001	0.003	0.005	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.013	0.011	0.018	0.046
	MW18_HIGH_20190620	20/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	0.002	<0.001	0.003	0.005	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.012	0.009	0.017	0.036
	0009_MW018_200430	30/04/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.08	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.77	0.01	0.85	0.88
	0009_MW018_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.08	<0.01	0.08	0.08
	0009_MW018_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_MW018_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_MW018_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
MW019	MW19_HIGH_190521	21/05/2019	<0.001	0.078	0.002	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.081	0.055	<0.001	<0.001	<0.001	0.18	0.34	0.41	1.1	0.29	0.16	<0.001	<0.001	<0.001	0.017	5.4	0.38	6.5	8.513
	MW19_LOW_190524	24/05/2019	<0.001	0.11	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.076	0.053	<0.001	<0.001	<0.001	0.17	0.36	0.39	1.2	0.28	0.14	<0.001	<0.001	<0.001	0.021	8.3	0.38	9.5	11.503
	MW19_LOW_20190619	19/06/2019	<0.001	0.047	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.034	0.03	<0.001	<0.001	<0.001	0.071	0.1	0.18	0.55	0.12	0.046	<0.001	<0.001	<0.001	0.006	1.7	0.11	2.25	3.004
	MW19_HIGH_20190620	20/06/2019	<0.001	0.036	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.035	0.03	<0.001	<0.001	<0.001	0.065	0.093	0.18	0.54	0.13	0.052	<0.001	<0.001	<0.001	0.006	1.2	0.1	1.74	2.477
	MW19_HIGH_20190620_TOPA	20/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.04	<0.2	<0.01	<0.01	<0.01	0.09	0.1	1.2	0.56	0.25	0.06	<0.01	<0.01	<0.01	<0.01	2.1	0.14	2.66	4.54
	0009_MW019_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.06	<0.2	<0.05	<0.05	<0.05	<0.05	0.09	0.2	0.55	0.07	<0.05	<0.12	<0.05	<0.05	<0.05	3.16	0.12	3.71	4.25
	0009_MW019_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.07	<0.2	<0.05	<0.05	<0.05	0.06	0.14	0.24	0.63	0.06	<0.05	<0.12	<0.05	<0.05	<0.05	4.82	0.18	5.45	6.2
	0009_MW019_LT_210408	8/04/2021	<0.1	0.31	<0.1	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.5	<0.1	<0.1	<0.1	0.11	0.24	0.26	0.86	0.15	<0.1	<0.24	<0.1	<0.1	<0.1	11.7	0.26	12.60	13.90
	0009_MW019_HT_210409	9/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.07	0.13	0.16	0.47	0.10	0.05	<0.05	<0.02	<0.02	<0.02	4.21	0.14	4.68	5.43
Former WWII RAN Fuel Installation																																
MW031	MW31_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.005	0.001	<0.001	<0.001	<0.001	0.001	0.011	0.035	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	0.31	0.002	0.345	0.366
	MW31_190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	<0.001	0.002	0.006	0.026	0.003	0.003	<0.001	<0.001	<0.001	<0.001	0.32	0.001	0.346	0.363
	MW31_20190618_TOPA	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.23	<0.01	0.26	0.3
	0009_MW031_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.26	<0.01	0.31	0.31
	0009_MW031_210408	8/04/2021	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.24	<0.01	0.30	0.37
MW035	CRC_MW01_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.2	0.035	<0.001	<0.001	<0.001	0.004	0.027	0.054	0.8	0.02	0.32	<0.001	<0.001	<0.001	<0.001	0.097	0.009	0.897	1.626
	CRC_MW01_190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.19	0.046	<0.001	<0.001	<0.001	0.003	0.025	0.078	0.67	0.017	0.2	<0.001	<0.001	<0.001	<0.001	0.34	0.01	1.01	1.679
	CRC_MW01_190618_TOPA	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	0.06	<0.01	<0.01	<0.01	<0.01	0.02	0.09	0.78	0.02	0.22	<0.01	<0.01	<0.01	<0.01	0.26	0.02	1.04	1.68
	0009_MW035_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.1	0.1
	0009_MW035_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.50	<0.02	0.16	<0.05	<0.02	<0.02	<0.02	0.13	<0.01	0.63	0.96
MW036	CRC_MW02_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.017	<0.001	<0.001	<0.001	0.004	0.008	0.044	0.21	0.018	0.036	<0.001	<0.001	<0.001	<0.001	0.16	0.01	0.37	0.557
	CRC_MW02_190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.027	0.01	<0.001	<0.001	<0.001	0.002	0.008	0.044	0.17	0.011	0.031	<0.001	<0.001	<0.001	<0.001	0.28	0.008	0.45	0.601
	0009_MW036_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.11	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.29	<0.01	0.4	0.4
	0009_MW036_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.25	<0.02	0.06	<0.05	<0.02	<0.02	<0.02	0.29	0.01	0.54	0.71

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than

Table T8: Historical Surface Water Results

Location ID	Sample ID	Sample Date	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
HMAS Cairns																																
SW030	HCSW2	4/03/2016	-	<0.1	<0.1	-	<0.05	-	<0.5	<0.02	<0.5	-	<0.5	<0.02	-	<0.02	<0.02	<0.05	<0.02	-	0.04	0.04	-	-	<0.5	<0.05	<0.05	<0.02	0.2	0.01	-	-
	0009_SW022_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.06	0.3	0.02	0.03	<0.05	<0.02	<0.02	<0.02	1.24	0.04	1.54	1.74
	0009_SW030_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.15	<0.01	0.20	0.20
SW031	0009_SW003_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.12	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	1.03	0.03	1.15	1.22
	0009_SW023_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_SW003_210105	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.06	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	0.11	0.25	1.24	2.08	0.21	0.17	<0.05	<0.02	<0.02	<0.02	6.87	0.2	8.95	11.3
	0009_SW031_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW032	HCSW1	4/03/2016	-	<0.1	<0.1	-	<0.05	-	<0.5	<0.02	<0.5	-	<0.5	<0.02	-	<0.02	<0.02	<0.05	<0.02	-	0.06	0.27	-	-	<0.5	<0.05	<0.05	<0.02	0.24	0.01	-	-
	HCSW01_190404	4/04/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.004	0.007	<0.001	<0.001	<0.001	0.006	0.006	0.018	0.084	0.008	0.008	<0.001	<0.001	<0.001	<0.001	0.38	0.014	0.464	0.535
	0009_SW001_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.1	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.6	0.01	0.7	0.71
	0009_SW021_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW001_210105	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.28	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	0.42	0.03	0.7	0.83
	0009_SW032_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
SW033	HCSW4	4/03/2016	-	<0.1	<0.1	-	<0.05	-	<0.5	<0.02	<0.5	-	<0.5	<0.02	-	<0.02	<0.02	<0.05	<0.02	-	<0.02	<0.02	-	-	<0.5	<0.05	<0.05	<0.02	0.06	0.03	-	-
	HCSW04_190404	4/04/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	0.003	<0.001	<0.001	0.003	<0.001	0.004	0.006	0.004	<0.001	<0.001	<0.001	<0.001	0.001	0.025	0.007	0.031	0.053
	HCSW05_190404	4/04/2019	<0.001	0.005	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.004	0.007	<0.001	<0.001	<0.001	0.008	0.003	0.023	0.084	0.018	0.006	<0.001	<0.001	0.002	0.005	0.25	0.009	0.334	0.427
	0009_SW004_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.22	<0.01	0.22	0.22
	0009_SW024_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW004_210105	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.06	0.01	0.06	0.07
	0009_SW033_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.03	0.03
SW034	HCSW06_190404	4/04/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	0.003	0.001	0.01	0.033	0.01	0.002	<0.001	<0.001	<0.001	0.002	0.094	0.004	0.127	0.162
	HCSW5_190617	17/06/2019	<0.001	0.007	0.002	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	0.012	<0.001	<0.001	<0.001	0.012	0.005	0.038	0.064	<0.05	0.006	0.016	<0.001	<0.001	0.003	0.28	0.012	0.344	0.462
	HCSW5_190617_TOPA	17/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.02	<0.01	0.11	0.08	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	0.25	0.01	0.33	0.51
	0009_SW005_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.06	<0.01	0.08	0.08
	0009_SW025_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_SW005_210105	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW034_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.09	<0.01	0.12	0.12
SW035	HCSW6_190617	17/06/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	0.008	<0.001	<0.001	<0.001	0.009	0.001	0.031	0.053	<0.05	0.004	<0.001	<0.001	<0.001	0.003	0.16	0.008	0.213	0.281
	HCSW6_190617_TOPA	17/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.01	<0.01	0.08	0.06	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	0.2	0.01	0.26	0.39
	0009_SW006_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_SW026_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
	0009_SW006_210105	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW035_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
Former WWII RAN Fuel Installation																																
SW036	SW08_190513	13/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<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	0.003	0.001	0.004	0.006
	SW08_190618	18/06/2019	<0.001	<0.005	0.013	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0057	0.001	0.0077	0.0257
	SW08_190618_TOPA	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	0.01	<0.01	0.01	<0.1
	0009_SW008_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW036_210408	8/04/2021	<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	0.08
SW100	SW20_190912	12/09/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0037	<0.001	0.0057	0.0057
	0009_SW020_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW100_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW101	SW17_190912	12/09/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0034	0.001	0.0054	0.0064
	0009_SW017_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW101_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than

Table T9: Historical Sediment Results

Location ID	Sample ID	Date	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	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	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HMAS Cairns																																
SD030	HCSW2_SD	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW2_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.02	<0.005	0.02	<0.05
	0009_SD020_200930	30/09/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0026	<0.0002	0.003	0.003
	0009_SD030_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0115	<0.0002	0.0121	0.0129
SD031	HCSW3_SD	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW3_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD021_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.001	<0.0002	0.001	0.001
	0009_SD031_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0024	<0.0002	0.0024	0.0027
SD032	HCSW01_190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW1_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD019_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD032_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0024	<0.0002	0.0024	0.0024
SD033	HCSW05_190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW4_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD022_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	0009_SD033_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
SD034	HCSW06_190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW5_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD023_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD034_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.001	<0.0002	0.0012	0.0012
SD035	HCSW06_20190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW6_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD024_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	0.0007	0.0007
	0009_SD035_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0009	<0.0002	0.0009	0.0009
Former WWII RAN Fuel Installation																																
SD036	SD08_190513	13/05/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	SW08_SD_0-0.1	18/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD008_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD036_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD100	SW20_190912_SD	12/09/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD100_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD100_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	0.0003	0.0003
SD101	SW17_190912_SD	12/09/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD101_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD101_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

LOR is limit of reporting
mg/kg is milligrams per kilogram
"<" denotes concentration less than

Appendix C

Analytical Data Validation

DATA VALIDATION REPORT

Project No.:	60612487	**Validation by:**	[redacted]	**Date:**	25/05/2021
Client:	Department of Defence				
Site:	HMAS Cairns and Former WWII RAN Fuel Installation				
Matrix type:	Groundwater, surface water, sediment	**Data verified by:**	[redacted]	**Date:**	27/05/2021
No. of primary samples:	33 groundwater, 9 surface water, 9 sediment				
Laboratory:	ALS (Brisbane), NMI (Sydney)	**Project Manager:**	[redacted]		
Lab reference:	ET2101751, RN1311111				

Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication on data interpretation and therefore decision-making on the project. The data are considered appropriate for use to meet the project objectives and meet the DQOs set out in Section 3.5 of the report.

Field QA/QC

Sampling personnel Sampling Methodology	Sampling was conducted between 07 April 2021 and 09 April 2021. Samples were collected using appropriate methods as identified within the main body of the report.
Chain of Custody (COC)	COC documents were completed as per AECOM procedures.
Rinsate Blank	Rinsate blank samples were collected at a frequency of one per day of sampling (two in total). Rinsates were collected from the decontaminated interface probe. Concentrations were reported below the LOR for all analytes tested (see **Table C4**).
Trip Blanks	Trip blank samples were collected at a frequency of one per esky of samples submitted to ALS. Three eskies with three associated trip blanks were submitted to the laboratory. All trip blanks reported concentrations below the LOR (see **Table C5**).
Frequency of field QC	Field duplicate (inter-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected at a frequency of one in ten primary samples (four duplicates and triplicates for groundwater, one duplicate and triplicate for both surface water and sediment). The target frequency of 10% for field duplicates and triplicates was achieved for groundwater, surface water and sediment.
Handling and preservation	Primary, duplicate and triplicate samples were received preserved and chilled at the laboratory. Sample receipt temperature was reported at 22.4 ºC, where reported. All samples were received at the laboratory in appropriate sample containers with no sample container / preservation non-compliances noted.
Equipment Calibration	Calibration of the water quality meter was conducted at the beginning of each field day.

Laboratory QA/QC

Tests requested/reported	Samples were analysed and reported as requested on the COC.
Holding time compliance	Samples were extracted and analysed within recommended holding times.
Laboratory Accreditation	The laboratory analysis was conducted by ALS Environmental Pty Ltd (Brisbane) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate

	samples were analysed at the national Measurement Institute (Sydney), also a NATA accredited laboratory.
Frequency of laboratory QC	The laboratory reported insufficient frequency of quality control samples to assess whether the results have been reported to an acceptable accuracy and precision. The frequency of quality control samples assessed was 3.57% with an expected rate of 5.00%. The laboratory was provided with a sufficient frequency of quality control samples however not all of the additional samples provided were assessed for quality control purposes.
Method Blank	Method blank concentrations were not detected above the LOR for all analytes tested.
Laboratory duplicate RPDs	Laboratory duplicate Relative Percentage Differences (RPD) were within control limits for all samples.
Laboratory control spike recovery	No non-compliances were reported for Laboratory Control Spikes (LCS).
Matrix spike recovery	All matrix spike (MS) recoveries were within control limits.
Surrogate spike recovery	Surrogate spike recoveries were within control limits.
QA/QC Data Evaluation	
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted.
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.
Limits of reporting	Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted screening levels. LOR values for various analytes were adjusted due to sample matrix interference for the following samples in ET2101751: • 0009_MW007_LT_210408 • 0009_MW019_LT_210408 • 0009_MW014_LT_210408 • 0009_MW002_LT_210408 • 0009_MW004_LT_210408 • 0009_MW005_LT_210408 • 0009_QC103_210408 • 0009_MW007_HT_210409 • 0009_QC105_210409 • 0009_MW002_HT_210409 • 0009_MW004_HT_210409 • 0009_MW005_HT_210409 • 0009_MW014_HT_210409 Adjusted LORs were sufficiently low to enable assessment against adopted screening levels.
Field duplicate RPDs	RPDs for groundwater, surface water, and sediment are reported in **Tables C1**, **C2**, and **C3** respectively. The following field duplicate RPDs were reported outside control limits. • 0009_MW014_LT_210408 and **0009_QC103_210408** for PFHpA (31%) and PFPeS (48%) • **0009_MW009_HT_210409** and 0009_QC104_210409 for PFOS (57%)

Field triplicate RPDs	Field triplicate RPDs were reported within control limits with the exception of the following (the sample with the higher concentration is in bold): • **0009_MW014_LT_210408** and 0009_QC203_210408 for PFHpA (59%), PFHxA (32%), PFPeA (42%), PFOS (32%), PFOA (48%), PFHxS (38%). • **0009_MW009_HT_210409** and 0009_QC104_210409 for PFOS (73%) • **0009_MW014_HT_210409** and 0009_QC205_210409 for PFBS (37%), PFHpS (45%), PFHpA (53%), PFHxA (57%), PFPeS (51%), PFPeA (60%), PFOS (47%), PFOA (58%), PFHxS (35%). The non-compliant RPD is likely to be due to different extraction methods used by the laboratories as the duplicate and primary sample are comparable. The minor non-compliance is not considered to affect the interpretation of the data.
Other	
Other observations	No other observations were noted.

Table C1: Groundwater Duplicate and Triplicate Results

Lab Report Number	21076	21076		1		21076	21076		1		21076	21076		1	
Field ID	0009_MW018_LT_210408	0009_QC102_210408	RPD	0009_QC202_210408	RPD	0009_MW014_LT_210408	0009_QC103_210408	RPD	0009_QC203_210408	RPD	0009_MW009_HT_210409	0009_QC104_210409	RPD	0009_QC204_210409	RPD
Date	8/04/2021 13:11	8/04/2021 13:11		8/04/2021 13:11		8/04/2021 15:10	8/04/2021 15:10		8/04/2021 15:10		9/04/2021 8:11	9/04/2021 8:11		9/04/2021 8:11	
Chemical Name	Unit	EQL													
4:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC	<0.18	<0.24	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
6:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	0.015	NC	<0.18	<0.24	NC	0.026	NC	<0.05	<0.05	NC	<0.01	NC
8:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC	<0.18	<0.24	NC	0.014	NC	<0.05	<0.05	NC	<0.01	NC
10:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC	<0.18	<0.24	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
EtFOSA	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC	<0.46	<0.61	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
EtFOSAA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.18	<0.24	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
EtFOSE	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.18	<0.24	NC	0.07	NC	<0.02	<0.02	NC	<0.01	NC
FOSA	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC	<0.46	<0.61	NC	<0.05	NC	<0.05	<0.05	NC	<0.05	NC
MeFOSA	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC	<0.46	<0.61	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
MeFOSAA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.18	<0.24	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
MeFOSE	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC	<0.46	<0.61	NC	<0.05	NC	<0.05	<0.05	NC	<0.05	NC
PFBS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	0.69	0.83	18	0.53	26	<0.02	<0.02	NC	<0.01	NC
PFPeS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	**0.51**	**0.83**	**48**	0.4	24	<0.02	<0.02	NC	<0.01	NC
PFHxS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	11.5	14	20	**7.8**	**38**	0.08	0.09	12	0.079	1
PFHpS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	0.69	0.71	3	0.53	26	<0.02	<0.02	NC	<0.01	NC
PFOS	µg/L	0.01 : 0.02 (Interlab)	0.04	0.02	67	<0.02	67	48.5	54.2	11	**35**	**32**	**0.18**	**0.1**	**57**	**0.084**	**73**
PFDS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.18	<0.24	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
PFBA	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	NC	<0.05	NC	<0.9	<1.2	NC	0.31	NC	<0.1	<0.1	NC	<0.05	NC
PFHxA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	3.03	4.12	30	**2.2**	**32**	<0.02	<0.02	NC	0.01	NC
PFPeA	µg/L	0.02	<0.02	<0.02	NC	<0.02	NC	0.64	0.76	17	**0.42**	**42**	<0.02	<0.02	NC	<0.02	NC
PFHpA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	**0.46**	**0.63**	**31**	**0.25**	**59**	<0.02	<0.02	NC	<0.01	NC
PFOA	µg/L	0.01	<0.01	<0.01	NC	<0.01	NC	0.91	1.02	11	**0.56**	**48**	<0.01	<0.01	NC	<0.01	NC
PFDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.18	<0.24	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
PFDoDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.18	<0.24	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
PFNA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.18	<0.24	NC	0.018	NC	<0.02	<0.02	NC	<0.01	NC
PFTeDA	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC	<0.46	<0.61	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
PFTrDA	µg/L	0.02	<0.02	<0.02	NC	<0.02	NC	<0.18	<0.24	NC	<0.02	NC	<0.02	<0.02	NC	<0.02	NC
PFUnDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.18	<0.24	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC

***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: No Limit (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (>20 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**

Table C1: Groundwater Duplicate and Triplicate Results

	Lab Report Number		21076	21076		1	
	Field ID		0009_MW014_HT_210409	0009_QC105_210409	RPD	0009_QC205_210409	RPD
	Date		9/04/2021 9:31	9/04/2021 9:31		9/04/2021 9:31	
Chemical Name	Unit	EQL					
4:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.18	<0.25	NC	<0.01	NC
6:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.18	<0.25	NC	0.026	NC
8:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.18	<0.25	NC	0.012	NC
10:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.18	<0.25	NC	<0.01	NC
EtFOSA	µg/L	0.05 : 0.02 (Interlab)	<0.45	<0.62	NC	<0.02	NC
EtFOSAA	µg/L	0.02 : 0.01 (Interlab)	<0.18	<0.25	NC	<0.01	NC
EtFOSE	µg/L	0.02 : 0.01 (Interlab)	<0.18	<0.25	NC	0.063	NC
FOSA	µg/L	0.05	<0.45	<0.62	NC	<0.05	NC
MeFOSA	µg/L	0.05 : 0.02 (Interlab)	<0.45	<0.62	NC	<0.02	NC
MeFOSAA	µg/L	0.02 : 0.01 (Interlab)	<0.18	<0.25	NC	<0.01	NC
MeFOSE	µg/L	0.05	<0.45	<0.62	NC	<0.05	NC
PFBS	µg/L	0.02 : 0.01 (Interlab)	0.58	0.68	16	**0.4**	**37**
PFPeS	µg/L	0.02 : 0.01 (Interlab)	0.49	0.62	23	**0.29**	**51**
PFHxS	µg/L	0.02 : 0.01 (Interlab)	7.99	9.52	17	**5.6**	**35**
PFHpS	µg/L	0.02 : 0.01 (Interlab)	0.54	0.5	8	**0.34**	**45**
PFOS	µg/L	0.01 : 0.02 (Interlab)	42	33.4	23	**26**	**47**
PFDS	µg/L	0.02 : 0.01 (Interlab)	<0.18	<0.25	NC	<0.01	NC
PFBA	µg/L	0.1 : 0.05 (Interlab)	<0.9	<1.2	NC	0.25	NC
PFHxA	µg/L	0.02 : 0.01 (Interlab)	2.89	3.1	7	**1.6**	**57**
PFPeA	µg/L	0.02	0.65	0.58	11	**0.35**	**60**
PFHpA	µg/L	0.02 : 0.01 (Interlab)	0.36	0.45	22	**0.21**	**53**
PFOA	µg/L	0.01	0.73	0.7	4	**0.4**	**58**
PFDA	µg/L	0.02 : 0.01 (Interlab)	<0.18	<0.25	NC	<0.01	NC
PFDoDA	µg/L	0.02 : 0.01 (Interlab)	<0.18	<0.25	NC	<0.01	NC
PFNA	µg/L	0.02 : 0.01 (Interlab)	<0.18	<0.25	NC	0.015	NC
PFTeDA	µg/L	0.05 : 0.02 (Interlab)	<0.45	<0.62	NC	<0.02	NC
PFTrDA	µg/L	0.02	<0.18	<0.25	NC	<0.02	NC
PFUnDA	µg/L	0.02 : 0.01 (Interlab)	<0.18	<0.25	NC	<0.01	NC

Table C2: Surface Water Duplicate and Triplicate Results

Lab Report Number	21076	21076	RPD	1	RPD
Field ID	0009_SW035_210407	0009_QC100_210407		0009_QC200_210407	
Date	7/04/2021 11:51	7/04/2021 11:51		7/04/2021 11:51	

Chemical Name	Unit	EQL					
4:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC
6:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC
8:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC
10:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC
EtFOSA	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC
EtFOSAA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
EtFOSE	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC
FOSA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
MeFOSA	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC
MeFOSAA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
MeFOSE	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC
PFBS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
PFPeS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
PFHxS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	0.014	NC
PFHpS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
PFOS	µg/L	0.01 : 0.02 (Interlab)	0.05	0.05	0	0.037	30
PFDS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
PFBA	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	NC	<0.05	NC
PFHxA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
PFPeA	µg/L	0.02	<0.02	<0.02	NC	<0.02	NC
PFHpA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
PFOA	µg/L	0.01	<0.01	<0.01	NC	<0.01	NC
PFDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
PFDoDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
PFNA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
PFTeDA	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC
PFTrDA	µg/L	0.02	<0.02	<0.02	NC	<0.02	NC
PFUnDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC

***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: No Limit (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (>20 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**

Table C3: Sediment Duplicate and Triplicate Results

Lab Report Number	21076	21076	RPD	1	RPD
Field ID	0009_SD035_210407	0009_QC101_210407		0009_QC201_210407	
Date	7/04/2021 11:53	7/04/2021 11:53		7/04/2021 11:53	

Chemical Name	Unit	EQL					
4:2 FTS	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.001	NC
6:2 FTS	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.001	NC
8:2 FTS	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.001	NC
10:2 FTS	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.002	NC
EtFOSA	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.002	NC
EtFOSAA	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.002	NC
EtFOSE	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.005	NC
FOSA	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
MeFOSA	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.002	NC
MeFOSAA	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.002	NC
MeFOSE	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.005	NC
PFBS	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
PFPeS	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
PFHxS	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
PFHpS	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
PFOS	mg/kg	0.0002	0.0009	0.001	11	<0.002	NC
PFDS	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
PFBA	mg/kg	0.001	<0.001	<0.001	NC	<0.002	NC
PFHxA	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
PFPeA	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.002	NC
PFHpA	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
PFOA	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
PFDA	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
PFDoDA	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.002	NC
PFNA	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
PFTeDA	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.002	NC
PFTrDA	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.002	NC
PFUnDA	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.002	NC

***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: No Limit (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (>20 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**

Table C4: Rinsate Analytical Results

Lab Report Number	21076	21076	21076	21076	21076	21076
Sample ID	0009_QC300_210407	0009_QC301_210408	0009_QC302_210408	0009_QC303_210409	0009_QC304_210409	0009_QC500_210407
Sample Date	7/04/2021 18:45	8/04/2021 15:02	8/04/2021 15:09	9/04/2021 9:15	9/04/2021 9:33	7/04/2021 7:51

Chemical Name	Unit	LOR						
4:2 FTS	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 FTS	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 FTS	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 FTS	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EtFOSA	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EtFOSAA	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
EtFOSE	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
FOSA	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MeFOSA	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MeFOSAA	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MeFOSE	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
PFBS	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFPeS	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFHxS	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFHpS	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PFDS	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFBA	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PFHxA	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFPeA	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFHpA	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFOA	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PFDA	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFDoDA	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFNA	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFTeDA	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
PFTrDA	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFUnDA	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Table C5: Trip Blank Analytical Results

Lab Report Number	21076
Sample ID	0009_QC500_210407
Sample Date	7/04/2021 7:51
Sample Type	Trip_B

Chemical Name	Unit	LOR	
4:2 FTS	µg/L	0.05	<0.05
6:2 FTS	µg/L	0.05	<0.05
8:2 FTS	µg/L	0.05	<0.05
10:2 FTS	µg/L	0.05	<0.05
EtFOSA	µg/L	0.05	<0.05
EtFOSAA	µg/L	0.02	<0.02
EtFOSE	µg/L	0.05	<0.05
FOSA	µg/L	0.02	<0.02
MeFOSA	µg/L	0.05	<0.05
MeFOSAA	µg/L	0.02	<0.02
MeFOSE	µg/L	0.05	<0.05
PFBS	µg/L	0.02	<0.02
PFPeS	µg/L	0.02	<0.02
PFHxS	µg/L	0.02	<0.02
PFHpS	µg/L	0.02	<0.02
PFOS	µg/L	0.01	<0.01
PFDS	µg/L	0.02	<0.02
PFBA	µg/L	0.1	<0.1
PFHxA	µg/L	0.02	<0.02
PFPeA	µg/L	0.02	<0.02
PFHpA	µg/L	0.02	<0.02
PFOA	µg/L	0.01	<0.01
PFDA	µg/L	0.02	<0.02
PFDoDA	µg/L	0.02	<0.02
PFNA	µg/L	0.02	<0.02
PFTeDA	µg/L	0.05	<0.05
PFTrDA	µg/L	0.02	<0.02
PFUnDA	µg/L	0.02	<0.02

Appendix D

Chain of Custody Forms

ANZ

FQM - Generic Chain of Custody Form

AECOM

[redacted]

CONSULTANT: AECOM	ADDRESS/OFFICE: AECOM TOWNSVILLE Level 5, 7-13 Tomlins Street, South Townsville 48	SAMPLER: [redacted]	Destination Laboratory
PROJECT MANAGER (PM): [redacted]	SITE: [redacted] QLD_0009	MOBILE: [redacted] PHONE:	[redacted]
PROJECT: [redacted] QLD_0009_PFASOMP_20	P.O. NO.: 60612487_4.1	EMAIL REPORT TO: [redacted]	NMI SYDNEY
RESULTS REQUIRED (Date): 5 DAY TAT	QUOTE NO.: [redacted]	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

AECOM 6/210413
Dnl 20/4/21 mv

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		PFAS [redacted] 28 Analytes)	STANDARD LOR (WATER)	PFAS STANDARD 28 ANALYTES (SOIL)						HOLD	
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles										
	0009_QC200_210407	W	7.4.21		1 x P	1	X							N21/009314		
	0009_QC201_210407	S	7.4.21		1 x P	1			X					N21/009315		
	0009_QC202_210408	W	8.4.21		↓	1	X							N21/009316		
	0009_QC203_210408	W	8.4.21			1	X							N21/009317		
	0009_QC204_210409	W	9.4.21			1	X							N21/009318		
	0009_QC205_210409	W	9.4.21		↓	1	X							N21/009319		

RECEIVED
13 APR 2021
BY [redacted] 9:00 C

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: [redacted]	Date: 12/4/21	Name:	Date:	Name:	Date:	Con' Note No:
Of:	Time: 14:00	Of:	Time:	Of:	Time:	Transport Co:

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. **Soil Container Codes**: Jar = Unpreserved glass jar

COC Page of

Environmental Division
Townsville
Work Order Reference
ET2101751

Telephone : +61 7 4773 0000

ALSCompass SAMPLING Intelligence

Custody Document for Submissions via ALS Compass App

Project: QLD-0009_PFASOM1_20 Client: AECOM

Project Manager: [redacted]
Phone:

ALS Compass COC Reference: 21076 # Samples:

Sampler:
Phone:

Turnaround Requirements: Standard (circled) 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?		°C	

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	[redacted]		
Date / Time: 12:56 12/4/21	Date / Time: 12:56 12/4/21	Date / Time:	Date / Time:

CHAIN OF CUSTODY

ALS COC#: 21076 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0009_SW030_210407		07/04/2021 03:08 PM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		
002	0009_SW031_210407		07/04/2021 03:09 PM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		
003	0009_SW032_210407		07/04/2021 03:20 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
004	0009_SW033_210407		07/04/2021 03:30 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
005	0009_SW034_210407		07/04/2021 11:36 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
006	0009_SW035_210407		07/04/2021 11:51 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
007	0009_SD030_210407		07/04/2021 03:09 PM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
008	0009_SD031_210407		07/04/2021 03:09 PM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
009	0009_SD032_210407		07/04/2021 03:20 PM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			

CHAIN OF CUSTODY

ALS COC#: 21076 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0009_SD033_210407		07/04/2021 03:30 PM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
011	0009_SD034_210407		07/04/2021 11:36 AM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
012	0009_SD035_210407		07/04/2021 11:53 AM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
013	0009_QC500_210407		07/04/2021 07:51 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
014	0009_QC100_210407		07/04/2021 11:52 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
015	0009_QC101_210407		07/04/2021 11:53 AM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
016	0009_QC300_210407		07/04/2021 06:45 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
017	0009_SW036_210408		08/04/2021 08:32 AM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		
018	0009_SD036_210408		08/04/2021 08:33 AM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			

CHAIN OF CUSTODY

ALS COC#: 21076 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0009_SW100_210408		08/04/2021 09:23 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
020	0009_SW101_210408		08/04/2021 09:22 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
021	0009_SD100_210408		08/04/2021 09:24 AM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
022	0009_SD101_210408		08/04/2021 09:24 AM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
023	0009_MW031_210408		08/04/2021 10:17 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
024	0009_MW035_210408		08/04/2021 10:41 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
025	0009_MW036_210408		08/04/2021 10:41 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
026	0009_MW007_LT_210408		08/04/2021 02:36 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
027	0009_MW016_LT_210408		08/04/2021 02:22 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		

CHAIN OF CUSTODY

ALS COC#: 21076 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0009_MW009_LT_210408		08/04/2021 01:50 PM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		
029	0009_MW017_LT_210408		08/04/2021 12:53 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
030	0009_MW018_LT_210408		08/04/2021 01:11 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
031	0009_MW011_LT_210408		08/04/2021 01:32 PM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		
032	0009_MW019_LT_210408		08/04/2021 02:07 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
033	0009_MW014_LT_210408		08/04/2021 03:10 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
034	0009_MW015_LT_210408		08/04/2021 02:58 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
035	0009_MW001_LT_210408		08/04/2021 03:15 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
036	0009_MW002_LT_210408		08/04/2021 03:12 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		

CHAIN OF CUSTODY

ALS COC#: 21076 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0009_MW003_LT_210408		08/04/2021 03:11 PM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		Extra lab volume
038	0009_MW004_LT_210408		08/04/2021 03:14 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
039	0009_MW005_LT_210408		08/04/2021 03:13 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
040	0009_MW013_LT_210408		08/04/2021 03:10 PM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		Extra lab volume
041	0009_QC102_210408		08/04/2021 01:11 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
042	0009_QC301_210408		08/04/2021 03:02 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
043	0009_QC302_210408		08/04/2021 03:09 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
044	0009_QC103_210408		08/04/2021 03:14 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
045	0009_MW017_HT_210409		09/04/2021 07:28 AM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		

CHAIN OF CUSTODY

ALS COC#: 21076 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0009_MW007_HT_210409		09/04/2021 08:55 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
047	0009_MW009_HT_210409		09/04/2021 08:11 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
048	0009_MW011_HT_210409		09/04/2021 07:54 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
049	0009_MW015_HT_210409		09/04/2021 09:15 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
050	0009_MW016_HT_210409		09/04/2021 08:44 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
051	0009_MW018_HT_210409		09/04/2021 07:41 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
052	0009_MW019_HT_210409		09/04/2021 08:31 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
053	0009_QC104_210409		09/04/2021 08:12 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
054	0009_QC105_210409		09/04/2021 09:31 AM	Water	ALS: 2 Non ALS: 0	No	-				

CHAIN OF CUSTODY

(ALS) COC#: 21076 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0009_MW001_HT_210409		09/04/2021 09:33 AM	Water	ALS: 4 Non ALS: 0	No	-				
056	0009_MW002_HT_210409		09/04/2021 09:35 AM	Water	ALS: 2 Non ALS: 0	No	-				
057	0009_MW003_HT_210409		09/04/2021 09:34 AM	Water	ALS: 2 Non ALS: 0	No	-				
058	0009_MW004_HT_210409		09/04/2021 09:32 AM	Water	ALS: 2 Non ALS: 0	No	-				
059	0009_MW005_HT_210409		09/04/2021 09:36 AM	Water	ALS: 2 Non ALS: 0	No	-				
060	0009_MW013_HT_210409		09/04/2021 09:35 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
061	0009_MW014_HT_210409		09/04/2021 09:31 AM	Water	ALS: 2 Non ALS: 0	No	-				
062	0009_QC303_210409		09/04/2021 09:15 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
063	0009_QC304_210409		09/04/2021 09:33 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		

CHAIN OF CUSTODY

ALS COC#: 21076 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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	PARTIAL ANALYSIS GROUP NAME	MATRIX	SELECTED ANALYSIS NAME
001	0009_SW030_210407	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
002	0009_SW031_210407	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
003	0009_SW032_210407	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
004	0009_SW033_210407	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
005	0009_SW034_210407	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
006	0009_SW035_210407	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
007	0009_SD030_210407	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
008	0009_SD031_210407	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
009	0009_SD032_210407	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
010	0009_SD033_210407	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
011	0009_SD034_210407	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
012	0009_SD035_210407	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
013	0009_QC500_210407	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
014	0009_QC100_210407	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
015	0009_QC101_210407	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

ALS COC#: 21076 ALS Laboratory: ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

016	0009_QC300_210407	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
017	0009_SW036_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
018	0009_SD036_210408	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
019	0009_SW100_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
020	0009_SW101_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
021	0009_SD100_210408	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
022	0009_SD101_210408	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
023	0009_MW031_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
024	0009_MW035_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
025	0009_MW036_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
026	0009_MW007_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
027	0009_MW016_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
028	0009_MW009_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
029	0009_MW017_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
030	0009_MW018_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
031	0009_MW011_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

(ALS) COC#: 21076 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:

032	0009_MW019_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
033	0009_MW014_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
034	0009_MW015_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
035	0009_MW001_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
036	0009_MW002_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
037	0009_MW003_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
038	0009_MW004_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
039	0009_MW005_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
040	0009_MW013_LT_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
041	0009_QC102_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
042	0009_QC301_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
043	0009_QC302_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
044	0009_QC103_210408	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
045	0009_MW017_HT_210409	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
046	0009_MW007_HT_210409	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
047	0009_MW009_HT_210409	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

ALS COC#: 21076 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

048	0009_MW011_HT_210409	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
049	0009_MW015_HT_210409	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
050	0009_MW016_HT_210409	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
051	0009_MW018_HT_210409	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
052	0009_MW019_HT_210409	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
053	0009_QC104_210409	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
060	0009_MW013_HT_210409	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
062	0009_QC303_210409	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
063	0009_QC304_210409	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

ALS COC#: 21076 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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	0009_SW030_210407	HDPE (no PTFE)	20 mL	00352010079530	Grey	No	
001	0009_SW030_210407	HDPE (no PTFE)	20 mL	00352010079393	Grey	No	
001	0009_SW030_210407	HDPE (no PTFE)	20 mL	00352010079366	Grey	No	
001	0009_SW030_210407	HDPE (no PTFE)	20 mL	00352010079525	Grey	No	
002	0009_SW031_210407	HDPE (no PTFE)	20 mL	00350019152618	Grey	No	
002	0009_SW031_210407	HDPE (no PTFE)	20 mL	00352010057841	Grey	No	
002	0009_SW031_210407	HDPE (no PTFE)	20 mL	00352010057960	Grey	No	
002	0009_SW031_210407	HDPE (no PTFE)	20 mL	00352010057892	Grey	No	
003	0009_SW032_210407	HDPE (no PTFE)	20 mL	00352010079447	Grey	No	
003	0009_SW032_210407	HDPE (no PTFE)	20 mL	00352010079517	Grey	No	
004	0009_SW033_210407	HDPE (no PTFE)	20 mL	00350019152596	Grey	No	
004	0009_SW033_210407	HDPE (no PTFE)	20 mL	00350019152678	Grey	No	
005	0009_SW034_210407	HDPE (no PTFE)	20 mL	00352010079347	Grey	No	
005	0009_SW034_210407	HDPE (no PTFE)	20 mL	00352010079381	Grey	No	
006	0009_SW035_210407	HDPE (no PTFE)	20 mL	00352010079360	Grey	No	
006	0009_SW035_210407	HDPE (no PTFE)	20 mL	00352010079327	Grey	No	
007	0009_SD030_210407	HDPE Soil Jar	200 mL	00620719071647	Grey	No	
008	0009_SD031_210407	HDPE Soil Jar	200 mL	00620719071589	Grey	No	
009	0009_SD032_210407	HDPE Soil Jar	200 mL	00620719071629	Grey	No	
010	0009_SD033_210407	HDPE Soil Jar	200 mL	00620719071696	Grey	No	
011	0009_SD034_210407	HDPE Soil Jar	200 mL	00620719071676	Grey	No	
012	0009_SD035_210407	HDPE Soil Jar	200 mL	00620719071692	Grey	No	
013	0009_QC500_210407	HDPE (no PTFE)	20 mL	00352010034741	Grey	No	
013	0009_QC500_210407	HDPE (no PTFE)	20 mL	00352010055236	Grey	No	
014	0009_QC100_210407	HDPE (no PTFE)	20 mL	00352010079461	Grey	No	
014	0009_QC100_210407	HDPE (no PTFE)	20 mL	00352010079420	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 21076 ALS Laboratory: ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

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: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

015	0009_QC101_210407	HDPE Soil Jar	200 mL	00620719071677	Grey	No	
016	0009_QC300_210407	HDPE (no PTFE)	20 mL	00352010079307	Grey	No	
016	0009_QC300_210407	HDPE (no PTFE)	20 mL	00352010079284	Grey	No	
017	0009_SW036_210408	HDPE (no PTFE)	20 mL	00350019152671	Grey	No	
017	0009_SW036_210408	HDPE (no PTFE)	20 mL	00352010079440	Grey	No	
017	0009_SW036_210408	HDPE (no PTFE)	20 mL	00350019152727	Grey	No	
017	0009_SW036_210408	HDPE (no PTFE)	20 mL	00352010079316	Grey	No	
018	0009_SD036_210408	HDPE Soil Jar	200 mL	00620719071611	Grey	No	
019	0009_SW100_210408	HDPE (no PTFE)	20 mL	00352010057910	Grey	No	
019	0009_SW100_210408	HDPE (no PTFE)	20 mL	00352010057941	Grey	No	
020	0009_SW101_210408	HDPE (no PTFE)	20 mL	00352010079340	Grey	No	
020	0009_SW101_210408	HDPE (no PTFE)	20 mL	00352010079495	Grey	No	
021	0009_SD100_210408	HDPE Soil Jar	200 mL	00620719071663	Grey	No	
022	0009_SD101_210408	HDPE Soil Jar	200 mL	00620719071574	Grey	No	
023	0009_MW031_210408	HDPE (no PTFE)	20 mL	00350019152713	Grey	No	
023	0009_MW031_210408	HDPE (no PTFE)	20 mL	00350019152682	Grey	No	
024	0009_MW035_210408	HDPE (no PTFE)	20 mL	00352010057857	Grey	No	
024	0009_MW035_210408	HDPE (no PTFE)	20 mL	00350019152719	Grey	No	
025	0009_MW036_210408	HDPE (no PTFE)	20 mL	00352010079413	Grey	No	
025	0009_MW036_210408	HDPE (no PTFE)	20 mL	00352010079451	Grey	No	
026	0009_MW007_LT_210408	HDPE (no PTFE)	20 mL	00350019152574	Grey	No	
026	0009_MW007_LT_210408	HDPE (no PTFE)	20 mL	00352010057874	Grey	No	
027	0009_MW016_LT_210408	HDPE (no PTFE)	20 mL	00352010079421	Grey	No	
027	0009_MW016_LT_210408	HDPE (no PTFE)	20 mL	00352010079506	Grey	No	
028	0009_MW009_LT_210408	HDPE (no PTFE)	20 mL	00352010079294	Grey	No	
028	0009_MW009_LT_210408	HDPE (no PTFE)	20 mL	00352010079392	Grey	No	
028	0009_MW009_LT_210408	HDPE (no PTFE)	20 mL	00352010079441	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 21076 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

028	0009_MW009_LT_210408	HDPE (no PTFE)	20 mL	00352010079364	Grey	No	
029	0009_MW017_LT_210408	HDPE (no PTFE)	20 mL	00352010079326	Grey	No	
029	0009_MW017_LT_210408	HDPE (no PTFE)	20 mL	00352010079532	Grey	No	
030	0009_MW018_LT_210408	HDPE (no PTFE)	20 mL	00350019152582	Grey	No	
030	0009_MW018_LT_210408	HDPE (no PTFE)	20 mL	00350019152668	Grey	No	
031	0009_MW011_LT_210408	HDPE (no PTFE)	20 mL	00352010079344	Grey	No	
031	0009_MW011_LT_210408	HDPE (no PTFE)	20 mL	00352010079518	Grey	No	
031	0009_MW011_LT_210408	HDPE (no PTFE)	20 mL	00352010079442	Grey	No	
031	0009_MW011_LT_210408	HDPE (no PTFE)	20 mL	00352010079302	Grey	No	
032	0009_MW019_LT_210408	HDPE (no PTFE)	20 mL	00352010079315	Grey	No	
032	0009_MW019_LT_210408	HDPE (no PTFE)	20 mL	00352010079281	Grey	No	
033	0009_MW014_LT_210408	HDPE (no PTFE)	20 mL	00352010079568	Grey	No	
033	0009_MW014_LT_210408	HDPE (no PTFE)	20 mL	00352010079428	Grey	No	
034	0009_MW015_LT_210408	HDPE (no PTFE)	20 mL	00350019152718	Grey	No	
034	0009_MW015_LT_210408	HDPE (no PTFE)	20 mL	00352010057851	Grey	No	
035	0009_MW001_LT_210408	HDPE (no PTFE)	20 mL	00352010079375	Grey	No	
035	0009_MW001_LT_210408	HDPE (no PTFE)	20 mL	00352010079445	Grey	No	
036	0009_MW002_LT_210408	HDPE (no PTFE)	20 mL	00352010079572	Grey	No	
036	0009_MW002_LT_210408	HDPE (no PTFE)	20 mL	00352010079274	Grey	No	
037	0009_MW003_LT_210408	HDPE (no PTFE)	20 mL	00352010079504	Grey	No	
037	0009_MW003_LT_210408	HDPE (no PTFE)	20 mL	00352010079513	Grey	No	
037	0009_MW003_LT_210408	HDPE (no PTFE)	20 mL	00352010079351	Grey	No	
037	0009_MW003_LT_210408	HDPE (no PTFE)	20 mL	00352010079462	Grey	No	
038	0009_MW004_LT_210408	HDPE (no PTFE)	20 mL	00352010079556	Grey	No	
038	0009_MW004_LT_210408	HDPE (no PTFE)	20 mL	00352010079471	Grey	No	
039	0009_MW005_LT_210408	HDPE (no PTFE)	20 mL	00350019152569	Grey	No	
039	0009_MW005_LT_210408	HDPE (no PTFE)	20 mL	00352010057852	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 21076 ALS Laboratory: ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

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: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

040	0009_MW013_LT_210408	HDPE (no PTFE)	20 mL	00352010079369	Grey	No	
040	0009_MW013_LT_210408	HDPE (no PTFE)	20 mL	00352010079296	Grey	No	
040	0009_MW013_LT_210408	HDPE (no PTFE)	20 mL	00352010079476	Grey	No	
040	0009_MW013_LT_210408	HDPE (no PTFE)	20 mL	00352010079571	Grey	No	
041	0009_QC102_210408	HDPE (no PTFE)	20 mL	00352010079359	Grey	No	
041	0009_QC102_210408	HDPE (no PTFE)	20 mL	00352010079299	Grey	No	
042	0009_QC301_210408	HDPE (no PTFE)	20 mL	00352010079485	Grey	No	
042	0009_QC301_210408	HDPE (no PTFE)	20 mL	00352010079352	Grey	No	
043	0009_QC302_210408	HDPE (no PTFE)	20 mL	00352010079293	Grey	No	
043	0009_QC302_210408	HDPE (no PTFE)	20 mL	00352010079488	Grey	No	
044	0009_QC103_210408	HDPE (no PTFE)	20 mL	00352010079522	Grey	No	
044	0009_QC103_210408	HDPE (no PTFE)	20 mL	00352010079507	Grey	No	
045	0009_MW017_HT_210409	HDPE (no PTFE)	20 mL	00352010079341	Grey	No	
045	0009_MW017_HT_210409	HDPE (no PTFE)	20 mL	00352010079453	Grey	No	
045	0009_MW017_HT_210409	HDPE (no PTFE)	20 mL	00352010079479	Grey	No	
045	0009_MW017_HT_210409	HDPE (no PTFE)	20 mL	00352010079470	Grey	No	
046	0009_MW007_HT_210409	HDPE (no PTFE)	20 mL	00352010079303	Grey	No	
046	0009_MW007_HT_210409	HDPE (no PTFE)	20 mL	00352010079378	Grey	No	
047	0009_MW009_HT_210409	HDPE (no PTFE)	20 mL	00352010079548	Grey	No	
047	0009_MW009_HT_210409	HDPE (no PTFE)	20 mL	00352010079387	Grey	No	
048	0009_MW011_HT_210409	HDPE (no PTFE)	20 mL	00350019152707	Grey	No	
048	0009_MW011_HT_210409	HDPE (no PTFE)	20 mL	00352010057947	Grey	No	
049	0009_MW015_HT_210409	HDPE (no PTFE)	20 mL	00352010079292	Grey	No	
049	0009_MW015_HT_210409	HDPE (no PTFE)	20 mL	00352010079416	Grey	No	
050	0009_MW016_HT_210409	HDPE (no PTFE)	20 mL	00352010079357	Grey	No	
050	0009_MW016_HT_210409	HDPE (no PTFE)	20 mL	00352010079435	Grey	No	
051	0009_MW018_HT_210409	HDPE (no PTFE)	20 mL	00352010079332	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 21076 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:

051	0009_MW018_HT_210409	HDPE (no PTFE)	20 mL	00352010079545	Grey	No	
052	0009_MW019_HT_210409	HDPE (no PTFE)	20 mL	00352010079465	Grey	No	
052	0009_MW019_HT_210409	HDPE (no PTFE)	20 mL	00352010079277	Grey	No	
053	0009_QC104_210409	HDPE (no PTFE)	20 mL	00352010079460	Grey	No	
053	0009_QC104_210409	HDPE (no PTFE)	20 mL	00352010079514	Grey	No	
054	0009_QC105_210409	HDPE (no PTFE)	20 mL	00352010079371	Grey	No	
054	0009_QC105_210409	HDPE (no PTFE)	20 mL	00352010079550	Grey	No	
055	0009_MW001_HT_210409	HDPE (no PTFE)	20 mL	00352010079394	Grey	No	
055	0009_MW001_HT_210409	HDPE (no PTFE)	20 mL	00352010079519	Grey	No	
055	0009_MW001_HT_210409	HDPE (no PTFE)	20 mL	00352010079539	Grey	No	
055	0009_MW001_HT_210409	HDPE (no PTFE)	20 mL	00352010079469	Grey	No	
056	0009_MW002_HT_210409	HDPE (no PTFE)	20 mL	00352010079554	Grey	No	
056	0009_MW002_HT_210409	HDPE (no PTFE)	20 mL	00352010079547	Grey	No	
057	0009_MW003_HT_210409	HDPE (no PTFE)	20 mL	00352010057865	Grey	No	
057	0009_MW003_HT_210409	HDPE (no PTFE)	20 mL	00352010057956	Grey	No	
058	0009_MW004_HT_210409	HDPE (no PTFE)	20 mL	00352010079398	Grey	No	
058	0009_MW004_HT_210409	HDPE (no PTFE)	20 mL	00352010079529	Grey	No	
059	0009_MW005_HT_210409	HDPE (no PTFE)	20 mL	00352010079348	Grey	No	
059	0009_MW005_HT_210409	HDPE (no PTFE)	20 mL	00352010079559	Grey	No	
060	0009_MW013_HT_210409	HDPE (no PTFE)	20 mL	00352010079452	Grey	No	
060	0009_MW013_HT_210409	HDPE (no PTFE)	20 mL	00352010079512	Grey	No	
061	0009_MW014_HT_210409	HDPE (no PTFE)	20 mL	00352010079318	Grey	No	
061	0009_MW014_HT_210409	HDPE (no PTFE)	20 mL	00352010079379	Grey	No	
062	0009_QC303_210409	HDPE (no PTFE)	20 mL	00352010079444	Grey	No	
062	0009_QC303_210409	HDPE (no PTFE)	20 mL	00352010079297	Grey	No	
063	0009_QC304_210409	HDPE (no PTFE)	20 mL	00352010079349	Grey	No	
063	0009_QC304_210409	HDPE (no PTFE)	20 mL	00352010079367	Grey	No	

CHAIN OF CUSTODY

COC#: 21076 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:			

Total Bottle Count: ALS: 134, Non ALS: 0

Appendix E

Laboratory Analytical Certificates and QA/QC Reports

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ET2101751**	Page	: 1 of 31
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Townsville
Contact	[redacted]	Contact	[redacted]
Address		Address	
Telephone	: [redacted]	Telephone	
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 12-Apr-2021 12:56
Order number	: 60612487_4.1	Date Analysis Commenced	: 14-Apr-2021
C-O-C number	: 21076	Issue Date	: 23-Apr-2021 15:39
Sampler	: [redacted]		
Site	: QLD_0009		
Quote number	: TV/007/21 - Compass		
No. of samples received	: 63		
No. of samples analysed	: 63		

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]	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
	2IC Organic Chemist	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 Contact 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.
- EP231X PFAS: Particular samples required dilution due to sample matrix. LOR values have been adjusted accordingly. Surrogate recovery not determined.
- All analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- 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.
- 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: SEDIMENT (Matrix: SOIL)			Sample ID	0009_SD032_210407	0009_SD034_210407	0009_SD035_210407	0009_QC101_210407	0009_SD036_210408
			Sampling date / time	07-Apr-2021 15:20	07-Apr-2021 11:36	07-Apr-2021 11:53	07-Apr-2021 11:53	08-Apr-2021 08:33
Compound	CAS Number	LOR	Unit	ET2101751-009	ET2101751-011	ET2101751-012	ET2101751-015	ET2101751-018
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**54.8**	**42.9**	**33.6**	**40.4**	**34.0**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	**0.0002**	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0024**	**0.0010**	**0.0009**	**0.0010**	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0009_SD032_210407	0009_SD034_210407	0009_SD035_210407	0009_QC101_210407	0009_SD036_210408
				Sampling date / time	07-Apr-2021 15:20	07-Apr-2021 11:36	07-Apr-2021 11:53	07-Apr-2021 11:53	08-Apr-2021 08:33
Compound	CAS Number	LOR	Unit		ET2101751-009	ET2101751-011	ET2101751-012	ET2101751-015	ET2101751-018
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0024**	**0.0012**	**0.0009**	**0.0010**	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0024**	**0.0012**	**0.0009**	**0.0010**	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0024**	**0.0012**	**0.0009**	**0.0010**	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**120**	**102**	**110**	**113**	**104**
13C8-PFOA	----	0.0002	%		**103**	**103**	**100**	**99.5**	**100**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0009_SD100_210408	0009_SD101_210408	----	----	----
				Sampling date / time	08-Apr-2021 09:24	08-Apr-2021 09:24	----	----	----
Compound	CAS Number	LOR	Unit		ET2101751-021	ET2101751-022	--------	--------	--------
					Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**17.7**	**20.7**	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0003**	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0009_SD100_210408	0009_SD101_210408	----	----	----
				Sampling date / time	08-Apr-2021 09:24	08-Apr-2021 09:24	----	----	----
Compound	CAS Number	LOR	Unit		ET2101751-021	ET2101751-022	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0003**	<0.0002	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0003**	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0003**	<0.0002	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**100**	**89.0**	----	----	----
13C8-PFOA	----	0.0002	%		**96.0**	**100**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD030_210407	0009_SD031_210407	0009_SD033_210407	----	----
				Sampling date / time	07-Apr-2021 15:09	07-Apr-2021 15:09	07-Apr-2021 15:30	----	----
Compound	CAS Number	LOR	Unit		ET2101751-007	ET2101751-008	ET2101751-010	--------	--------
					Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**34.9**	**21.8**	**61.4**	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0006**	<0.0002	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0115**	**0.0024**	**0.0005**	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		**0.0008**	**0.0003**	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD030_210407	0009_SD031_210407	0009_SD033_210407	----	----
				Sampling date / time	07-Apr-2021 15:09	07-Apr-2021 15:09	07-Apr-2021 15:30	----	----
Compound	CAS Number	LOR	Unit		ET2101751-007	ET2101751-008	ET2101751-010	--------	--------
					Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0129**	**0.0027**	**0.0005**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0121**	**0.0024**	**0.0005**	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0121**	**0.0024**	**0.0005**	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**104**	**83.0**	**107**	----	----
13C8-PFOA	----	0.0002	%		**102**	**89.0**	**100**	----	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW030_210407	0009_SW031_210407	0009_SW032_210407	0009_SW033_210407	0009_SW034_210407
				Sampling date / time	07-Apr-2021 15:08	07-Apr-2021 15:09	07-Apr-2021 15:20	07-Apr-2021 15:30	07-Apr-2021 11:36
					ET2101751-001	ET2101751-002	ET2101751-003	ET2101751-004	ET2101751-005
					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	0.02	µg/L		**0.05**	<0.02	<0.02	<0.02	**0.03**
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**	<0.01	**0.04**	**0.03**	**0.09**
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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW030_210407	0009_SW031_210407	0009_SW032_210407	0009_SW033_210407	0009_SW034_210407
				Sampling date / time	07-Apr-2021 15:08	07-Apr-2021 15:09	07-Apr-2021 15:20	07-Apr-2021 15:30	07-Apr-2021 11:36
Compound	CAS Number	LOR	Unit		ET2101751-001	ET2101751-002	ET2101751-003	ET2101751-004	ET2101751-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**0.20**	<0.01	**0.04**	**0.03**	**0.12**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.20**	<0.01	**0.04**	**0.03**	**0.12**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.20**	<0.01	**0.04**	**0.03**	**0.12**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**92.9**	**94.9**	**97.8**	**92.3**	**98.1**
13C8-PFOA	----	0.02	%		**97.3**	**97.0**	**97.3**	**97.4**	**98.4**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW035_210407	0009_QC500_210407	0009_QC100_210407	0009_QC300_210407	0009_SW036_210408
				Sampling date / time	07-Apr-2021 11:51	07-Apr-2021 07:51	07-Apr-2021 11:52	07-Apr-2021 18:45	08-Apr-2021 08:32
					ET2101751-006	ET2101751-013	ET2101751-014	ET2101751-016	ET2101751-017
					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	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<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		**0.05**	<0.01	**0.05**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW035_210407	0009_QC500_210407	0009_QC100_210407	0009_QC300_210407	0009_SW036_210408
				Sampling date / time	07-Apr-2021 11:51	07-Apr-2021 07:51	07-Apr-2021 11:52	07-Apr-2021 18:45	08-Apr-2021 08:32
Compound	CAS Number	LOR	Unit		ET2101751-006	ET2101751-013	ET2101751-014	ET2101751-016	ET2101751-017
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.08**
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**	<0.01	**0.05**	<0.01	**0.08**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.05**	<0.01	**0.05**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.05**	<0.01	**0.05**	<0.01	**0.08**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**92.8**	**99.6**	**101**	**95.2**	**99.6**
13C8-PFOA	----	0.02	%		**97.2**	**97.8**	**98.3**	**98.5**	**97.1**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW100_210408	0009_SW101_210408	0009_MW031_210408	0009_MW035_210408	0009_MW036_210408
				Sampling date / time	08-Apr-2021 09:23	08-Apr-2021 09:22	08-Apr-2021 10:17	08-Apr-2021 10:41	08-Apr-2021 10:41
					ET2101751-019	ET2101751-020	ET2101751-023	ET2101751-024	ET2101751-025
					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	**0.14**	**0.05**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.16**	**0.06**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	<0.02	**0.06**	**0.50**	**0.25**
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	**0.24**	**0.13**	**0.29**
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**	**0.05**
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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW100_210408	0009_SW101_210408	0009_MW031_210408	0009_MW035_210408	0009_MW036_210408
				Sampling date / time	08-Apr-2021 09:23	08-Apr-2021 09:22	08-Apr-2021 10:17	08-Apr-2021 10:41	08-Apr-2021 10:41
Compound	CAS Number	LOR	Unit		ET2101751-019	ET2101751-020	ET2101751-023	ET2101751-024	ET2101751-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.07**	<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	**0.37**	**0.96**	**0.71**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.30**	**0.63**	**0.54**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**0.37**	**0.80**	**0.65**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**101**	**95.1**	**98.6**	**96.5**	**96.6**
13C8-PFOA	----	0.02	%		**96.9**	**96.4**	**95.9**	**95.5**	**96.3**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW007_LT_210408	0009_MW016_LT_210408	0009_MW009_LT_210408	0009_MW017_LT_210408	0009_MW018_LT_210408
				Sampling date / time	08-Apr-2021 14:36	08-Apr-2021 14:22	08-Apr-2021 13:50	08-Apr-2021 12:53	08-Apr-2021 13:11
Compound	CAS Number	LOR	Unit		ET2101751-026	ET2101751-027	ET2101751-028	ET2101751-029	ET2101751-030
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.19**	**0.31**	<0.02	**0.03**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.29**	**0.38**	<0.02	**0.04**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**2.58**	**2.59**	**0.10**	**0.34**	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.34**	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**35.0**	**0.15**	**0.10**	**1.67**	**0.04**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.19	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<1.0	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.23**	**0.16**	<0.02	**0.03**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.71**	**0.58**	<0.02	**0.08**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.19	**0.08**	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.38**	**0.02**	<0.01	**0.03**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.19	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.19	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.19	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.19	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.19	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.48	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.19	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.48	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.48	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW007_LT_210408	0009_MW016_LT_210408	0009_MW009_LT_210408	0009_MW017_LT_210408	0009_MW018_LT_210408
				Sampling date / time	08-Apr-2021 14:36	08-Apr-2021 14:22	08-Apr-2021 13:50	08-Apr-2021 12:53	08-Apr-2021 13:11
					ET2101751-026	ET2101751-027	ET2101751-028	ET2101751-029	ET2101751-030
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.48	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.48	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.19	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.19	<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		<0.19	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.19	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.19	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.19	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**39.7**	**4.27**	**0.20**	**2.22**	**0.04**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**37.6**	**2.74**	**0.20**	**2.01**	**0.04**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**39.1**	**3.89**	**0.20**	**2.18**	**0.04**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**105**	**107**	**89.6**	**99.1**	**91.3**
13C8-PFOA	----	0.02	%		**85.0**	**103**	**104**	**105**	**102**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW011_LT_210408	0009_MW019_LT_210408	0009_MW014_LT_210408	0009_MW015_LT_210408	0009_MW001_LT_210408
				Sampling date / time	08-Apr-2021 13:32	08-Apr-2021 14:07	08-Apr-2021 15:10	08-Apr-2021 14:58	08-Apr-2021 15:15
					ET2101751-031	ET2101751-032	ET2101751-033	ET2101751-034	ET2101751-035
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.10	**0.69**	<0.02	**0.07**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.10	**0.51**	<0.02	**0.05**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	**0.86**	**11.5**	**0.21**	**0.32**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	**0.24**	**0.69**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.14**	**11.7**	**48.5**	**1.44**	**0.23**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.10	<0.18	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.5	<0.9	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.02**	**0.15**	**0.64**	**0.03**	**0.03**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.02**	**0.26**	**3.03**	**0.08**	**0.13**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.02**	**0.11**	**0.46**	<0.02	**0.02**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.07**	**0.26**	**0.91**	**0.02**	**0.03**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.10	<0.18	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.10	<0.18	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.10	<0.18	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.10	<0.18	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.10	<0.18	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.24	<0.46	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.10	<0.18	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.24	<0.46	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.24	<0.46	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW011_LT_210408	0009_MW019_LT_210408	0009_MW014_LT_210408	0009_MW015_LT_210408	0009_MW001_LT_210408
				Sampling date / time	08-Apr-2021 13:32	08-Apr-2021 14:07	08-Apr-2021 15:10	08-Apr-2021 14:58	08-Apr-2021 15:15
Compound	CAS Number	LOR	Unit		ET2101751-031	ET2101751-032	ET2101751-033	ET2101751-034	ET2101751-035
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.24	<0.46	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.24	<0.46	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.10	<0.18	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.10	<0.18	<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	<0.10	<0.18	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	**0.31**	<0.18	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.10	<0.18	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.10	<0.18	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**0.27**	**13.9**	**66.9**	**1.78**	**0.88**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.14**	**12.6**	**60.0**	**1.65**	**0.55**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.27**	**13.6**	**65.7**	**1.78**	**0.83**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.1**	**119**	**90.0**	**103**	**103**
13C8-PFOA	----	0.02	%		**102**	**102**	**100**	**103**	**105**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW002_LT_210408	0009_MW003_LT_210408	0009_MW004_LT_210408	0009_MW005_LT_210408	0009_MW013_LT_210408
				Sampling date / time	08-Apr-2021 15:12	08-Apr-2021 15:11	08-Apr-2021 15:14	08-Apr-2021 15:13	08-Apr-2021 15:10
Compound	CAS Number	LOR	Unit		ET2101751-036	ET2101751-037	ET2101751-038	ET2101751-039	ET2101751-040
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**1.59**	**0.69**	**0.66**	**0.49**	**0.06**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**1.59**	**0.60**	**0.52**	**0.50**	**0.08**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**18.1**	**5.43**	**7.01**	**6.70**	**0.97**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**2.11**	**0.24**	**0.59**	**0.65**	**0.06**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**85.1**	**4.45**	**27.0**	**40.6**	**3.58**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.37	<0.02	<0.18	<0.08	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<1.8	**0.2**	<0.9	**0.4**	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**1.37**	**0.41**	**0.81**	**0.84**	**0.10**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**6.55**	**1.79**	**1.67**	**1.48**	**0.17**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**1.07**	**0.25**	**0.53**	**0.40**	**0.05**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**2.40**	**0.46**	**1.16**	**0.89**	**0.09**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.37	**0.02**	<0.18	**0.13**	**0.24**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.37	<0.02	<0.18	<0.08	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.37	<0.02	<0.18	<0.08	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.37	<0.02	<0.18	<0.08	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.37	<0.02	<0.18	<0.08	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.92	<0.05	<0.46	<0.19	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.37	<0.02	<0.18	<0.08	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.92	<0.05	<0.46	<0.19	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.92	<0.05	<0.46	<0.19	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW002_LT_210408	0009_MW003_LT_210408	0009_MW004_LT_210408	0009_MW005_LT_210408	0009_MW013_LT_210408
				Sampling date / time	08-Apr-2021 15:12	08-Apr-2021 15:11	08-Apr-2021 15:14	08-Apr-2021 15:13	08-Apr-2021 15:10
Compound	CAS Number	LOR	Unit		ET2101751-036	ET2101751-037	ET2101751-038	ET2101751-039	ET2101751-040
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.92	<0.05	<0.46	<0.19	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.92	<0.05	<0.46	<0.19	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.37	<0.02	<0.18	<0.08	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.37	<0.02	<0.18	<0.08	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.37	<0.05	<0.18	<0.08	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.37	**0.06**	<0.18	<0.08	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.37	<0.05	<0.18	<0.08	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.37	<0.05	<0.18	<0.08	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**120**	**14.6**	**40.0**	**53.1**	**5.40**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**103**	**9.88**	**34.0**	**47.3**	**4.55**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**116**	**13.7**	**38.8**	**51.8**	**5.02**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**Not Determined**	**101**	**105**	**136**	**103**
13C8-PFOA	----	0.02	%		**Not Determined**	**95.0**	**95.0**	**96.0**	**105**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC102_210408	0009_QC301_210408	0009_QC302_210408	0009_QC103_210408	0009_MW017_HT_210409
				Sampling date / time	08-Apr-2021 13:11	08-Apr-2021 15:02	08-Apr-2021 15:09	08-Apr-2021 15:14	09-Apr-2021 07:28
Compound	CAS Number	LOR	Unit		ET2101751-041	ET2101751-042	ET2101751-043	ET2101751-044	ET2101751-045
					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	**0.83**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.83**	**0.02**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	<0.02	<0.02	**14.0**	**0.23**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	**0.71**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.02**	<0.01	<0.01	**54.2**	**0.97**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<1.2	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	**0.76**	**0.02**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	**4.12**	**0.05**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	**0.63**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	**1.02**	**0.02**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.61	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.61	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.61	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC102_210408	0009_QC301_210408	0009_QC302_210408	0009_QC103_210408	0009_MW017_HT_210409
				Sampling date / time	08-Apr-2021 13:11	08-Apr-2021 15:02	08-Apr-2021 15:09	08-Apr-2021 15:14	09-Apr-2021 07:28
Compound	CAS Number	LOR	Unit		ET2101751-041	ET2101751-042	ET2101751-043	ET2101751-044	ET2101751-045
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.61	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.61	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<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	<0.24	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.24	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.24	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.24	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**0.02**	<0.01	<0.01	**77.1**	**1.31**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.02**	<0.01	<0.01	**68.2**	**1.20**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.02**	<0.01	<0.01	**75.6**	**1.29**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**95.0**	**96.6**	**89.6**	**95.2**	**97.1**
13C8-PFOA	----	0.02	%		**93.7**	**97.0**	**95.6**	**97.6**	**97.0**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW007_HT_210409	0009_MW009_HT_210409	0009_MW011_HT_210409	0009_MW015_HT_210409	0009_MW016_HT_210409
				Sampling date / time	09-Apr-2021 08:55	09-Apr-2021 08:11	09-Apr-2021 07:54	09-Apr-2021 09:15	09-Apr-2021 08:44
					ET2101751-046	ET2101751-047	ET2101751-048	ET2101751-049	ET2101751-050
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.39**	<0.02	<0.02	<0.02	**0.20**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.66**	<0.02	<0.02	<0.02	**0.34**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**4.27**	**0.08**	<0.02	**0.27**	**1.72**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.36**	<0.02	<0.02	**0.02**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**45.5**	**0.18**	**0.23**	**2.52**	**0.22**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.24	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<1.2	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.34**	<0.02	**0.03**	**0.04**	**0.09**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**1.29**	<0.02	**0.04**	**0.10**	**0.42**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.32	<0.02	**0.04**	<0.02	**0.05**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.58**	<0.01	**0.18**	**0.03**	**0.01**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.24	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.24	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.24	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.24	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.24	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.61	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.24	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.61	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.61	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW007_HT_210409	0009_MW009_HT_210409	0009_MW011_HT_210409	0009_MW015_HT_210409	0009_MW016_HT_210409
				Sampling date / time	09-Apr-2021 08:55	09-Apr-2021 08:11	09-Apr-2021 07:54	09-Apr-2021 09:15	09-Apr-2021 08:44
Compound	CAS Number	LOR	Unit		ET2101751-046	ET2101751-047	ET2101751-048	ET2101751-049	ET2101751-050
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.61	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.61	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.24	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.24	<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		<0.24	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.24	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.24	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.24	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**53.4**	**0.26**	**0.52**	**2.98**	**3.05**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**49.8**	**0.26**	**0.23**	**2.79**	**1.94**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**52.4**	**0.26**	**0.52**	**2.96**	**2.71**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**101**	**104**	**102**	**92.3**	**104**
13C8-PFOA	----	0.02	%		**99.2**	**99.0**	**96.9**	**100**	**97.9**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW018_HT_210409	0009_MW019_HT_210409	0009_QC104_210409	0009_QC105_210409	0009_MW001_HT_210409
				Sampling date / time	09-Apr-2021 07:41	09-Apr-2021 08:31	09-Apr-2021 08:12	09-Apr-2021 09:31	09-Apr-2021 09:33
					ET2101751-051	ET2101751-052	ET2101751-053	ET2101751-054	ET2101751-055
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.04**	<0.02	**0.68**	**0.11**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.05**	<0.02	**0.62**	**0.10**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	**0.47**	**0.09**	**9.52**	**0.54**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	**0.13**	<0.02	**0.50**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.02**	**4.21**	**0.10**	**33.4**	**0.09**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.25	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<1.2	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	**0.10**	<0.02	**0.58**	**0.04**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.16**	<0.02	**3.10**	**0.22**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**0.07**	<0.02	**0.45**	**0.03**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.14**	<0.01	**0.70**	**0.04**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.25	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.25	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.25	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.25	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.25	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.62	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.25	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.62	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.62	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW018_HT_210409	0009_MW019_HT_210409	0009_QC104_210409	0009_QC105_210409	0009_MW001_HT_210409
				Sampling date / time	09-Apr-2021 07:41	09-Apr-2021 08:31	09-Apr-2021 08:12	09-Apr-2021 09:31	09-Apr-2021 09:33
Compound	CAS Number	LOR	Unit		ET2101751-051	ET2101751-052	ET2101751-053	ET2101751-054	ET2101751-055
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.62	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.62	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.25	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.25	<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	<0.25	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	**0.06**	<0.05	<0.25	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.25	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.25	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**0.02**	**5.43**	**0.19**	**49.6**	**1.17**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.02**	**4.68**	**0.19**	**42.9**	**0.63**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.02**	**5.25**	**0.19**	**48.4**	**1.07**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**101**	**99.2**	**96.6**	**103**	**100**
13C8-PFOA	----	0.02	%		**99.6**	**99.3**	**100**	**101**	**100**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW002_HT_210409	0009_MW003_HT_210409	0009_MW004_HT_210409	0009_MW005_HT_210409	0009_MW013_HT_210409
				Sampling date / time	09-Apr-2021 09:35	09-Apr-2021 09:34	09-Apr-2021 09:32	09-Apr-2021 09:36	09-Apr-2021 09:35
					ET2101751-056	ET2101751-057	ET2101751-058	ET2101751-059	ET2101751-060
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**1.34**	**0.94**	**0.90**	**0.65**	**0.06**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**1.45**	**0.86**	**0.73**	**0.55**	**0.05**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**14.1**	**6.59**	**7.93**	**6.94**	**0.55**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**1.80**	**0.32**	**0.92**	**0.80**	**0.05**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**78.6**	**4.84**	**31.5**	**47.3**	**2.49**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.38	**0.02**	<0.19	<0.19	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<1.9	**0.3**	<0.9	<1.0	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**1.38**	**0.53**	**1.27**	**1.04**	**0.07**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**6.04**	**2.58**	**2.56**	**1.96**	**0.15**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**1.03**	**0.33**	**0.73**	**0.49**	**0.05**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**2.25**	**0.64**	**1.51**	**1.08**	**0.08**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.38	<0.02	<0.19	<0.19	**0.08**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.38	<0.02	<0.19	<0.19	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.38	<0.02	<0.19	<0.19	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.38	<0.02	<0.19	<0.19	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.38	<0.02	<0.19	<0.19	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.96	<0.05	<0.47	<0.48	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.38	<0.02	<0.19	<0.19	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.96	<0.05	<0.47	<0.48	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.96	<0.05	<0.47	<0.48	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW002_HT_210409	0009_MW003_HT_210409	0009_MW004_HT_210409	0009_MW005_HT_210409	0009_MW013_HT_210409
				Sampling date / time	09-Apr-2021 09:35	09-Apr-2021 09:34	09-Apr-2021 09:32	09-Apr-2021 09:36	09-Apr-2021 09:35
Compound	CAS Number	LOR	Unit		ET2101751-056	ET2101751-057	ET2101751-058	ET2101751-059	ET2101751-060
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.96	<0.05	<0.47	<0.48	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.96	<0.05	<0.47	<0.48	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.38	<0.02	<0.19	<0.19	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.38	<0.02	<0.19	<0.19	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.38	<0.05	<0.19	<0.19	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.38	<0.05	<0.19	<0.19	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.38	<0.05	<0.19	<0.19	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.38	<0.05	<0.19	<0.19	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**108**	**18.0**	**48.0**	**60.8**	**3.63**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**92.7**	**11.4**	**39.4**	**54.2**	**3.04**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**105**	**16.8**	**46.4**	**59.5**	**3.45**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**Not Determined**	**Not Determined**	**Not Determined**	**Not Determined**	**Not Determined**
13C8-PFOA	----	0.02	%		**Not Determined**	**Not Determined**	**Not Determined**	**Not Determined**	**Not Determined**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW014_HT_210409	0009_QC303_210409	0009_QC304_210409	----	----
				Sampling date / time	09-Apr-2021 09:31	09-Apr-2021 09:15	09-Apr-2021 09:33	----	----
Compound	CAS Number	LOR	Unit		ET2101751-061	ET2101751-062	ET2101751-063	--------	--------
					Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.58**	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.49**	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**7.99**	<0.02	<0.02	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.54**	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**42.0**	<0.01	<0.01	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.18	<0.02	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.9	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.65**	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**2.89**	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.36**	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.73**	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.18	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.18	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.18	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.18	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.18	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.45	<0.05	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.18	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.45	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.45	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW014_HT_210409	0009_QC303_210409	0009_QC304_210409	----	----
				Sampling date / time	09-Apr-2021 09:31	09-Apr-2021 09:15	09-Apr-2021 09:33	----	----
Compound	CAS Number	LOR	Unit		ET2101751-061	ET2101751-062	ET2101751-063	--------	--------
					Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.45	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.45	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.18	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.18	<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		<0.18	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.18	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.18	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.18	<0.05	<0.05	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**56.2**	<0.01	<0.01	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**50.0**	<0.01	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**55.2**	<0.01	<0.01	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**Not Determined**	**88.4**	**91.4**	----	----
13C8-PFOA	----	0.02	%		**Not Determined**	**95.4**	**94.5**	----	----

Surrogate Control Limits

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(WATER) EP231A: Perfluoroalkyl Sulfonic Acids
(WATER) EP231B: Perfluoroalkyl Carboxylic Acids
(WATER) EP231C: Perfluoroalkyl Sulfonamides
(WATER) EP231D: (n:2) Fluorotelomer Sulfonic Acids
(WATER) EP231P: PFAS Sums
(WATER) EP231S: PFAS Surrogate
(SOIL) EP231B: Perfluoroalkyl Carboxylic Acids
(SOIL) EP231D: (n:2) Fluorotelomer Sulfonic Acids
(SOIL) EP231C: Perfluoroalkyl Sulfonamides
(SOIL) EP231A: Perfluoroalkyl Sulfonic Acids
(SOIL) EP231P: PFAS Sums
(SOIL) EP231S: PFAS Surrogate
(SOIL) EA055: Moisture Content (Dried @ 105-110°C)

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ET2101751**	Page	: 1 of 19
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Townsville
Contact	[redacted]	Contact	[redacted]
Address		Address	
Telephone	: ----	Telephone	
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 12-Apr-2021
Order number	: 60612487_4.1	Date Analysis Commenced	: 14-Apr-2021
C-O-C number	: 21076	Issue Date	: 23-Apr-2021
Sampler	[redacted]		
Site	: QLD_0009		
Quote number	: TV/007/21 - Compass		
No. of samples received	: 63		
No. of samples analysed	: 63		

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]	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
	2IC Organic Chemist	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

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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3620324)									
ET2101751-007	0009_SD030_210407	EA055: Moisture Content	----	0.1	%	34.9	38.4	9.59	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3620323)									
ET2101751-007	0009_SD030_210407	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0006	0.0006	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0115	0.0117	1.45	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0008	0.0011	37.9	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3620323)									
ET2101751-007	0009_SD030_210407	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3620323)									
ET2101751-007	0009_SD030_210407	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

				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: 3620323) - continued									
ET2101751-007	0009_SD030_210407	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3620323)									
ET2101751-007	0009_SD030_210407	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	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 (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3625141)									
ET2101751-001	0009_SW030_210407	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.15	0.16	0.00	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.05	0.05	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
ET2101751-017	0009_SW036_210408	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3625143)									
ET2101751-028	0009_MW009_LT_210408	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.10	0.12	20.3	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.10	0.10	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	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 (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3625143) - continued									
ET2101751-028	0009_MW009_LT_210408	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
ET2101751-037	0009_MW003_LT_210408	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	4.45	3.69	18.8	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.69	0.74	7.32	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.60	0.61	2.59	0% - 20%
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	5.43	5.42	0.00	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.24	0.24	0.00	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3625145)									
ET2101751-045	0009_MW017_HT_210409	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.97	1.02	4.57	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.23	0.22	5.17	0% - 50%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
ET2101751-055	0009_MW001_HT_210409	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.09	0.08	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.11	0.11	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.10	0.10	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.54	0.52	5.13	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3625141)									
ET2101751-001	0009_SW030_210407	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
ET2101751-017	0009_SW036_210408	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	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: 3625141) - continued									
ET2101751-017	0009_SW036_210408	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3625143)									
ET2101751-028	0009_MW009_LT_210408	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
ET2101751-037	0009_MW003_LT_210408	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.46	0.46	0.00	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.41	0.42	3.03	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	1.79	1.80	0.586	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.25	0.25	0.00	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.2	0.2	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3625145)									
ET2101751-045	0009_MW017_HT_210409	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	0.02	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.05	0.05	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
ET2101751-055	0009_MW001_HT_210409	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.04	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.00	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: 3625145) - continued									
ET2101751-055	0009_MW001_HT_210409	EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.22	0.21	7.15	0% - 50%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.03	0.03	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3625141)									
ET2101751-001	0009_SW030_210407	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ET2101751-017	0009_SW036_210408	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3625143)									
ET2101751-028	0009_MW009_LT_210408	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	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: 3625143) - continued									
ET2101751-028	0009_MW009_LT_210408	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ET2101751-037	0009_MW003_LT_210408	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3625145)									
ET2101751-045	0009_MW017_HT_210409	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ET2101751-055	0009_MW001_HT_210409	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	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: 3625145) - continued									
ET2101751-055	0009_MW001_HT_210409	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3625141)									
ET2101751-001	0009_SW030_210407	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ET2101751-017	0009_SW036_210408	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.08	<0.05	44.4	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3625143)									
ET2101751-028	0009_MW009_LT_210408	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ET2101751-037	0009_MW003_LT_210408	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.06	0.06	0.00	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: 3625143) - continued									
ET2101751-037	0009_MW003_LT_210408	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3625145)									
ET2101751-045	0009_MW017_HT_210409	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ET2101751-055	0009_MW001_HT_210409	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 3625141)									
ET2101751-001	0009_SW030_210407	EP231X: Sum of PFAS	----	0.01	µg/L	0.20	0.21	4.88	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.20	0.21	4.88	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.20	0.21	4.88	0% - 20%
ET2101751-017	0009_SW036_210408	EP231X: Sum of PFAS	----	0.01	µg/L	0.08	<0.01	156	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.08	<0.01	156	No Limit
EP231P: PFAS Sums (QC Lot: 3625143)									
ET2101751-028	0009_MW009_LT_210408	EP231X: Sum of PFAS	----	0.01	µg/L	0.20	0.22	9.52	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.20	0.22	9.52	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.20	0.22	9.52	0% - 20%
ET2101751-037	0009_MW003_LT_210408	EP231X: Sum of PFAS	----	0.01	µg/L	14.6	13.9	4.98	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	9.88	9.11	8.11	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	13.7	13.0	5.23	0% - 20%
EP231P: PFAS Sums (QC Lot: 3625145)									

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 (%)*
EP231P: PFAS Sums (QC Lot: 3625145) - continued									
ET2101751-045	0009_MW017_HT_210409	EP231X: Sum of PFAS	----	0.01	µg/L	1.31	1.33	1.52	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.20	1.24	3.28	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	1.29	1.31	1.54	0% - 20%
ET2101751-055	0009_MW001_HT_210409	EP231X: Sum of PFAS	----	0.01	µg/L	1.17	1.13	3.48	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.63	0.60	4.88	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	1.07	1.03	3.81	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: **SOIL**

				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: 3620323)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0011 mg/kg	83.2	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00117 mg/kg	89.3	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	81.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	94.1	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	81.0	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0012 mg/kg	88.8	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3620323)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	84.6	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.8	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.6	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.5	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3620323)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.2	59.6	143
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	81.4	62.8	140
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.2	61.5	139
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.1	61.9	137
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.6	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3620323)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	90.6	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00118 mg/kg	94.1	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	94.6	65.0	137

Sub-Matrix: **SOIL**

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: 3620323) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.0012 mg/kg	80.0	54.8	124

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: 3625141)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	96.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	125	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.2373 µg/L	97.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	101	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	102	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	62.0	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3625143)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	96.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	97.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.2373 µg/L	83.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	79.8	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	97.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	68.0	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3625145)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	93.3	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	106	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.2373 µg/L	86.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	84.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	91.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	64.3	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3625158)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	96.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	114	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.2373 µg/L	104	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	104	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	98.1	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	69.5	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625141)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	88.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	99.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	94.8	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	92.0	71.0	133

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625141) - continued								
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	89.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.4	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	92.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	77.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	89.7	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625143)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	96.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	95.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	94.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	87.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	97.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.4	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	81.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	89.5	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625145)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	92.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	89.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	95.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	86.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	83.0	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	83.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	72.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	87.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625158)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.2	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	116	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	96.8	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	93.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	106	71.0	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625158) - continued								
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	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	80.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.1	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3625141)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	111	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	89.3	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.8	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	99.4	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	96.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	89.4	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3625143)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	95.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	95.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	99.9	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	93.2	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	95.4	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	93.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	107	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3625145)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	109	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	93.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	82.6	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.2	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	91.6	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	80.2	65.0	136

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3625145) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	91.6	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3625158)								
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	88.9	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	82.6	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	99.9	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	104	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	97.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	89.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3625141)								
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	96.3	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	94.8	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	82.2	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3625143)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 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	0.2378 µg/L	97.1	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	104	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	88.2	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3625145)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	93.7	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	99.0	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	91.2	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	82.4	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3625158)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	104	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	104	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	111	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	82.4	64.2	133
EP231P: PFAS Sums (QCLot: 3625141)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231P: PFAS Sums (QCLot: 3625141) - continued								
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3625143)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3625145)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3625158)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

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: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3620323)							
ET2101751-008	0009_SD031_210407	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0011 mg/kg	90.4	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00117 mg/kg	80.8	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00118 mg/kg	81.8	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	91.6	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	135	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0012 mg/kg	83.3	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3620323)							
ET2101751-008	0009_SD031_210407	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	80.4	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	92.0	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	106	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	84.0	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	88.4	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	79.2	72.0	129

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3620323) - continued							
ET2101751-008	0009_SD031_210407	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	93.2	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	92.0	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	83.2	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	80.0	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	82.0	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3620323)							
ET2101751-008	0009_SD031_210407	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	92.0	48.0	128
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	83.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	70.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	87.0	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	90.5	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	78.8	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	87.2	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3620323)							
ET2101751-008	0009_SD031_210407	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	78.2	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00118 mg/kg	78.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	76.2	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0012 mg/kg	87.9	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3625141)							
ET2101751-002	0009_SW031_210407	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	92.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	118	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	93.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	80.0	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	89.5	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	69.3	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3625143)							
ET2101751-031	0009_MW011_LT_210408	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	97.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	96.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	84.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	84.9	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: 3625143) - continued							
ET2101751-031	0009_MW011_LT_210408	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	73.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	79.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625141)							
ET2101751-002	0009_SW031_210407	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	77.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	89.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	86.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	80.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	79.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	82.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	83.2	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	83.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.0	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	99.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3625143)							
ET2101751-031	0009_MW011_LT_210408	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	92.6	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	88.5	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	98.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	92.1	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	83.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	97.1	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	96.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	86.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	83.8	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3625141)							
ET2101751-002	0009_SW031_210407	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	95.5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	93.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	90.4	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	84.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	95.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	81.2	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*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3625143)							
ET2101751-031	0009_MW011_LT_210408	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	95.8	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	92.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	81.3	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.3	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	93.8	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	90.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3625141)							
ET2101751-002	0009_SW031_210407	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	96.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	83.8	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	97.9	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3625143)							
ET2101751-031	0009_MW011_LT_210408	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	95.3	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	86.7	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	93.3	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	93.0	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ET2101751**	Page	: 1 of 10
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 12-Apr-2021
Site	: QLD_0009	Issue Date	: 23-Apr-2021
Sampler	: [redacted]	No. of samples received	: 63
Order number	: 60612487_4.1	No. of samples analysed	: 63

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, 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
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	2	56	3.57	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: **SOIL**

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*
EA055: Moisture Content (Dried @ 105-110°C)								
HDPE Soil Jar (EA055)								
0009_SD030_210407,	0009_SD031_210407,	**07-Apr-2021**	**----**	----	----	**14-Apr-2021**	21-Apr-2021	✓
0009_SD032_210407,	0009_SD033_210407,							
0009_SD034_210407,	0009_SD035_210407,							
0009_QC101_210407								
HDPE Soil Jar (EA055)								
0009_SD036_210408,	0009_SD100_210408,	**08-Apr-2021**	**----**	----	----	**14-Apr-2021**	22-Apr-2021	✓
0009_SD101_210408								
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0009_SD030_210407,	0009_SD031_210407,	**07-Apr-2021**	**16-Apr-2021**	04-Oct-2021	✓	**19-Apr-2021**	26-May-2021	✓
0009_SD032_210407,	0009_SD033_210407,							
0009_SD034_210407,	0009_SD035_210407,							
0009_QC101_210407								
HDPE Soil Jar (EP231X)								
0009_SD036_210408,	0009_SD100_210408,	**08-Apr-2021**	**16-Apr-2021**	05-Oct-2021	✓	**19-Apr-2021**	26-May-2021	✓
0009_SD101_210408								

Matrix: **SOIL**

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 Soil Jar (EP231X) 0009_SD030_210407, 0009_SD031_210407, 0009_SD032_210407, 0009_SD033_210407, 0009_SD034_210407, 0009_SD035_210407, 0009_QC101_210407	**07-Apr-2021**	**16-Apr-2021**	04-Oct-2021	✓	**19-Apr-2021**	26-May-2021	✓
HDPE Soil Jar (EP231X) 0009_SD036_210408, 0009_SD100_210408, 0009_SD101_210408	**08-Apr-2021**	**16-Apr-2021**	05-Oct-2021	✓	**19-Apr-2021**	26-May-2021	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X) 0009_SD030_210407, 0009_SD031_210407, 0009_SD032_210407, 0009_SD033_210407, 0009_SD034_210407, 0009_SD035_210407, 0009_QC101_210407	**07-Apr-2021**	**16-Apr-2021**	04-Oct-2021	✓	**19-Apr-2021**	26-May-2021	✓
HDPE Soil Jar (EP231X) 0009_SD036_210408, 0009_SD100_210408, 0009_SD101_210408	**08-Apr-2021**	**16-Apr-2021**	05-Oct-2021	✓	**19-Apr-2021**	26-May-2021	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X) 0009_SD030_210407, 0009_SD031_210407, 0009_SD032_210407, 0009_SD033_210407, 0009_SD034_210407, 0009_SD035_210407, 0009_QC101_210407	**07-Apr-2021**	**16-Apr-2021**	04-Oct-2021	✓	**19-Apr-2021**	26-May-2021	✓
HDPE Soil Jar (EP231X) 0009_SD036_210408, 0009_SD100_210408, 0009_SD101_210408	**08-Apr-2021**	**16-Apr-2021**	05-Oct-2021	✓	**19-Apr-2021**	26-May-2021	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X) 0009_SD030_210407, 0009_SD031_210407, 0009_SD032_210407, 0009_SD033_210407, 0009_SD034_210407, 0009_SD035_210407, 0009_QC101_210407	**07-Apr-2021**	**16-Apr-2021**	04-Oct-2021	✓	**19-Apr-2021**	26-May-2021	✓
HDPE Soil Jar (EP231X) 0009_SD036_210408, 0009_SD100_210408, 0009_SD101_210408	**08-Apr-2021**	**16-Apr-2021**	05-Oct-2021	✓	**19-Apr-2021**	26-May-2021	✓

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

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) 0009_SW030_210407, 0009_SW031_210407, 0009_SW032_210407, 0009_SW033_210407, 0009_SW034_210407, 0009_SW035_210407, 0009_QC500_210407, 0009_QC100_210407, 0009_QC300_210407	**07-Apr-2021**	**19-Apr-2021**	04-Oct-2021	✓	**20-Apr-2021**	04-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_QC102_210408, 0009_QC301_210408, 0009_QC302_210408, 0009_QC103_210408	**08-Apr-2021**	**19-Apr-2021**	05-Oct-2021	✓	**19-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_SW036_210408, 0009_SW100_210408, 0009_SW101_210408, 0009_MW031_210408, 0009_MW035_210408, 0009_MW036_210408	**08-Apr-2021**	**19-Apr-2021**	05-Oct-2021	✓	**20-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_MW007_LT_210408, 0009_MW016_LT_210408, 0009_MW009_LT_210408, 0009_MW017_LT_210408, 0009_MW018_LT_210408, 0009_MW011_LT_210408, 0009_MW019_LT_210408, 0009_MW014_LT_210408, 0009_MW015_LT_210408, 0009_MW001_LT_210408, 0009_MW002_LT_210408, 0009_MW003_LT_210408, 0009_MW004_LT_210408, 0009_MW005_LT_210408, 0009_MW013_LT_210408	**08-Apr-2021**	**21-Apr-2021**	05-Oct-2021	✓	**21-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_MW017_HT_210409, 0009_MW007_HT_210409, 0009_MW009_HT_210409, 0009_MW011_HT_210409, 0009_MW015_HT_210409, 0009_MW016_HT_210409, 0009_MW018_HT_210409, 0009_MW019_HT_210409, 0009_QC104_210409, 0009_QC105_210409, 0009_MW001_HT_210409	**09-Apr-2021**	**19-Apr-2021**	06-Oct-2021	✓	**19-Apr-2021**	06-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_MW002_HT_210409, 0009_MW003_HT_210409, 0009_MW004_HT_210409, 0009_MW005_HT_210409, 0009_MW013_HT_210409, 0009_MW014_HT_210409, 0009_QC303_210409, 0009_QC304_210409	**09-Apr-2021**	**20-Apr-2021**	06-Oct-2021	✓	**20-Apr-2021**	06-Oct-2021	✓

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) 0009_SW030_210407, 0009_SW031_210407, 0009_SW032_210407, 0009_SW033_210407, 0009_SW034_210407, 0009_SW035_210407, 0009_QC500_210407, 0009_QC100_210407, 0009_QC300_210407	**07-Apr-2021**	**19-Apr-2021**	04-Oct-2021	✓	**20-Apr-2021**	04-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_QC102_210408, 0009_QC301_210408, 0009_QC302_210408, 0009_QC103_210408	**08-Apr-2021**	**19-Apr-2021**	05-Oct-2021	✓	**19-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_SW036_210408, 0009_SW100_210408, 0009_SW101_210408, 0009_MW031_210408, 0009_MW035_210408, 0009_MW036_210408	**08-Apr-2021**	**19-Apr-2021**	05-Oct-2021	✓	**20-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_MW007_LT_210408, 0009_MW016_LT_210408, 0009_MW009_LT_210408, 0009_MW017_LT_210408, 0009_MW018_LT_210408, 0009_MW011_LT_210408, 0009_MW019_LT_210408, 0009_MW014_LT_210408, 0009_MW015_LT_210408, 0009_MW001_LT_210408, 0009_MW002_LT_210408, 0009_MW003_LT_210408, 0009_MW004_LT_210408, 0009_MW005_LT_210408, 0009_MW013_LT_210408	**08-Apr-2021**	**21-Apr-2021**	05-Oct-2021	✓	**21-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_MW017_HT_210409, 0009_MW007_HT_210409, 0009_MW009_HT_210409, 0009_MW011_HT_210409, 0009_MW015_HT_210409, 0009_MW016_HT_210409, 0009_MW018_HT_210409, 0009_MW019_HT_210409, 0009_QC104_210409, 0009_QC105_210409, 0009_MW001_HT_210409	**09-Apr-2021**	**19-Apr-2021**	06-Oct-2021	✓	**19-Apr-2021**	06-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_MW002_HT_210409, 0009_MW003_HT_210409, 0009_MW004_HT_210409, 0009_MW005_HT_210409, 0009_MW013_HT_210409, 0009_MW014_HT_210409, 0009_QC303_210409, 0009_QC304_210409	**09-Apr-2021**	**20-Apr-2021**	06-Oct-2021	✓	**20-Apr-2021**	06-Oct-2021	✓

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) 0009_SW030_210407, 0009_SW031_210407, 0009_SW032_210407, 0009_SW033_210407, 0009_SW034_210407, 0009_SW035_210407, 0009_QC500_210407, 0009_QC100_210407, 0009_QC300_210407	**07-Apr-2021**	**19-Apr-2021**	04-Oct-2021	✓	**20-Apr-2021**	04-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_QC102_210408, 0009_QC301_210408, 0009_QC302_210408, 0009_QC103_210408	**08-Apr-2021**	**19-Apr-2021**	05-Oct-2021	✓	**19-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_SW036_210408, 0009_SW100_210408, 0009_SW101_210408, 0009_MW031_210408, 0009_MW035_210408, 0009_MW036_210408	**08-Apr-2021**	**19-Apr-2021**	05-Oct-2021	✓	**20-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_MW007_LT_210408, 0009_MW016_LT_210408, 0009_MW009_LT_210408, 0009_MW017_LT_210408, 0009_MW018_LT_210408, 0009_MW011_LT_210408, 0009_MW019_LT_210408, 0009_MW014_LT_210408, 0009_MW015_LT_210408, 0009_MW001_LT_210408, 0009_MW002_LT_210408, 0009_MW003_LT_210408, 0009_MW004_LT_210408, 0009_MW005_LT_210408, 0009_MW013_LT_210408	**08-Apr-2021**	**21-Apr-2021**	05-Oct-2021	✓	**21-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_MW017_HT_210409, 0009_MW007_HT_210409, 0009_MW009_HT_210409, 0009_MW011_HT_210409, 0009_MW015_HT_210409, 0009_MW016_HT_210409, 0009_MW018_HT_210409, 0009_MW019_HT_210409, 0009_QC104_210409, 0009_QC105_210409, 0009_MW001_HT_210409	**09-Apr-2021**	**19-Apr-2021**	06-Oct-2021	✓	**19-Apr-2021**	06-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_MW002_HT_210409, 0009_MW003_HT_210409, 0009_MW004_HT_210409, 0009_MW005_HT_210409, 0009_MW013_HT_210409, 0009_MW014_HT_210409, 0009_QC303_210409, 0009_QC304_210409	**09-Apr-2021**	**20-Apr-2021**	06-Oct-2021	✓	**20-Apr-2021**	06-Oct-2021	✓

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) 0009_SW030_210407, 0009_SW031_210407, 0009_SW032_210407, 0009_SW033_210407, 0009_SW034_210407, 0009_SW035_210407, 0009_QC500_210407, 0009_QC100_210407, 0009_QC300_210407	**07-Apr-2021**	**19-Apr-2021**	04-Oct-2021	✓	**20-Apr-2021**	04-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_QC102_210408, 0009_QC301_210408, 0009_QC302_210408, 0009_QC103_210408	**08-Apr-2021**	**19-Apr-2021**	05-Oct-2021	✓	**19-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_SW036_210408, 0009_SW100_210408, 0009_SW101_210408, 0009_MW031_210408, 0009_MW035_210408, 0009_MW036_210408	**08-Apr-2021**	**19-Apr-2021**	05-Oct-2021	✓	**20-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_MW007_LT_210408, 0009_MW016_LT_210408, 0009_MW009_LT_210408, 0009_MW017_LT_210408, 0009_MW018_LT_210408, 0009_MW011_LT_210408, 0009_MW019_LT_210408, 0009_MW014_LT_210408, 0009_MW015_LT_210408, 0009_MW001_LT_210408, 0009_MW002_LT_210408, 0009_MW003_LT_210408, 0009_MW004_LT_210408, 0009_MW005_LT_210408, 0009_MW013_LT_210408	**08-Apr-2021**	**21-Apr-2021**	05-Oct-2021	✓	**21-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_MW017_HT_210409, 0009_MW007_HT_210409, 0009_MW009_HT_210409, 0009_MW011_HT_210409, 0009_MW015_HT_210409, 0009_MW016_HT_210409, 0009_MW018_HT_210409, 0009_MW019_HT_210409, 0009_QC104_210409, 0009_QC105_210409, 0009_MW001_HT_210409	**09-Apr-2021**	**19-Apr-2021**	06-Oct-2021	✓	**19-Apr-2021**	06-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0009_MW002_HT_210409, 0009_MW003_HT_210409, 0009_MW004_HT_210409, 0009_MW005_HT_210409, 0009_MW013_HT_210409, 0009_MW014_HT_210409, 0009_QC303_210409, 0009_QC304_210409	**09-Apr-2021**	**20-Apr-2021**	06-Oct-2021	✓	**20-Apr-2021**	06-Oct-2021	✓

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)							
0009_SW030_210407, 0009_SW031_210407, 0009_SW032_210407, 0009_SW033_210407, 0009_SW034_210407, 0009_SW035_210407, 0009_QC500_210407, 0009_QC100_210407, 0009_QC300_210407	**07-Apr-2021**	**19-Apr-2021**	04-Oct-2021	✓	**20-Apr-2021**	04-Oct-2021	✓
HDPE (no PTFE) (EP231X)							
0009_QC102_210408, 0009_QC301_210408, 0009_QC302_210408, 0009_QC103_210408	**08-Apr-2021**	**19-Apr-2021**	05-Oct-2021	✓	**19-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X)							
0009_SW036_210408, 0009_SW100_210408, 0009_SW101_210408, 0009_MW031_210408, 0009_MW035_210408, 0009_MW036_210408	**08-Apr-2021**	**19-Apr-2021**	05-Oct-2021	✓	**20-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW007_LT_210408, 0009_MW016_LT_210408, 0009_MW009_LT_210408, 0009_MW017_LT_210408, 0009_MW018_LT_210408, 0009_MW011_LT_210408, 0009_MW019_LT_210408, 0009_MW014_LT_210408, 0009_MW015_LT_210408, 0009_MW001_LT_210408, 0009_MW002_LT_210408, 0009_MW003_LT_210408, 0009_MW004_LT_210408, 0009_MW005_LT_210408, 0009_MW013_LT_210408	**08-Apr-2021**	**21-Apr-2021**	05-Oct-2021	✓	**21-Apr-2021**	05-Oct-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW017_HT_210409, 0009_MW007_HT_210409, 0009_MW009_HT_210409, 0009_MW011_HT_210409, 0009_MW015_HT_210409, 0009_MW016_HT_210409, 0009_MW018_HT_210409, 0009_MW019_HT_210409, 0009_QC104_210409, 0009_QC105_210409, 0009_MW001_HT_210409	**09-Apr-2021**	**19-Apr-2021**	06-Oct-2021	✓	**19-Apr-2021**	06-Oct-2021	✓
HDPE (no PTFE) (EP231X)							
0009_MW002_HT_210409, 0009_MW003_HT_210409, 0009_MW004_HT_210409, 0009_MW005_HT_210409, 0009_MW013_HT_210409, 0009_MW014_HT_210409, 0009_QC303_210409, 0009_QC304_210409	**09-Apr-2021**	**20-Apr-2021**	06-Oct-2021	✓	**20-Apr-2021**	06-Oct-2021	✓

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: **SOIL**

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)							
Moisture Content	EA055	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
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

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	6	56	**10.71**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	56	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	56	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	56	**3.57**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed 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 soil 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 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 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
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 : **ET2101751**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Townsville
Contact		Contact	
Address		Address	
E-mail		E-mail	
Telephone	: ----	Telephone	
Facsimile	: ----	Facsimile	:
Project	: QLD_0009_PFASOMP_20	Page	: 1 of 5
Order number	: 60612487_4.1	Quote number	: ET2021AECOMAU0001 (TV/007/21 - Compass)
C-O-C number	: 21076	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: QLD_0009		
Sampler			

Dates

Date Samples Received	: 12-Apr-2021 12:56	Issue Date	: 14-Apr-2021
Client Requested Due Date	: 21-Apr-2021	Scheduled Reporting Date	: **21-Apr-2021**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 22.4°C - Ice present
Receipt Detail	: Esky	No. of samples received / analysed	: 63 / 63

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
- **14.4.21: SRN has been resent to acknowledge assign EP231X analysis on samples on hold. For any further information regarding these adjustments please contact client services at**
- 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.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- All analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- 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.

ET2101751-026	: 08-Apr-2021 14:36	: 0009_MW007_LT_210408
ET2101751-027	: 08-Apr-2021 14:22	: 0009_MW016_LT_210408
ET2101751-028	: 08-Apr-2021 13:50	: 0009_MW009_LT_210408
ET2101751-029	: 08-Apr-2021 12:53	: 0009_MW017_LT_210408
ET2101751-030	: 08-Apr-2021 13:11	: 0009_MW018_LT_210408
ET2101751-031	: 08-Apr-2021 13:32	: 0009_MW011_LT_210408
ET2101751-032	: 08-Apr-2021 14:07	: 0009_MW019_LT_210408
ET2101751-033	: 08-Apr-2021 15:10	: 0009_MW014_LT_210408
ET2101751-034	: 08-Apr-2021 14:58	: 0009_MW015_LT_210408
ET2101751-035	: 08-Apr-2021 15:15	: 0009_MW001_LT_210408
ET2101751-036	: 08-Apr-2021 15:12	: 0009_MW002_LT_210408
ET2101751-037	: 08-Apr-2021 15:11	: 0009_MW003_LT_210408
ET2101751-038	: 08-Apr-2021 15:14	: 0009_MW004_LT_210408
ET2101751-039	: 08-Apr-2021 15:13	: 0009_MW005_LT_210408
ET2101751-040	: 08-Apr-2021 15:10	: 0009_MW013_LT_210408
ET2101751-045	: 09-Apr-2021 07:28	: 0009_MW017_HT_210409
ET2101751-046	: 09-Apr-2021 08:55	: 0009_MW007_HT_210409
ET2101751-047	: 09-Apr-2021 08:11	: 0009_MW009_HT_210409
ET2101751-048	: 09-Apr-2021 07:54	: 0009_MW011_HT_210409
ET2101751-049	: 09-Apr-2021 09:15	: 0009_MW015_HT_210409
ET2101751-050	: 09-Apr-2021 08:44	: 0009_MW016_HT_210409
ET2101751-051	: 09-Apr-2021 07:41	: 0009_MW018_HT_210409
ET2101751-052	: 09-Apr-2021 08:31	: 0009_MW019_HT_210409
ET2101751-055	: 09-Apr-2021 09:33	: 0009_MW001_HT_210409
ET2101751-056	: 09-Apr-2021 09:35	: 0009_MW002_HT_210409
ET2101751-057	: 09-Apr-2021 09:34	: 0009_MW003_HT_210409
ET2101751-058	: 09-Apr-2021 09:32	: 0009_MW004_HT_210409
ET2101751-059	: 09-Apr-2021 09:36	: 0009_MW005_HT_210409
ET2101751-060	: 09-Apr-2021 09:35	: 0009_MW013_HT_210409
ET2101751-061	: 09-Apr-2021 09:31	: 0009_MW014_HT_210409

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: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ET2101751-007	07-Apr-2021 15:09	0009_SD030_210407	✓	✓
ET2101751-008	07-Apr-2021 15:09	0009_SD031_210407	✓	✓
ET2101751-009	07-Apr-2021 15:20	0009_SD032_210407	✓	✓
ET2101751-010	07-Apr-2021 15:30	0009_SD033_210407	✓	✓
ET2101751-011	07-Apr-2021 11:36	0009_SD034_210407	✓	✓
ET2101751-012	07-Apr-2021 11:53	0009_SD035_210407	✓	✓
ET2101751-015	07-Apr-2021 11:53	0009_QC101_210407	✓	✓
ET2101751-018	08-Apr-2021 08:33	0009_SD036_210408	✓	✓

			SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ET2101751-021	08-Apr-2021 09:24	0009_SD100_210408	✓	✓
ET2101751-022	08-Apr-2021 09:24	0009_SD101_210408	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (28 analytes)
ET2101751-001	07-Apr-2021 15:08	0009_SW030_210407	✓
ET2101751-002	07-Apr-2021 15:09	0009_SW031_210407	✓
ET2101751-003	07-Apr-2021 15:20	0009_SW032_210407	✓
ET2101751-004	07-Apr-2021 15:30	0009_SW033_210407	✓
ET2101751-005	07-Apr-2021 11:36	0009_SW034_210407	✓
ET2101751-006	07-Apr-2021 11:51	0009_SW035_210407	✓
ET2101751-013	07-Apr-2021 07:51	0009_QC500_210407	✓
ET2101751-014	07-Apr-2021 11:52	0009_QC100_210407	✓
ET2101751-016	07-Apr-2021 18:45	0009_QC300_210407	✓
ET2101751-017	08-Apr-2021 08:32	0009_SW036_210408	✓
ET2101751-019	08-Apr-2021 09:23	0009_SW100_210408	✓
ET2101751-020	08-Apr-2021 09:22	0009_SW101_210408	✓
ET2101751-023	08-Apr-2021 10:17	0009_MW031_210408	✓
ET2101751-024	08-Apr-2021 10:41	0009_MW035_210408	✓
ET2101751-025	08-Apr-2021 10:41	0009_MW036_210408	✓
ET2101751-026	08-Apr-2021 14:36	0009_MW007_LT_210408	✓
ET2101751-027	08-Apr-2021 14:22	0009_MW016_LT_210408	✓
ET2101751-028	08-Apr-2021 13:50	0009_MW009_LT_210408	✓
ET2101751-029	08-Apr-2021 12:53	0009_MW017_LT_210408	✓
ET2101751-030	08-Apr-2021 13:11	0009_MW018_LT_210408	✓
ET2101751-031	08-Apr-2021 13:32	0009_MW011_LT_210408	✓
ET2101751-032	08-Apr-2021 14:07	0009_MW019_LT_210408	✓
ET2101751-033	08-Apr-2021 15:10	0009_MW014_LT_210408	✓
ET2101751-034	08-Apr-2021 14:58	0009_MW015_LT_210408	✓
ET2101751-035	08-Apr-2021 15:15	0009_MW001_LT_210408	✓
ET2101751-036	08-Apr-2021 15:12	0009_MW002_LT_210408	✓
ET2101751-037	08-Apr-2021 15:11	0009_MW003_LT_210408	✓

			WATER - EP231X PFAS - Full Suite (28 analytes)
ET2101751-038	08-Apr-2021 15:14	0009_MW004_LT_210408	✓
ET2101751-039	08-Apr-2021 15:13	0009_MW005_LT_210408	✓
ET2101751-040	08-Apr-2021 15:10	0009_MW013_LT_210408	✓
ET2101751-041	08-Apr-2021 13:11	0009_QC102_210408	✓
ET2101751-042	08-Apr-2021 15:02	0009_QC301_210408	✓
ET2101751-043	08-Apr-2021 15:09	0009_QC302_210408	✓
ET2101751-044	08-Apr-2021 15:14	0009_QC103_210408	✓
ET2101751-045	09-Apr-2021 07:28	0009_MW017_HT_210409	✓
ET2101751-046	09-Apr-2021 08:55	0009_MW007_HT_210409	✓
ET2101751-047	09-Apr-2021 08:11	0009_MW009_HT_210409	✓
ET2101751-048	09-Apr-2021 07:54	0009_MW011_HT_210409	✓
ET2101751-049	09-Apr-2021 09:15	0009_MW015_HT_210409	✓
ET2101751-050	09-Apr-2021 08:44	0009_MW016_HT_210409	✓
ET2101751-051	09-Apr-2021 07:41	0009_MW018_HT_210409	✓
ET2101751-052	09-Apr-2021 08:31	0009_MW019_HT_210409	✓
ET2101751-053	09-Apr-2021 08:12	0009_QC104_210409	✓
ET2101751-054	09-Apr-2021 09:31	0009_QC105_210409	✓
ET2101751-055	09-Apr-2021 09:33	0009_MW001_HT_210409	✓
ET2101751-056	09-Apr-2021 09:35	0009_MW002_HT_210409	✓
ET2101751-057	09-Apr-2021 09:34	0009_MW003_HT_210409	✓
ET2101751-058	09-Apr-2021 09:32	0009_MW004_HT_210409	✓
ET2101751-059	09-Apr-2021 09:36	0009_MW005_HT_210409	✓
ET2101751-060	09-Apr-2021 09:35	0009_MW013_HT_210409	✓
ET2101751-061	09-Apr-2021 09:31	0009_MW014_HT_210409	✓
ET2101751-062	09-Apr-2021 09:15	0009_QC303_210409	✓
ET2101751-063	09-Apr-2021 09:33	0009_QC304_210409	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/210413
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 13-APR-2021
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASomp_20		
Your Client Services Manager	[redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N21/009315	0009_QC201_210407	SOIL 7.4.21

Lab Reg No.		N21/009315				
Date Sampled		07-APR-2021				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	mg/kg	<0.002				NR70
PFPeA (2706-90-3)	mg/kg	<0.002				NR70
PFHxA (307-24-4)	mg/kg	<0.001				NR70
PFHpA (375-85-9)	mg/kg	<0.001				NR70
PFOA (335-67-1)	mg/kg	<0.001				NR70
PFNA (375-95-1)	mg/kg	<0.001				NR70
PFDA (335-76-2)	mg/kg	<0.001				NR70
PFUdA (2058-94-8)	mg/kg	<0.002				NR70
PFDoA (307-55-1)	mg/kg	<0.002				NR70
PFTrDA (72629-94-8)	mg/kg	<0.002				NR70
PFTeDA (376-06-7)	mg/kg	<0.002				NR70
PFHxDA (67905-19-5)	mg/kg	<0.002				NR70
PFODA (16517-11-6)	mg/kg	<0.005				NR70
FOUEA (70887-84-2)	mg/kg	<0.001				NR70
PFBS (375-73-5)	mg/kg	<0.001				NR70
PFPeS (2706-91-4)	mg/kg	<0.001				NR70
PFHxS (355-46-4)	mg/kg	<0.001				NR70
PFHpS (375-92-8)	mg/kg	<0.001				NR70
PFOS (1763-23-1)	mg/kg	<0.002				NR70
PFNS (68259-12-1)	mg/kg	<0.001				NR70
PFDS (335-77-3)	mg/kg	<0.001				NR70
PFOSA (754-91-6)	mg/kg	<0.001				NR70
N-MeFOSA (31506-32-8)	mg/kg	<0.002				NR70
N-EtFOSA (4151-50-2)	mg/kg	<0.002				NR70
N-MeFOSAA (2355-31-9)	mg/kg	<0.002				NR70
N-EtFOSAA(2991-50-6)	mg/kg	<0.002				NR70
N-MeFOSE (24448-09-7)	mg/kg	<0.005				NR70
N-EtFOSE (1691-99-2)	mg/kg	<0.005				NR70
4:2 FTS (757124-72-4)	mg/kg	<0.001				NR70
6:2 FTS (27619-97-2)	mg/kg	<0.001				NR70

REPORT OF ANALYSIS

Lab Reg No.		N21/009315				
Date Sampled		07-APR-2021				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
8:2 FTS (39108-34-4)	mg/kg	<0.001				NR70
10:2 FTS (120226-60-0)	mg/kg	<0.002				NR70
8:2 diPAP (678-41-1)	mg/kg	<0.002				NR70
PFBA (Surrogate Recovery)	%	102				NR70
PFPeA (Surrogate Recovery)	%	98				NR70
PFHxA (Surrogate Recovery)	%	96				NR70
PFHpA (Surrogate Recovery)	%	98				NR70
PFOA (Surrogate Recovery)	%	101				NR70
PFNA (Surrogate Recovery)	%	108				NR70
PFDA (Surrogate Recovery)	%	114				NR70
PFUdA (Surrogate Recovery)	%	104				NR70
PFDoA (Surrogate Recovery)	%	123				NR70
PFTeDA (Surrogate Recovery)	%	110				NR70
PFHxDA (Surrogate Recovery)	%	94				NR70
FOUEA (Surrogate Recovery)	%	98				NR70
PFBS (Surrogate Recovery)	%	97				NR70
PFHxS (Surrogate Recovery)	%	98				NR70
PFOS (Surrogate Recovery)	%	106				NR70
PFOSA (Surrogate Recovery)	%	112				NR70
N-MeFOSA (Surrogate Recovery)	%	86				NR70
N-EtFOSA (Surrogate Recovery)	%	124				NR70
N-MeFOSAA (Surrogate Recovery)	%	109				NR70
N-EtFOSAA (Surrogate Recovery)	%	119				NR70
N-MeFOSE (Surrogate Recovery)	%	129				NR70
N-EtFOSE (Surrogate Recovery)	%	69				NR70
4:2 FTS (Surrogate Recovery)	%	69				NR70
6:2 FTS (Surrogate Recovery)	%	89				NR70
8:2 FTS (Surrogate Recovery)	%	111				NR70
8:2 diPAP (Surrogate Recovery)	%	68				NR70
Dates						
Date extracted		16-APR-2021				
Date analysed		16-APR-2021				

N21/009315
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

Lab Reg No.		N21/009315				
Date Sampled		07-APR-2021				
	Units					Method

[redacted]

Organics - NSW
Accreditation No. 198

20-APR-2021

Lab Reg No.		N21/009315				
Date Sampled		07-APR-2021				
	Units					Method
Trace Elements						
Total Solids	%	64.5				NT2_49
Dates						
Date extracted		13-APR-2021				
Date analysed		14-APR-2021				

[redacted]

Inorganics - NSW
Accreditation No. 198

20-APR-2021

All results are expressed on a dry weight basis.

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/210413
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 13-APR-2021
Attention	[redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASomp_20		
Your Client Services Manager	[redacted]	**Phone**	[redacted]

Lab Reg No.	Sample Ref	Sample Description
N21/009314	0009_QC200_210407	WATER 7.4.21
N21/009316	0009_QC202_210408	WATER 8.4.21
N21/009317	0009_QC203_210408	WATER 8.4.21
N21/009318	0009_QC204_210409	WATER 9.4.21

Lab Reg No.			N21/009314	N21/009316	N21/009317	N21/009318	
Date Sampled			07-APR-2021	08-APR-2021	08-APR-2021	09-APR-2021	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
PFBA (375-22-4)		ug/L	<0.05	<0.05	0.31	<0.05	NR70
PFPeA (2706-90-3)		ug/L	<0.02	<0.02	0.42	<0.02	NR70
PFHxA (307-24-4)		ug/L	<0.01	<0.01	2.2	0.010	NR70
PFHpA (375-85-9)		ug/L	<0.01	<0.01	0.25	<0.01	NR70
PFOA (335-67-1)		ug/L	<0.01	<0.01	0.56	<0.01	NR70
PFNA (375-95-1)		ug/L	<0.01	<0.01	0.018	<0.01	NR70
PFDA (335-76-2)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFUdA (2058-94-8)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDoA (307-55-1)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFTrDA (72629-94-8)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFTeDA (376-06-7)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFHxDA (67905-19-5)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFODA (16517-11-6)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70
FOUEA (70887-84-2)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDS (335-77-3)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFPeS (2706-91-4)		ug/L	<0.01	<0.01	0.40	<0.01	NR70
PFHxS (355-46-4)		ug/L	0.014	<0.01	7.8	0.079	NR70
PFHpS (375-92-8)		ug/L	<0.01	<0.01	0.53	<0.01	NR70
PFOS (1763-23-1)		ug/L	0.037	<0.02	35	0.084	NR70
PFNS (68259-12-1)		ug/L	<0.01	<0.01	0.091	<0.01	NR70
PFBS (375-73-5)		ug/L	<0.01	<0.01	0.53	<0.01	NR70
PFOSA (754-91-6)		ug/L	<0.01	<0.01	0.070	<0.01	NR70
N-MeFOSA (31506-32-8)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-EtFOSA (4151-50-2)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-MeFOSAA (2355-31-9)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-EtFOSAA(2991-50-6)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSE (24448-09-7)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70

REPORT OF ANALYSIS

Lab Reg No.			N21/009314	N21/009316	N21/009317	N21/009318	
Date Sampled			07-APR-2021	08-APR-2021	08-APR-2021	09-APR-2021	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
N-EtFOSE (1691-99-2)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70
4:2 FTS (757124-72-4)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
6:2 FTS (27619-97-2)		ug/L	<0.01	0.015	0.026	<0.01	NR70
8:2 FTS (39108-34-4)		ug/L	<0.01	<0.01	0.014	<0.01	NR70
10:2 FTS (120226-60-0)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 diPAP (678-41-1)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFBA (Surrogate Recovery)		%	112	99	109	99	NR70
PFPeA (Surrogate Recovery)		%	111	90	95	90	NR70
PFHxA (Surrogate Recovery)		%	112	94	82	98	NR70
PFHpA (Surrogate Recovery)		%	106	100	121	94	NR70
PFOA (Surrogate Recovery)		%	106	99	103	98	NR70
PFNA (Surrogate Recovery)		%	85	87	78	92	NR70
PFDA (Surrogate Recovery)		%	81	99	99	84	NR70
PFUdA (Surrogate Recovery)		%	76	98	98	79	NR70
PFDoA (Surrogate Recovery)		%	68	97	100	72	NR70
PFTeDA (Surrogate Recovery)		%	80	100	105	77	NR70
PFHxDA (Surrogate Recovery)		%	91	90	107	84	NR70
FOUEA (Surrogate Recovery)		%	71	86	104	75	NR70
PFBS (Surrogate Recovery)		%	106	88	104	92	NR70
PFHxS (Surrogate Recovery)		%	104	94	74	94	NR70
PFOS (Surrogate Recovery)		%	85	96	105	97	NR70
PFOSA (Surrogate Recovery)		%	64	81	77	65	NR70
N-MeFOSA (Surrogate Recovery)		%	72	48	71	63	NR70
N-EtFOSA (Surrogate Recovery)		%	62	67	65	66	NR70
N-MeFOSAA (Surrogate Recovery)		%	61	105	99	75	NR70
N-EtFOSAA (Surrogate Recovery)		%	83	117	106	84	NR70
N-MeFOSE (Surrogate Recovery)		%	81	78	97	44	NR70
N-EtFOSE (Surrogate Recovery)		%	58	44	71	53	NR70
4:2 FTS (Surrogate Recovery)		%	55	72	97	66	NR70
6:2 FTS (Surrogate Recovery)		%	64	56	73	56	NR70
8:2 FTS (Surrogate Recovery)		%	56	61	65	57	NR70
8:2 diPAP (Surrogate Recovery)		%	84	97	100	75	NR70
Dates							
Date extracted			15-APR-2021	15-APR-2021	15-APR-2021	15-APR-2021	
Date analysed			16-APR-2021	16-APR-2021	16-APR-2021	16-APR-2021	

N21/009314
to
N21/009319

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.

Organics - NSW
Accreditation No. 198

20-APR-2021

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/210413
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 13-APR-2021
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASomp_20		
Your Client Services Manager	[redacted]	**Phone**	[redacted]

Lab Reg No.	Sample Ref	Sample Description
N21/009319	0009_QC205_210409	WATER 9.4.21

Lab Reg No.			N21/009319				
Date Sampled			09-APR-2021				
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
PFBA (375-22-4)		ug/L	0.25				NR70
PFPeA (2706-90-3)		ug/L	0.35				NR70
PFHxA (307-24-4)		ug/L	1.6				NR70
PFHpA (375-85-9)		ug/L	0.21				NR70
PFOA (335-67-1)		ug/L	0.40				NR70
PFNA (375-95-1)		ug/L	0.015				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	0.29				NR70
PFHxS (355-46-4)		ug/L	5.6				NR70
PFHpS (375-92-8)		ug/L	0.34				NR70
PFOS (1763-23-1)		ug/L	26				NR70
PFNS (68259-12-1)		ug/L	0.093				NR70
PFBS (375-73-5)		ug/L	0.40				NR70
PFOSA (754-91-6)		ug/L	0.063				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	0.026				NR70

REPORT OF ANALYSIS

Lab Reg No.			N21/009319				
Date Sampled			09-APR-2021				
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
8:2 FTS (39108-34-4)		ug/L	0.012				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)		%	99				NR70
PFPeA (Surrogate Recovery)		%	84				NR70
PFHxA (Surrogate Recovery)		%	79				NR70
PFHpA (Surrogate Recovery)		%	101				NR70
PFOA (Surrogate Recovery)		%	97				NR70
PFNA (Surrogate Recovery)		%	79				NR70
PFDA (Surrogate Recovery)		%	102				NR70
PFUdA (Surrogate Recovery)		%	104				NR70
PFDoA (Surrogate Recovery)		%	99				NR70
PFTeDA (Surrogate Recovery)		%	99				NR70
PFHxDA (Surrogate Recovery)		%	94				NR70
FOUEA (Surrogate Recovery)		%	93				NR70
PFBS (Surrogate Recovery)		%	99				NR70
PFHxS (Surrogate Recovery)		%	73				NR70
PFOS (Surrogate Recovery)		%	86				NR70
PFOSA (Surrogate Recovery)		%	77				NR70
N-MeFOSA (Surrogate Recovery)		%	62				NR70
N-EtFOSA (Surrogate Recovery)		%	98				NR70
N-MeFOSAA (Surrogate Recovery)		%	104				NR70
N-EtFOSAA (Surrogate Recovery)		%	107				NR70
N-MeFOSE (Surrogate Recovery)		%	71				NR70
N-EtFOSE (Surrogate Recovery)		%	60				NR70
4:2 FTS (Surrogate Recovery)		%	83				NR70
6:2 FTS (Surrogate Recovery)		%	51				NR70
8:2 FTS (Surrogate Recovery)		%	62				NR70
8:2 diPAP (Surrogate Recovery)		%	90				NR70
Dates							
Date extracted			15-APR-2021				
Date analysed			16-APR-2021				

[redacted]
Organics - NSW
Accreditation No. 198

20-APR-2021

REPORT OF ANALYSIS

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.

This Report supersedes reports: *RN1311093*

Measurement Uncertainty is available upon request.
Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/210413 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
				N21/009314				
PFBA (375-22-4)	NR70	0.05	<0.05	<0.05	<0.05	-	100	95
PFPeA (2706-90-3)	NR70	0.02	<0.02	<0.02	<0.02	-	97	95
PFHxA (307-24-4)	NR70	0.01	<0.01	<0.01	<0.01	-	97	93
PFHpA (375-85-9)	NR70	0.01	<0.01	<0.01	<0.01	-	88	87
PFOA (335-67-1)	NR70	0.01	<0.01	<0.01	<0.01	-	100	91
PFNA (375-95-1)	NR70	0.01	<0.01	<0.01	<0.01	-	96	90
PFDA (335-76-2)	NR70	0.01	<0.01	<0.01	<0.01	-	88	81
PFUdA (2058-94-8)	NR70	0.01	<0.01	<0.01	<0.01	-	94	75
PFDoA (307-55-1)	NR70	0.01	<0.01	<0.01	<0.01	-	89	77
PFTrDA (72629-94-8)	NR70	0.02	<0.02	<0.02	<0.02	-	85	85
PFTeDA (376-06-7)	NR70	0.02	<0.02	<0.02	<0.02	-	97	79
PFHxDA (67905-19-5)	NR70	0.02	<0.02	<0.02	<0.02	-	100	98
PFODA (16517-11-6)	NR70	0.05	<0.05	<0.05	<0.05	-	102	99
FOUEA (70887-84-2)	NR70	0.01	<0.01	<0.01	<0.01	-	100	85
PFBS (375-73-5)	NR70	0.01	<0.01	<0.01	<0.01	-	102	97
PFPeS (2706-91-4)	NR70	0.01	<0.01	<0.01	<0.01	-	102	96
PFHxS (355-46-4)	NR70	0.01	<0.01	0.014	0.014	0	94	93
PFHpS (375-92-8)	NR70	0.01	<0.01	<0.01	<0.01	-	93	88
PFOS (1763-23-1)	NR70	0.02	<0.02	0.037	0.047	24	96	82
PFNS (68259-12-1)	NR70	0.01	<0.01	<0.01	<0.01	-	89	78
PFDS (335-77-3)	NR70	0.01	<0.01	<0.01	<0.01	-	95	71
PFOSA (754-91-6)	NR70	0.01	<0.01	<0.01	<0.01	-	94	79
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	<0.02	<0.02	-	110	82
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	<0.02	<0.02	-	107	80
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	<0.01	<0.01	-	86	66
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	<0.01	<0.01	-	96	72
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	<0.05	<0.05	-	87	73
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	<0.05	<0.05	-	104	99
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	<0.01	<0.01	-	106	83
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	<0.01	<0.01	-	87	104
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	<0.01	<0.01	-	100	82
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	<0.01	<0.01	-	98	86
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	<0.02	<0.02	-	104	106

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: **20/04/2021**

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/210413 **Sample Matrix:** Solid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		mg/kg	mg/kg	mg/kg	mg/kg	%	%	%
PFBA (375-22-4)	NR70	0.002	<0.002	NA	NA	NA	118	NA
PFPeA (2706-90-3)	NR70	0.002	<0.002	NA	NA	NA	98	NA
PFHxA (307-24-4)	NR70	0.001	<0.001	NA	NA	NA	112	NA
PFHpA (375-85-9)	NR70	0.001	<0.001	NA	NA	NA	100	NA
PFOA (335-67-1)	NR70	0.001	<0.001	NA	NA	NA	106	NA
PFNA (375-95-1)	NR70	0.001	<0.001	NA	NA	NA	107	NA
PFDA (335-76-2)	NR70	0.001	<0.001	NA	NA	NA	95	NA
PFUdA (2058-94-8)	NR70	0.002	<0.002	NA	NA	NA	113	NA
PFDoA (307-55-1)	NR70	0.002	<0.002	NA	NA	NA	95	NA
PFTrDA (72629-94-8)	NR70	0.002	<0.002	NA	NA	NA	102	NA
PFTeDA (376-06-7)	NR70	0.002	<0.002	NA	NA	NA	102	NA
PFHxDA (67905-19-5)	NR70	0.002	<0.002	NA	NA	NA	110	NA
PFODA (16517-11-6)	NR70	0.005	<0.005	NA	NA	NA	91	NA
FOUEA (70887-84-2)	NR70	0.001	<0.001	NA	NA	NA	109	NA
PFBS (375-73-5)	NR70	0.001	<0.001	NA	NA	NA	103	NA
PFPeS (2706-91-4)	NR70	0.001	<0.001	NA	NA	NA	99	NA
PFHxS (355-46-4)	NR70	0.001	<0.001	NA	NA	NA	100	NA
PFHpS (375-92-8)	NR70	0.001	<0.001	NA	NA	NA	100	NA
PFOS (1763-23-1)	NR70	0.002	<0.002	NA	NA	NA	131	NA
PFNS (68259-12-1)	NR70	0.001	<0.001	NA	NA	NA	106	NA
PFDS (335-77-3)	NR70	0.001	<0.001	NA	NA	NA	108	NA
PFOSA (754-91-6)	NR70	0.001	<0.001	NA	NA	NA	108	NA
N-MeFOSA (31506-32-8)	NR70	0.002	<0.002	NA	NA	NA	96	NA
N-EtFOSA (4151-50-2)	NR70	0.002	<0.002	NA	NA	NA	132	NA
N-MeFOSAA (2355-31-9)	NR70	0.002	<0.002	NA	NA	NA	102	NA
N-EtFOSAA(2991-50-6)	NR70	0.002	<0.002	NA	NA	NA	126	NA
N-MeFOSE (24448-09-7)	NR70	0.005	<0.005	NA	NA	NA	110	NA
N-EtFOSE (1691-99-2)	NR70	0.005	<0.005	NA	NA	NA	114	NA
4:2 FTS (757124-72-4)	NR70	0.001	<0.001	NA	NA	NA	98	NA
6:2 FTS (27619-97-2)	NR70	0.001	<0.001	NA	NA	NA	116	NA
8:2 FTS (39108-34-4)	NR70	0.001	<0.001	NA	NA	NA	116	NA
10:2 FTS (120226-60-0)	NR70	0.002	<0.002	NA	NA	NA	124	NA
8:2 diPAP (678-41-1)	NR70	0.002	<0.002	NA	NA	NA	106	NA

Results expressed in percentage (%) or mg/kg 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: **20/04/2021**

Australian Government
Department of Industry, Science, Energy and Resources

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [redacted]

Customer: AECOM AUSTRALIA PTY LTD

Address: LEVEL 8
FORTITUDE VALLEY QLD 4006

Email: [redacted]

Telephone:

Fax:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: [redacted]

Address: 105 Delhi Road, North Ryde, NSW
NSW 2113

Email: [redacted]

Telephone:

Fax:

SAMPLE DETAILS

NMI Job Name: **AECO06/210413**

Total No. of Samples: **6**

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N21/009314	20-APR-2021	0009_QC200_210407	WATER 7.4.21
N21/009315	20-APR-2021	0009_QC201_210407	SOIL 7.4.21
N21/009316	20-APR-2021	0009_QC202_210408	WATER 8.4.21
N21/009317	20-APR-2021	0009_QC203_210408	WATER 8.4.21
N21/009318	20-APR-2021	0009_QC204_210409	WATER 9.4.21
N21/009319	20-APR-2021	0009_QC205_210409	WATER 9.4.21

SAMPLE RECEIVED CONDITION

Date samples received:	13-APR-2021
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	60612487_4_1
Temperature of samples:	Chilled
Comments:	ALL OK
Mode of Delivery:	Courier

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.

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

Appendix F

Equipment Calibration Certificates

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	DEFENCE PFAS AMP	**Project Number:**	60612487 - 4.1
Project Location:	HMAS CAIRNS	**Client:**	DEPT of DEFENCE
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	AIRMET SCIENTIFIC MACKAY
Make and Model:	PRO PLUS
Serial Number:	10H106322

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	07/04/2021 0740				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	~~ppm~~ %	~~ppm~~ ORP
Calibration Standard Concentration:	7.01	4.01	2760	100	231
Calibration Reading:	7.01	4.01	2901	94.3	229.1
Calibration Temperature:	26.0	26.2	25.4	24.8	25.8

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	08/04/2021 0645				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	~~ppm~~ %	~~ppm~~ ORP
Calibration Standard Concentration:	7.01	4.01	2760	100	229.9
Bump Test Reading:	7.04	4.11	2959	94.9	228.1
Bump Test Temperature:	27.2	27.3	26.4	26.0	26.6

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

- NO calibration issues -

Approval and Distribution

☐ Each individual instrum[redacted]ted daily and bump tested as required by fieldwork staff.

[redacted]
Fieldwork Staff Signature

08.04.2021
Date

Distribution: Project Central File

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Defence PFAS OMP	**Project Number:**	60612487-4-1
Project Location:	HMAS CAIRNS	**Client:**	Dept of Defence
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	AIK MET
Make and Model:	PRO PLUS
Serial Number:	10H106922

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	9/4/21 0700				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	%	~~ppm~~ ORP
Calibration Standard Concentration:	7.01	4.01	2760	100	232.3
Calibration Reading:	6.97	3.99	3872	97.8	234.2
Calibration Temperature:	24.8	25.6	24.1	23.4	24.8

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☐ Each individual inst[redacted]librated daily and bump tested as required by fieldwork staff.

[redacted] — **Fieldwork Staff Signature**

09 · 04 · 2021 — **Date**

Distribution: Project Central File

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP	**Project Number:**	60612487
Project Location:	HMAS CAIRNS	**Client:**	DEFENCE
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	ARMET
Make and Model:	YSI PRODSS
Serial Number:	18K102334

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	8/4/21 0645				
Parameter	Acidity		Conductivity	ORP	Dissolved Oxygen
Units	pH	pH	µS/cm	mV ~~ppm~~	~~ppm~~ %
Calibration Standard Concentration:	7.00	4.01	2813	229.3	~~1000~~ 99.2
Calibration Reading:	6.90	4.05	3284	224.6	99.3
Calibration Temperature:	27.0	27.0	26.1	26.4	25.4

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	9/4/21 0645				
Parameter	Acidity		Conductivity	ORP	Dissolved Oxygen
Units	pH	pH	µS/cm	mV ~~ppm~~	~~ppm~~ %
Calibration Standard Concentration:	7.00	4.01	2707	231.2	99.4
Bump Test Reading:	~~7.00~~ 6.99	4.00	2885	228.7	98.9
Bump Test Temperature:	25.0	25.8	24.1	24.8	23.6

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☐ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[redacted]
Fieldwork Staff Signature

9/4/21
Date

Distribution: Project Central File

Prepared for
Department of Defence
ABN: 68 706 814 312

Sampling Event Factual Report - October 2021

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

01-Mar-2022
Doc No. 60612487_RP53_20220301_2

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Delivering a better world

Sampling Event Factual Report - October 2021

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

Client: Department of Defence

ABN: 68 706 814 312

Prepared by

AECOM Australia Pty Ltd
Level 5, 7 Tomlins Street, South Townsville Qld 4810, PO Box 5423, Townsville QLD 4810, Australia
T +61 7 4729 5500 www.aecom.com
ABN 20 093 846 925

01-Mar-2022

Job No.: 60612487

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

Quality Information

Document	Sampling Event Factual Report - October 2021
Ref	60612487_RP53_20220301_2
Date	01-Mar-2022
Prepared by	[redacted]
Reviewed by	[redacted]

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
0	21-Jan-2022	Draft for Review	[redacted] Principal Contaminated Land Consultant	
1	11-Feb-2022	Draft for Review	[redacted] Principal Contaminated Land Consultant	
2	01-Mar-2022	Final Issue	[redacted] Associate Director Contaminated Land, ANZ NWA	[redacted]

Table of Contents

List of Tables (in Text)

List of Figures (in Appendix A)

List of Tables (in Appendix B)

Abbreviations

Term	Description
AECOM	AECOM Australia Pty Ltd
ALS	Australian Laboratory Services
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure, as amended (2013)
DCMM	Defence Contamination Management Manual
DO	Dissolved oxygen
DoH	Department of Health
EC	Electrical conductivity
HEPA	Heads of Environmental Protection Agencies
HMAS	Her Majesty's Australian Ship
LOR	Limit of reporting
mAHD	metres Australian Height Datum
mbtoc	metres below top of casing
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPC	National Environment Protection Council
NHMRC	National Health and Medical Research Council
NMI	National Measurement Institute
NSW	New South Wales
OMP	Ongoing Monitoring Plan
ORP	Oxidation-reduction potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance/Quality Control
QLD	Queensland
RAN	Royal Australian Navy
SAQP	Sampling Analysis Quality Plan
SWL	Standing Water Level
WWII	World War II
DFI	Defence Fuel Installation

Units of Measurement			
L	Litres	m	Metres
mg	Milligram	ha	Hectares
kg	Kilogram	µg	Microgram
mV	Millivolts		

1.0 Introduction

1.1 General

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) outlined in the *PFAS Management Area Plan (PMAP)* (Department of Defence, 2020) at Her Majesty's Australian Ship (HMAS) Cairns and the Former World War II Royal Australian Navy (WWII RAN) Fuel Installation (the 'Site') located in Cairns, Queensland. For this report, 'on-Base' will refer to locations within the HMAS Cairns management area, and 'off-Base' will refer to sampling locations within the Former WWII RAN Fuel Installation Management Area. The HMAS Cairns Management Area comprises HMAS Cairns, the seabed area and the area situated down hydraulic gradient (east) of HMAS Cairns (including Trinity Inlet). The Former WWII RAN Fuel Installation Management Area covers Cairns Botanic Gardens, Centenary Lakes, Saltwater Creek and private residential properties along Greenslopes Street and Collins Avenue, as defined in the PMAP (Department of Defence, 2020).

The location of the Site and the Management Areas are shown in **Figure 1** in **Appendix A**. The OMP for HMAS Cairns and the Former WWII RAN Fuel Installation (Department of Defence, 2020) includes biannual groundwater, surface water and sediment sampling events in October 2020, April 2021, October 2021, April 2022, October 2022 and April 2023.

These sampling events include the following:

- High and low tide groundwater sampling of 15 monitoring wells on-Base at HMAS Cairns
- Groundwater sampling of three monitoring wells off-Base within the Former WWII RAN Fuel Installation Management Area
- Sediment sampling at six locations on-Base at HMAS Cairns with co-located surface water sampling when water is present
- Sediment sampling at three locations off-Base within the Former WWII RAN Fuel Installation Management Area with co-located surface water sampling when water is present.

Following each sampling event, factual reports will be prepared. Annual interpretative reports will be prepared following the completion of each 12-month sampling period. This sampling event factual report has been prepared to report the results of the post-dry season sampling event completed in late October 2021, specifically highlighting first time detections and/or first-time exceedances of human health and ecological screening criteria for perfluorooctane sulfonate (PFOS) + perfluorohexane sulfonic acid (PFHxS) and / or perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the *Defence (2020) PFAS OMP factual reports – interim guidance for preparation,* v0.2, May 2021 (Department of Defence, 2021).

1.2 Objectives

The objectives of the OMP program are to:

- Implement the OMP prepared as part of the PMAP
- Collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration and transport of PFAS at HMAS Cairns and the Former WWII RAN Fuel Installation.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PMAP.

The objective of this phase of works is to implement the scope of works for the October 2021 sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2021).

2.0 Scope of Work

The sampling event at HMAS Cairns and the Former WWII RAN Fuel Installation was completed in general accordance with the SAQP (AECOM, 2021). In summary, the scope of works for this sampling event included:

- Obtaining permission to work in public spaces where some sampling locations are situated
- Review of the SAQP prior to monitoring event to ensure compliance with the following:
  - PFAS National Environmental Management Plan (NEMP) (2020)
  - National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (ASC NEPM, 2013)
  - Defence Routine Environment Water Quality Monitoring Manual (2018)
  - AS/NZ 5667:1998 Water quality – Sampling
  - Australian and New Zealand Guidelines for Fresh and Marine Water Quality; and
  - Relevant State regulatory guidelines.
- Gauging of groundwater level in monitoring wells prior to collection of samples (refer to **Table 1** below, and **Figure 2A** and **Figure 2B** in **Appendix A** for specific locations).
- Collection of groundwater samples from 18 locations including 15 locations at HMAS Cairns at both high and low tides, and three locations at the Former WWII RAN Fuel Installation (Refer to **Table 1** below, and **Figure 2A** and **Figure 2B** in **Appendix A**). It is noted that one groundwater monitoring well was dry at the time of sampling.
- Collection of co-located surface water and sediment samples at nine locations including six locations at HMAS Cairns and three locations at the Former WWII RAN Fuel Installation (refer to **Table 2** and **Table 3** below, and **Figure 2A** and **Figure 2B** in **Appendix A**).
- A resampling event including the collection of four groundwater samples from monitoring wells at HMAS Cairns (MW009, MW016, MW018 and MW019) and one sediment sample (SD036) from Saltwater Creek at the Former WWII Ran Fuel Installation (refer to **Figure 2A** and **Figure 2B** in **Appendix A**). The purpose of the resampling event was to confirm first-time detections and new historical maximums of particular PFAS compounds observed in October 2021.
- Collecting intra- and inter-laboratory duplicate samples at a rate of one in 10 primary samples, one rinsate sample per fieldwork day, and one trip blank per sample batch.
- Analysis of all samples for a suite of 28 PFAS analytes at the standard limit of reporting (LOR).
- Data management of all OMP field and laboratory data in the Defence ESdat database.
- Preparation of this Sampling Event Factual Report.

Table 1 Groundwater Sampling Locations

Locations	Monitoring Well ID
HMAS Cairns Management Area	MW001, MW002, MW003, MW004, MW005, MW007, MW009, MW011, MW013, MW014, MW015, MW016, MW017, MW018, MW019
Former WWII RAN Fuel Installation Management Area	MW031, MW035, MW036

Table 2 Surface Water Sampling Locations

Locations	Location ID
HMAS Cairns Management Area	SW030, SW031, SW032, SW033, SW034, SW035

Locations	Location ID
Former WWII RAN Fuel Installation Management Area	SW036, SW100, SW101

Table 3 Sediment Sampling Locations

Locations	Location ID
HMAS Cairns Management Area	SD030, SD031, SD032, SD033, SD034, SD035
Former WWII RAN Fuel Installation Management Area	SD036, SD100, SD101

3.0 Methodology

The methodology used for the October 2021 sampling event was in accordance with the SAQP (AECOM, 2021) and is summarised below.

3.1 Groundwater Sampling Methodology

Table 4 Groundwater Sampling Methodology

Item	Details
Groundwater gauging	The depth to groundwater was measured in each monitoring well prior to the installation of HydraSleeves™ and immediately prior to collection of groundwater samples using an interface probe (IP).
Water quality parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and water quality observations were recorded for all groundwater samples. Equipment calibration certificates are provided in **Appendix F**.
Sampling methodology	Groundwater samples were collected from monitoring wells using no-purge methodology HydraSleeves™, which were installed within the screened interval of each well (based on a review of the well construction log) for a minimum of 24 hours prior to the sampling round (as stated in **Table T1**, **Appendix B**). Once the first tidal sampling round was completed at HMAS Cairns, new HydraSleeves™ were deployed at the screened interval depth in preparation for the second tidal sampling round. New HydraSleeves™ were not deployed following the second tidal sampling round at HMAS Cairns or following the single sampling round at the Former WWII RAN Fuel Installation to avoid conflict with other monitoring programs. Groundwater samples were collected from MW011, MW031 and MW035 using a decontaminated steel bailer from the screened interval due to insufficient volume of water collected from the HydraSleeve™. A groundwater sample was not collected from MW036 as this well was dry at the time of sampling.
Quality Assurance/Quality Control (QA/QC) Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits), trip blanks, and rinsate samples. Refer to **Appendix C** for assessment of QA/QC sample data.
Sample analysis	All primary samples were submitted for analysis for the PFAS suite using the standard levels of detection. Australian Laboratory Services (ALS) Environmental Brisbane, Queensland (QLD) was used as the primary laboratory. The National Measurement Institute (NMI) of Sydney, New South Wales (NSW) was used as the secondary laboratory. ALS and NMI methods for groundwater analyses are certified by the National Association of Testing Authorities (NATA). Chain of Custody Forms are presented in **Appendix D**. Laboratory certificates are presented in **Appendix E**.

3.2 Surface Water Sampling Methodology

Table 5 Surface Water Sampling Methodology

Item	Details
Water quality parameters	Temperature, EC, DO, ORP, pH and observations of water quality were recorded for all surface water samples at the time of sampling.
Sampling methodology	Samples were collected from immediately below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a decontaminated, stainless

Item	Details
	steel sampling cup was lowered into the water and collected surface water was poured into a new, laboratory-supplied container with the cap immediately applied once the container was full.
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and trip blanks samples. Refer to **Appendix C** for assessment of QA/QC sample data.
Sample analysis	All primary samples were submitted for PFAS suite using the standard levels of detection. ALS Brisbane, QLD was used as the primary laboratory. NMI of Sydney, NSW was used as the secondary laboratory. Chain of Custody Forms are presented in **Appendix D**. Laboratory certificates are presented in **Appendix E**.

3.3 Sediment Sampling Methodology

Table 6 Sediment Sampling Methodology

Item	Details
Sampling Collection Methodology	Samples representative of potentially deposited sediments were collected from within the water body (if possible) using a decontaminated steel trowel or a gloved hand. At each location, a new, laboratory supplied container was used for each sample with the cap immediately applied once the container was full.
Logging	Sediment characteristics were recorded for each sample.
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits). Refer to **Appendix C** for assessment of QA/QC sample data.
Sample analysis	All primary samples were submitted for PFAS suite using the standard levels of detection. ALS Brisbane, Queensland was used as the primary laboratory. The NMI of Sydney, NSW was used as the secondary laboratory. Chain of Custody Forms are presented in **Appendix D**. Laboratory certificates are presented in **Appendix E**.

3.4 Adopted Screening Criteria

Adopted screening criteria references national guidance in the form of the PFAS NEMP, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset include the following:

- PFAS NEMP, (HEPA, 2020)
- Department of Health (DoH), 2019. *Health Based Guidance Values for PFAS for use in site investigations in Australia.* April 2017 [updated September 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 1999, Schedule B1*, as amended in 2013 (ASC NEPM, 2013).

The adopted PFAS screening criteria to assess the data generated as part of the ongoing monitoring program are presented in **Table 7** below.

Table 7 Summary of Adopted Screening Criteria

Pathway	Compound	Criteria	Comment / Reference
Human Health Receptors			
Recreational use – surface water	PFOS + PFHxS	2 µg/L	The values are from NHMRC (2019). *All surface water results will be compared to these criteria.*
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater and marine (95% species protection values)	PFOS	0.13µg/L	The values are from the PFAS NEMP (HEPA, 2020). *All surface water and groundwater results will be compared to these criteria.*
	PFOA	220 µg/L	

There are no human health or ecological guideline values available for sediment.

3.5 Data Quality Objectives and Data Validation

The data quality objectives and data quality indicators adopted for these works are presented in the SAQP (AECOM, 2021).

Data validation assessment is provided in **Appendix C**.

Data validation procedures employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) (Defence, 2018 as amended 2019) Annex L requirements.

3.6 Deviations from the SAQP

Table 8 lists the deviations from the SAQP (AECOM, 2021) during this sampling event.

Table 8 Deviations from the SAQP during sampling event for October 2020

SAQP	October 2020 Sampling Event
Sampling location MW036.	Groundwater was not sampled at this location as the monitoring well was dry.

4.0 Field Observations and Results

The October 2021 sampling event was completed between 26 October 2021 and 28 October 2021, commencing with groundwater gauging and deployment of HydraSleeves™.

A resampling of selected groundwater and sediment samples was completed between 7 December 2021 and 8 December 2021 to confirm first-time detections and new historical maximums of particular PFAS compounds. The results are summarised in following sections.

4.1 Groundwater

4.1.1 Observations and Field Measurements

Table 9 Groundwater Observations and Field Measurements

Compound	Criteria
Access	All monitoring wells were accessible, and samples were collected from all locations with the exception of a groundwater sample from MW036 due to a lack of water.
Monitoring Well Network	One monitoring well (MW016) was noted to be damaged during the fieldwork. The damage did not impact sampling or the seal of the well cap. At sites MW011, MW031 and MW035, insufficient water was present for HydraSleeve™ deployment. Therefore, decontaminated steel bailers were deployed.
Tidal Summary	Tidal samples were collected on 27 October 2021 (high tide) and 28 October 2021 (low tide). The Bureau of Meteorology (BOM, 2021) tidal summary for Cairns, located at (16°56'S, 145°47'E) was: • High tide at 16:37 27 October 2021 with a height of 2.10 m • Low tide at 10:13 28 October 2021 with a height of 1.40 m.
Depth to Groundwater	Main Sampling Round During the main sampling round depth to groundwater at HMAS Cairns at high tide was between 0.813 and 2.585 metres below top of casing (mbtoc) and groundwater elevations were between -0.209 and 1.748 metres Australian Height Datum (mAHD). Depth to groundwater at low tide was between 0.880 and 2.807 mbtoc and groundwater elevations were between -0.292 and 1.673 mAHD. At the Former WWII RAN Fuel Installation depth to groundwater was between 2.223 and 4.813 mbtoc and groundwater elevations were between 0.203 and 2.247 mAHD. Resampling event During the resampling round depth to groundwater at HMAS Cairns was between 0.696 and 1.935 metres below top of casing (mbtoc) and groundwater elevations were between 0.621 and 1.963 mAHD. Groundwater gauging data are presented in **Table T1** in **Appendix B**.

Compound	Criteria
Field Observations	Main Sampling Round Groundwater from six monitoring well locations at HMAS Cairns at high tide (MW001, MW004, MW011, MW013, MW018 and MW019) had a sulphurous odour. Groundwater from seven monitoring well locations at HMAS Cairns at low tide (MW001, MW002, MW004, MW011, MW013, MW014 and MW019) had a sulphurous odour. Groundwater colour ranged from clear, to yellow, brown, orange and black. No other visible or olfactory indications of contamination were observed during the sampling of the monitoring wells. Dissolved oxygen was unable to be recorded by the water quality meter at the following locations: • MW011 at high and low tide • MW019 at low tide Field observations are presented **Table T1** in **Appendix B**.
	Resampling Event Groundwater from two monitoring well locations at HMAS Cairns (MW018 and MW019) had a sulfurous odour. No odour was observed at the remaining two wells sampled in the resampling event. Groundwater colour ranged from clear to yellow. No other visible or olfactory indications of contamination were observed during the sampling of the monitoring wells. Field observations are presented **Table T1** in **Appendix B**.
Groundwater Flow Direction	Groundwater contours and inferred groundwater flow directions at HMAS Cairns at both high and low tide, and the Former WWII RAN Fuel Installation in October 2021 are shown on **Figure 3A** and **Figure 3B** in **Appendix A**. Groundwater is inferred to flow predominantly in an easterly direction at HMAS Cairns towards Trinity Inlet at both high and low tides. The inferred groundwater flow direction at the Former WWII RAN Fuel Installation is to the south-east towards Saltwater Creek.

Compound	Criteria
Water quality parameters	Groundwater quality parameters were measured prior to collecting groundwater samples. The readings are presented in **Table T1** in **Appendix B** and are summarised below. <u>Main Sampling Round</u> At HMAS Cairns: • DO results ranged between 0.09 mg/L (MW004) and 2.60 mg/L (MW017) at high tide, and between 0.15 mg/L (MW016) and 2.81 mg/L (MW015) at low tide indicating low to well oxygenated conditions. • EC ranged from 7,653 µS/cm (MW007) to 92,467 µS/cm (MW016) at high tide, and from 9,147 µS/cm (MW002) to 75,537 µS/cm (MW016) at low tide indicating saline conditions in groundwater. • pH ranged from 6.61 (MW019) to 7.79 (MW014) at high tide, and from 6.66 (MW019) to 7.59 (MW015) at low tide indicating slightly acidic to neutral conditions. • ORP ranged from -357.3 mV (MW019) to -60.4 mV (MW017) at high tide, and from -336.5 mV (MW019) to -6.9 mV (MW015) at low tide, indicating mildly oxidising to mildly reducing conditions. • Temperature ranged from 27.7°C (MW011) to 32.7°C (MW019) at high tide, and from 27.4°C (MW014) to 32.9°C (MW001) at low tide. At the Former WWII RAN Fuel Installation: • DO results ranged between 2.04 mg/L (MW031) and 2.31 mg/L (MW035) indicating moderate oxygenated conditions. • EC ranged from 824 µS/cm (MW035) to 1,028 µS/cm (MW031) indicating fresh to brackish groundwater conditions. • pH ranged from 6.63 (MW031) to 6.66 (MW035) indicating slightly acidic conditions. • ORP ranged from -31.2 mV (MW031) to 66.8 mV (MW035) indicating slightly reducing to oxidising conditions. • Temperature ranged from 25.0°C (MW031) to 26.2°C (MW035).
	<u>Resampling Event</u> • DO results ranged between 0.29 mg/L (MW019) and 0.81 mg/L (MW018) indicating low oxygen conditions. • EC ranged from 10,640 µS/cm (MW018) to 69,914 µS/cm (MW016) indicating saline conditions in groundwater. • pH ranged from 6.66 (MW019) to 7.27 (MW018), indicating neutral conditions. • ORP ranged from -328.2 mV (MW019) to -93.3 mV (MW016), indicating mildly to strongly reducing conditions. • Temperature ranged from 29.0°C (MW019) to 32.2°6 (MW016).
Weather Conditions	<u>Main Sampling Round</u> Weather was hot and cloudy during the sampling event.
	<u>Resampling Event</u> Weather was hot and cloudy, with intermittent heavy rain during sampling.
Estate Management Works or Training Activities	Construction activities were occurring in the ship maintenance shed east of MW017 during both the sampling rounds. This construction did not involve earthworks, at the time of sampling, and is considered unlikely to influence concentrations of PFAS or interpretation of these results.

4.1.2 Analytical Results

35 of the 36 groundwater samples collected during this event reported concentrations of PFAS compounds above the laboratory LOR. The groundwater analytical results from this sampling event (both the main round and resampling round) are presented in **Table T2** in **Appendix B**. A total of 28 samples from HMAS Cairns and one sample from the Former WWII RAN Fuel Installation exceeded the adopted ecological guideline values for PFOS.

Overall, PFAS concentrations between high and low tide sampling were generally within the same order of magnitude. PFOS, PFOA or PFOS+PFHxS concentrations for samples collected at MW001, MW013 and MW017 recorded new historical maximums.

6:2 fluorotelomer sulfonate (6:2 FTS) was detected for the first time at MW009 (0.08 µg/L at high tide and 0.05 µg/L at low tide) and new historical maximum concentrations of 6:2 FTS were detected at MW016, MW018 and MW019 during the main sampling round.

When resampled, concentrations of 6:2 FTS at MW009 and MW018 were below the laboratory LOR. At MW016 and MW019 concentrations during the resampling round were within the same order of magnitude as results from the main round.

Historical groundwater results presented in **Table T7**, **Appendix B**. There were no first-time detections or first-time exceedances of guideline values detected in groundwater during this sampling event.

4.2 Surface Water

4.2.1 Observations and Field Measurements

Table 10 Surface Water Observations and Field Measurements

Compound	Criteria
Access	All surface water sampling locations were accessible, and samples were collected from all locations.
Field Observations	Surface water colour ranged from clear to dark reddish brown. No visual or olfactory indications of contamination were observed during the sampling of the surface water sampling locations with the exception of SW036, which exhibited a slight oily sheen. Field observations are presented in **Table T3** in **Appendix B**.
Water quality parameters	Surface water quality parameters were measured prior to collecting surface water samples. The readings are presented in **Table T3** in **Appendix B** and are summarised below. At HMAS Cairns: • DO ranged from 3.73 mg/L (SW033) to 5.90 mg/L (SW032) indicating well oxygenated conditions. • EC ranged from 35,923 µS/cm (SW033) to 74,160 µS/cm (SW031) indicating saline conditions. • pH ranged from 6.91 (SW032) to 8.00 (SW034) indicating near neutral to slightly alkaline conditions. • ORP ranged from 64.9 mV (SW031) to 206.0 mV (SW032) indicating moderately oxidising conditions. • Temperature ranged from 27.1°C (SW033) and 32.2°C (SW031). At the Former WWII RAN Fuel Installation: • DO ranged from 4.87 mg/L (SW101) to 5.65 mg/L (SW100) indicating moderate to well oxygenated conditions. • EC ranged from 2,075 µS/cm (SW101) to 41,022 µS/cm (SW036) indicating brackish to saline conditions. • pH ranged from 7.39 (SW036) to 7.93 (SW101) indicating near neutral conditions. • ORP ranged from 42.6 mV (SW101) to 210.3 mV (SW036) indicating mildly oxidising conditions. • Temperature ranged from 25.6°C (SW101) and 27.5°C (SW100).
Weather Conditions	Weather was hot and cloudy during the sampling event.
Estate Management Works or Training Activities	Construction activities were occurring in the ship maintenance shed east of SW032 during the sampling event. This construction did not involve earthworks, at the time of sampling, and is considered unlikely to influence concentrations of PFAS or interpretation of these results.

4.2.2 Analytical Results

Of the nine surface water samples collected during this event, four samples reported concentrations of PFAS compounds at, or above, the laboratory LOR. The surface water analytical results from this sampling event are presented in **Table T4** in **Appendix B**. There were no exceedances of guideline values at HMAS Cairns or the Former WWII RAN Fuel Installation.

Historical surface water results presented in **Table T8**, **Appendix B**. There were no first-time detections or first-time exceedances of guideline values detected in surface water during this sampling event. PFAS concentrations were within the historical range for surface water locations on and off-Base.

4.3 Sediment

4.3.1 Observations and Field Measurements

Table 11 Sediment Observations and Field Measurements

Compound	Criteria
Access	All sediment sampling locations were accessible, and samples were collected from all locations.
Field Observations	Main Sampling Round An organic odour was noted for the sediment locations SD032, SD034 and SD035. No other visible or olfactory indications of contamination were observed during the sampling of the sediment locations. Sediment logging data are presented in **Table T5** in **Appendix B**. Resampling Event No visible or olfactory indications of contamination were observed during resampling of the sediment location (SD036). Sediment logging data are presented in **Table T5** in **Appendix B**.
Weather Conditions	Main Sampling Round Weather was hot and cloudy during the sampling event. Resampling Event Weather was hot and humid, with intermittent heavy rain during sampling.
Estate Management Works or Training Activities	Construction activities were occurring in the ship maintenance shed east of SD032 during the sampling event. This construction did not involve earthworks, at the time of sampling, and is considered unlikely to influence concentrations of PFAS or interpretation of these results.

4.3.2 Analytical Results

Of the nine sediment samples collected during the main event, eight samples reported concentrations of PFAS compounds above the laboratory LOR. The sediment analytical results from this sampling event are presented in **Table T6** in **Appendix B**.

Historical sediment results presented in **Table T9**, **Appendix B**. First-time detections of PFOS+PFHxS in sediment are presented in **Table 12** below and on **Figure 4A** in **Appendix A**.

The result for the resampling event was consistent with results from the main sampling round. Concentrations of PFAS in remaining sediment locations were within historical ranges.

Table 12 First Time Detections of PFAS in Sediment

Sediment Locations	PFOA concentration (mg/kg)	PFOS+PFHxS concentration (mg/kg)
SD036	0.0002	0.0006

Concentrations have been rounded to four decimal places.
*Blue cells denote first time detection above LOR.

5.0 Summary and Next Sampling Event

5.1 Summary of Monitoring Event

A groundwater, surface water and sediment monitoring event was completed at HMAS Cairns and the Former WWII RAN Fuel Installation between 26 October and 28 October 2021. Additional sampling was conducted on 7 and 8 December 2021 to confirm one new detection of PFOS+PFHxS in sediment and new detections or new historical maximum concentrations of 6:2 FTS at select groundwater wells.

The program included sampling of 17 groundwater monitoring wells including 15 wells at HMAS Cairns at both high and low tides and two wells at the Former WWII RAN Fuel Installation, and collection of co-located surface water and sediment samples at nine locations including six locations at HMAS Cairns and three locations at the Former WWII RAN Fuel Installation.

Table 13 summarises the findings of the October 2021 sampling event, the December 2021 resampling event and the recommended actions.

Table 13 Summary of Sampling Event

Item	Comment	Recommended Actions
Groundwater: Access to sampling locations and monitoring well network condition.	All of the 18 monitoring well locations were accessible. All wells were sampled except for MW036 as it was dry.	Ongoing monitoring in accordance with the OMP.
	Main Sampling Round No issues were identified in 17 of the 18 monitoring wells visited. One monitoring well (MW016) was observed to have damaged to the gatic cover. The damage included a broken bolt and lug.	Repair the gatic cover at MW016.
	Resampling Event All four monitoring wells were accessible during the resampling event. The damaged monitoring well (MW016) observed in the main sampling round remains damaged.	
Sediment/Surface Water: Access to sampling locations.	All nine co-located surface water and sediment sample locations were accessible.	Ongoing monitoring in accordance with the OMP.
	The sediment sample location proposed for resampling was accessible.	
Analytical Results	Main Sampling Round PFAS compounds were detected above laboratory LOR in all 32 groundwater samples. PFAS compounds were detected above laboratory LOR in four surface water samples. PFAS compounds were detected above laboratory LOR in eight sediment samples.	Ongoing monitoring in accordance with the OMP.
	Resampling Event PFAS compounds were detected above laboratory LOR in three of the four groundwater samples.	

Item	Comment	Recommended Actions
	PFAS compounds were detected above laboratory LOR in one sediment sample.	
First-time detections of PFOA or PFOS+PFHxS	Main Sampling Round One first time detection above the LOR was detected for PFOA and PFOS+PFHxS at SD036. No other first-time detections of PFAS above the laboratory limit of reporting were recorded in any of the groundwater, surface water or sediment samples collected.	Ongoing monitoring in accordance with the OMP.
	Resampling Event Results relating to the first-time detection of PFOA and PFOS+PFHxS at SD036 was consistent with the October 2021 results.	
First-time exceedances of screening criteria for PFOS, PFOA or PFOS+PFHxS	There were no first-time exceedances of the NHMRC (2019) recreational use guidelines or the 95% species protection ecological guidelines (HEPA, 2020) for surface water or groundwater.	Ongoing monitoring in accordance with the OMP.

5.2 Upcoming Sampling Events

The next biannual sampling event is scheduled for April 2022.

5.3 Upcoming Annual Interpretive Report

The next annual interpretative report is scheduled for January 2022.

6.0 References

AECOM, 2021, *Sampling and Analysis Quality Plan – PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,* Rev 2, 29 March 2021.

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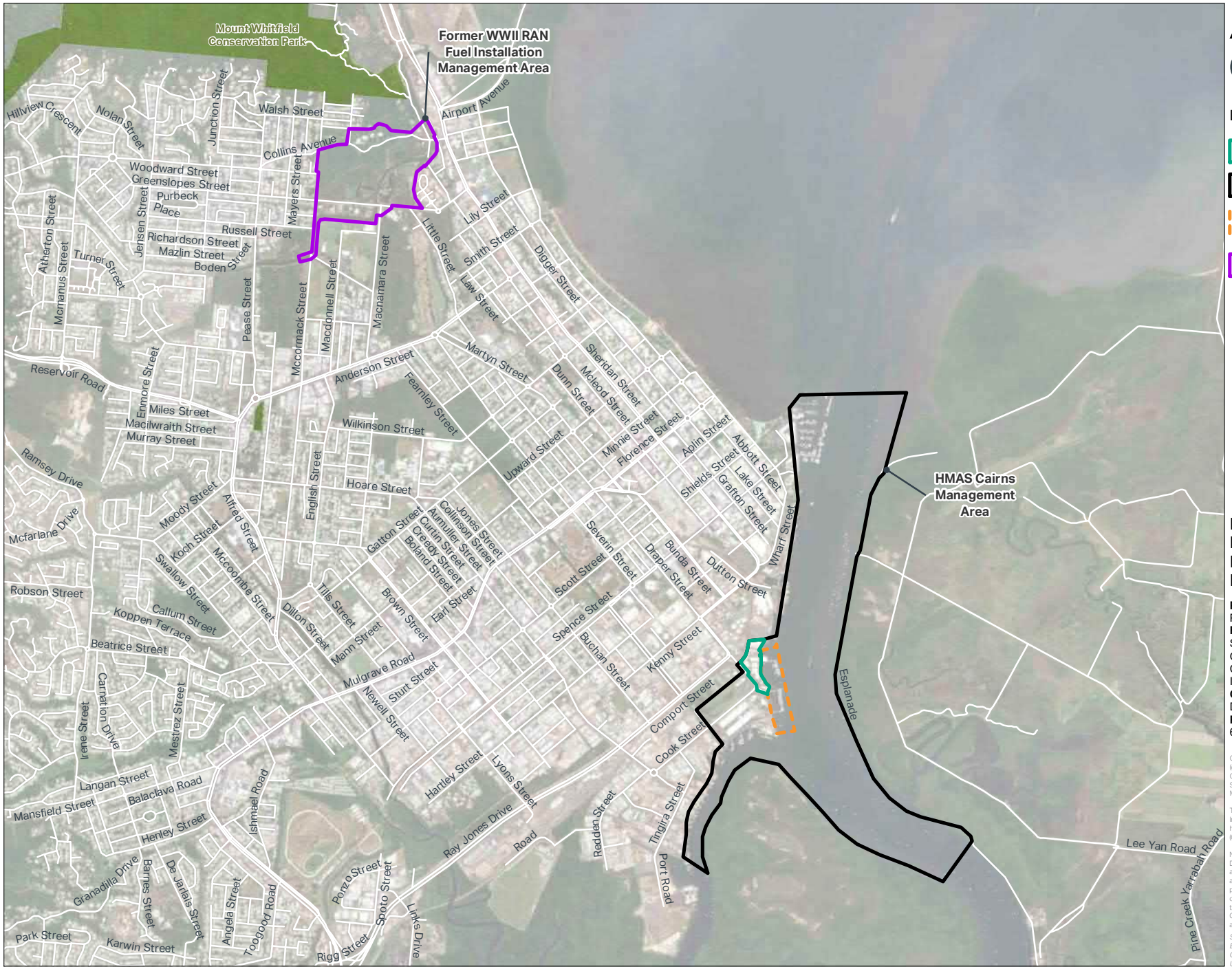
Appendix A

Figures

Appendix A Figures



AECOM

N

0 500 1,000 m

Legend

- HMAS Cairns Property Boundary
- HMAS Cairns Management Area
- Seabed Area
- Former WWII RAN Fuel Installation Management Area

FIGURE 1:
HMAS CAIRNS AND FORMER WWII RAN FUEL INSTALLATION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, October 2021 - PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- HMAS Cairns
- Management Area
- Seabed Area
- Groundwater Monitoring Location
- Combined Surface and Sediment Location

FIGURE 2:
HMAS CAIRNS - SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, October 2021 – OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Surface Water and Sediment Location

FIGURE 2B:
FORMER WWII RAN FUEL INSTALLATION – SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, October 2021 – PFAS OMP - HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

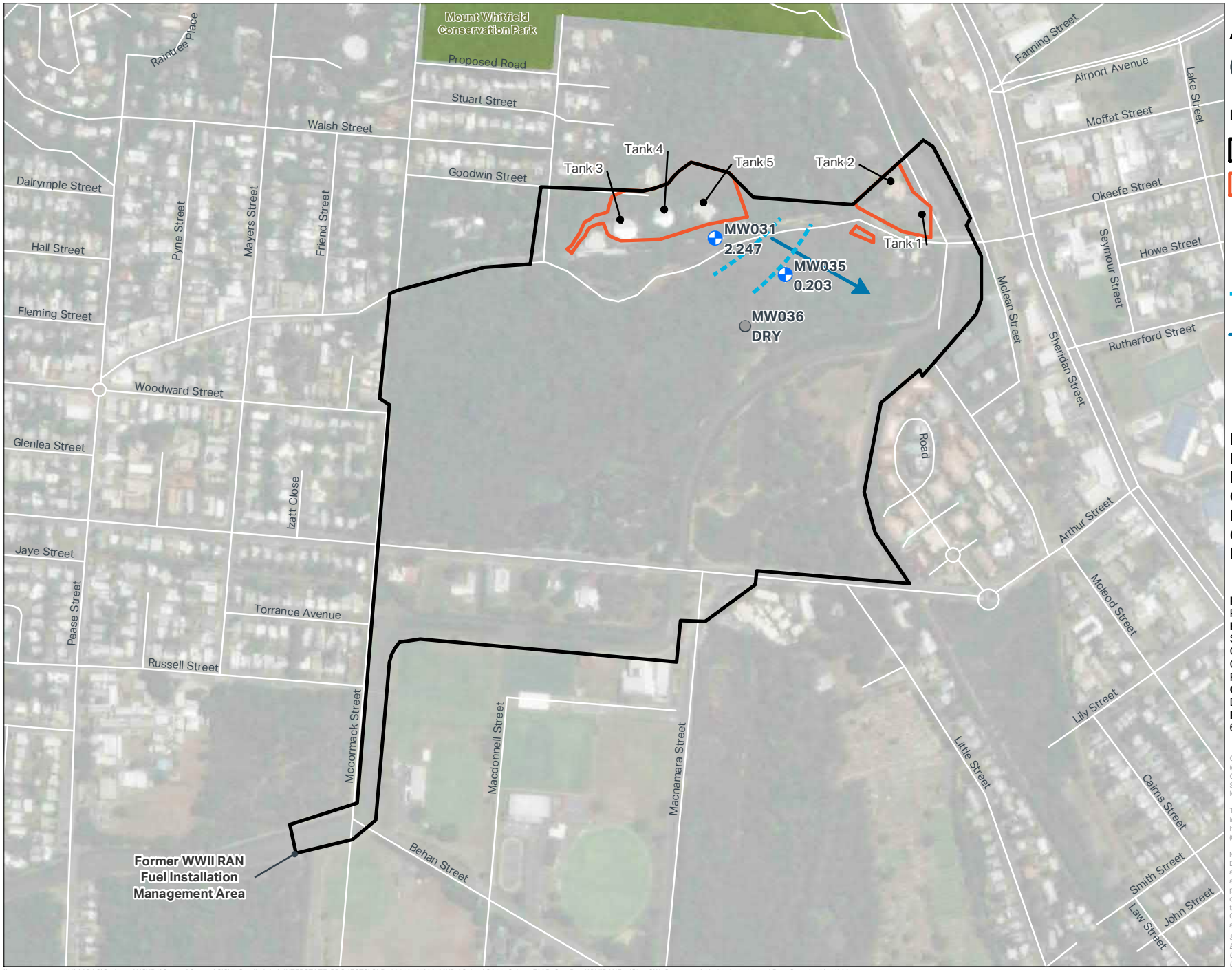
- HMAS Cairns
- Management Area
- Seabed Area
- Groundwater Contours at High Tide (mAHD)
- Groundwater Contours at Low Tide (mAHD)
- Inferred Groundwater Flow Direction
- Groundwater Monitoring Location

1.102 Low Tide Groundwater Elevation (mAHD)
0.247 High tide Groundwater Elevation (mAHD)

FIGURE 3A: HMAS CAIRNS - DRY SEASON - GROUNDWATER ELEVATION AND INFERRED GROUNDWATER FLOW DIRECTION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, October 2021 – OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Not sampled
- Groundwater Contours (mAHD)
- Inferred Groundwater Flow Direction

FIGURE 3B: FORMER WWII RAN FUEL - DRY SEASON - GROUNDWATER ELEVATION AND INFERRED GROUNDWATER FLOW DIRECTION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, October 2021 – PFAS OMP - HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- First-time detection of PFOS+PFHxS

FIGURE 4:
FORMER WWII RAN FUEL - DRY SEASON - FIRST-TIME DETECTIONS OF PFAS IN SEDIMENT

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, October 2021 – PFAS OMP - HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Appendix B

Tables

Appendix B Tables

Table T1: Groundwater Gauging and Water Quality Parameter Results

Property ID	Location ID	HydraSleeve Deployment Date	HydraSleeve Deployment Time	Screen Interval (mbgl)	Hydrasleeve Deployment Collar Depth* (mbgl)	Sample Date	Sample Time	Well Depth (mbtoc)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Condition of Gatic	DO (mg/L)	EC (µS/cm)	pH	Eh/Redox (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method	Comment
HMAS Cairns High Tide																							
0009	MW001	26/10/2021	12:50	2.5 – 5.5	4.04	27/10/2021	15:24	5.34	0.813	2.494	1.681	Good	0.37	59933	7.09	-289.4	31.6	Clear	Light Yellow	Strong sulfurous odour	No sheen	HydraSleeve	
0009	MW002	26/10/2021	12:40	1.5 – 4.5	2.94	27/10/2021	15:10	4.24	1.188	2.564	1.376	Good	1.46	9815	6.96	-179.7	31.4	Low	Yellow	No odour	No sheen	HydraSleeve	
0009	MW003	26/10/2021	12:30	2.5 – 5.5	3.6	27/10/2021	14:59	4.9	1.401	2.542	1.141	Good	0.91	41124	7.18	-220.4	31	Low	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW004	26/10/2021	12:00	2.0 – 4.0	2.6	27/10/2021	14:12	3.9	2.296	2.543	0.247	Good	0.09	57808	7.33	-342	31.9	Low	Light Yellow	Very strong sulfurous odour	No sheen	HydraSleeve	
0009	MW005	26/10/2021	12:10	2.0 – 4.0	2.29	27/10/2021	14:25	3.59	2.341	2.548	0.207	Good	1.78	54396	7.46	-222.1	29.7	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW007	26/10/2021	13:35	1.5 – 4.0	2.31	27/10/2021	14:44	3.61	1.145	2.602	1.457	Good	0.29	7653	7.02	-174	32.2	Medium	Light Brown	No odour	No sheen	HydraSleeve	
0009	MW009	26/10/2021	14:35	1.5 – 4.5	3.12	27/10/2021	15:30	4.42	0.974	2.659	1.685	Good	0.17	23515	7.09	-93.7	27.9	Clear	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW011	26/10/2021	14:40	2.0 – 3.0	2.63	27/10/2021	15:51	2.93	2.585	2.376	-0.209	Good	-	55704	7.01	-344.2	27.7	Turbid	Black	Very strong sulfurous odour	No sheen	Bailer	Dissolved oxygen too low for WQM to read.
0009	MW013	26/10/2021	12:20	2.0 – 5.0	3.67	27/10/2021	14:46	4.97	2.224	2.437	0.213	Good	0.13	56627	7.23	-355	29.4	Low	Light Yellow	Distinct sulfurous odour	No sheen	HydraSleeve	
0009	MW014	26/10/2021	13:10	2.0 – 5.0	3.71	27/10/2021	15:58	5.01	1.461	2.395	0.934	Good	1.91	21861	7.79	-266.1	28.5	Low	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW015	26/10/2021	13:25	2.0 – 5.0	3.74	27/10/2021	16:16	5.04	1.898	2.515	0.617	Good	1.63	54600	7.47	-109.8	28.1	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW016	26/10/2021	14:20	2.0 – 5.0	3.75	27/10/2021	15:15	5.05	0.954	2.702	1.748	Damaged	0.63	92467	6.73	-65.7	30.5	Low	Light Yellow	No odour	No sheen	HydraSleeve	Lugs broken, bolt pulled from gatic collar to allow access. Gatic collar needs to be repaired.
0009	MW017	26/10/2021	13:45	2.0 – 5.0	3.61	27/10/2021	16:30	4.91	1.89	2.498	0.608	Good	2.6	33196	7.25	-60.4	29.4	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW018	26/10/2021	14:50	2.0 – 5.0	3.63	27/10/2021	16:40	4.93	2.221	2.668	0.447	Good	0.92	10143	7.49	-128	29.3	Clear	Clear	Distinct sulfurous odour	No sheen	HydraSleeve	
0009	MW019	26/10/2021	12:18	2.0 – 5.0	3.71	27/10/2021	14:16	5.01	1.564	1.913	0.349	Good	0.79	62241	6.61	-357.3	32.7	Medium	Yellow	Strong sulfurous odour	No sheen	HydraSleeve	
HMAS Cairns Low Tide																							
0009	MW001	27/10/2021	15:24	2.5 – 5.5	4.04	28/10/2021	09:17	5.34	0.88	2.494	1.614	Good	1.19	41660	6.84	-212.9	32.9	Low	Yellow	Very strong sulfurous odour	No sheen	HydraSleeve	
0009	MW002	27/10/2021	15:10	1.5 – 4.5	2.94	28/10/2021	09:06	4.24	1.189	2.564	1.375	Good	1.13	9147	6.73	-134.6	31.8	Low	Light Yellow	Weak sulfurous odour	No sheen	HydraSleeve	
0009	MW003	27/10/2021	14:59	2.5 – 5.5	3.6	28/10/2021	08:55	4.9	1.44	2.542	1.102	Good	1.36	36021	6.84	-156	29.9	Low	Yellow	No odour	No sheen	HydraSleeve	
0009	MW004	27/10/2021	14:12	2.0 – 4.0	2.6	28/10/2021	08:24	3.9	2.268	2.543	0.275	Good	0.55	43779	7.15	-300.2	28	Low	Light Yellow	Very strong sulfurous odour	No sheen	HydraSleeve	
0009	MW005	27/10/2021	14:25	2.0 – 4.0	2.29	28/10/2021	08:35	3.59	2.325	2.548	0.223	Good	1.76	42039	7.2	-175.9	29.7	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW007	27/10/2021	14:44	1.5 – 4.0	2.31	28/10/2021	10:32	3.61	1.115	2.602	1.487	Good	0.76	9461	7.18	-130	30.9	Medium	Light Brown	No odour	No sheen	HydraSleeve	
0009	MW009	27/10/2021	15:30	1.5 – 4.5	3.12	28/10/2021	09:39	4.42	0.986	2.659	1.673	Good	0.26	24908	7.17	-111.2	28.5	Medium	Light Brown	No odour	No sheen	HydraSleeve	
0009	MW011	27/10/2021	15:51	2.0 – 3.0	1.63	28/10/2021	09:09	2.93	2.607	2.376	-0.231	Good	-	58817	7.07	-345	29	Turbid	Black / Grey	Very strong sulfurous odour	No sheen	Bailer	Dissolved oxygen too low for WQM to read.
0009	MW013	27/10/2021	14:46	2.0 – 5.0	3.67	28/10/2021	08:45	4.97	2.217	2.437	0.22	Good	1.67	30782	7.1	-291.8	29.6	Low	Light Yellow	Very strong sulfurous odour	No sheen	HydraSleeve	
0009	MW014	27/10/2021	15:58	2.0 – 5.0	3.71	28/10/2021	10:06	5.01	1.482	2.395	0.913	Good	1.12	52061	7.25	-278.5	27.4	Low	Yellow	Rotten egg smell (sulfurous)	No sheen	HydraSleeve	
0009	MW015	27/10/2021	16:16	2.0 – 5.0	3.74	28/10/2021	10:14	5.04	2.807	2.515	-0.292	Good	2.81	55640	7.59	-6.9	28.6	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW016	27/10/2021	15:15	2.0 – 5.0	3.75	28/10/2021	09:57	5.05	1.037	2.702	1.665	Damaged	0.15	75537	6.75	-98.9	31.3	Low	Light Yellow	No odour	No sheen	HydraSleeve	Lugs broken, bolt pulled from gatic collar to allow access. Gatic collar needs to be repaired.
0009	MW017	27/10/2021	16:30	2.0 – 5.0	3.61	28/10/2021	10:41	4.91	2.784	2.498	-0.286	Good	0.47	62207	7.01	-19.4	28.7	Medium	Light Brown	No odour	No sheen	HydraSleeve	
0009	MW018	27/10/2021	16:40	2.0 – 5.0	3.63	28/10/2021	10:55	4.93	2.235	2.668	0.433	Good	0.76	12297	7.39	-146.2	28.8	Highly Turbid	Brown	No odour	No sheen	HydraSleeve	
0009	MW019	27/10/2021	14:16	2.0 – 5.0	3.71	28/10/2021	08:51	5.01	1.589	1.913	0.324	Good	-	51772	6.66	-336.5	27.5	Medium	Light Yellow	Strong sulfurous odour	No sheen	HydraSleeve	Dissolved oxygen too low for WQM to read.
Resampling Round - 7 December 2021																							
0009	MW009	07/12/2021	10:06	1.5 – 4.5	2.87	8/12/2021	10:33	4.17	0.696	2.659	1.963	Good	0.66	23123	7.14	-109.51	29.7	Low	Clear	No odour	No sheen	HydraSleeve	
0009	MW016	07/12/2021	09:58	2.0 – 5.0	3.51	8/12/2021	10:19	4.81	0.859	2.702	1.843	Damaged	0.49	69914	6.79	-93.3	32.6	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW018	07/12/2021	10:30	2.0 – 5.0	3.41	8/12/2021	10:52	4.71	1.935	2.668	0.733	Good	0.81	10640	7.27	-166.6	30.7	Clear	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve	
0009	MW019	07/12/2021	09:46	2.0 – 5.0	3.47	8/12/2021	09:59	4.77	1.292	1.913	0.621	Good	0.29	52164	6.66	-328.2	29	Low	Yellow	Rotten egg smell (sulfurous)	No sheen	HydraSleeve	
Former WWII RAN Fuel Installation																							
0009	MW031	26/10/2021	15:30	2.5 – 4.5	4.08	27/10/2021	17:20	5.38	4.813	7.06	2.247	Good	2.04	1028	6.63	-31.2	26.2	Turbid	Orange / Brown	No odour	No sheen	Bailer	
0009	MW035	26/10/2021	15:40	1.0 – 2.0	1.45	27/10/2021	09:50	2.75	2.223	2.426	0.203	Good	2.31	824	6.66	66.8	25	Low	Light Brown	No odour	No sheen	Bailer	
0009	MW036	-	-	0.7 – 1.7	-	-	-	2.05	-	2.878	Well dry at the time of sampling.												

*HydraSleeves were installed with bottom weight touching the bottom of the well, HydraSleeve installation depth was claculated based on HydraSleeve length of 1.3 m full length and 0.3 m if installed with a top weight.

mbtoc	metres below top of casing
mAHD	metres above Australian Height Datum
DO	Dissolved Oxygen
EC	Electrical Conductivity
ORP	Oxidation Reduction Potential
Temp	Temperature
mg/L	milligrams per litre
µS/cm	microsiemens per centimetre
mV	millivolt
°C	degrees Celcius
-	no data collected

Table T2: Groundwater Analytical Results

		4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																												**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																														
HMAS Cairns																																
MW001	0009_MW001_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.13	0.32	0.02	0.04	<0.05	<0.02	<0.02	<0.02	0.08	0.02	0.4	0.67
	0009_MW001_LT_211028	28/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.17	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.36**	0.02	0.53	0.67
MW002	0009_MW002_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.07	<0.05	<0.02	<0.05	2.48	1.1	<0.02	<0.02	<0.02	1.52	4.54	10.2	34	1.82	3.36	<0.05	<0.02	<0.02	0.06	**70**	3.57	104	133
	0009_MW002_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.13	<0.05	<0.02	<0.05	2.44	1	<0.02	0.12	<0.02	1.66	4.8	9.94	29.7	1.98	2.45	<0.05	<0.02	<0.02	0.06	**84.6**	3.38	114	142
MW003	0009_MW003_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.03	0.4	<0.02	<0.02	<0.02	0.39	0.57	3.6	9.05	0.61	1.18	<0.05	<0.02	<0.02	<0.02	**3.34**	0.76	12.4	20.9
	0009_MW003_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.11	0.4	<0.02	<0.02	<0.02	0.45	0.64	3.89	9.65	0.68	1.3	<0.05	<0.02	<0.02	<0.02	**3.34**	0.78	13	22.2
MW004	0009_MW004_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.08	<0.05	<0.02	<0.05	0.43	0.3	0.02	<0.02	<0.02	0.36	0.29	1.31	3.8	0.52	0.41	<0.05	<0.02	<0.02	<0.02	**8.62**	0.41	12.4	16.6
	0009_MW004_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.08	<0.05	<0.02	<0.05	0.44	0.3	0.02	0.04	<0.02	0.37	0.37	1.32	4.25	0.51	0.36	<0.05	<0.02	<0.02	<0.02	**11**	0.56	15.2	19.6
MW005	0009_MW005_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.05	<0.05	<0.02	<0.05	0.4	0.2	<0.02	0.04	<0.02	0.21	0.34	1.04	4.05	0.51	0.39	<0.05	<0.02	<0.02	0.04	**19.5**	0.43	23.6	27.2
	0009_MW005_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.05	<0.05	<0.02	<0.05	0.32	0.2	<0.02	0.03	<0.02	0.24	0.36	1	4.01	0.5	0.32	<0.05	<0.02	<0.02	0.03	**18.2**	0.44	22.2	25.7
MW007	0009_MW007_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.03	<0.05	<0.02	<0.05	0.62	0.3	<0.02	<0.02	<0.02	0.27	0.82	1.87	6.7	0.41	0.77	<0.05	<0.02	<0.02	<0.02	**94.6**	0.85	101	107
	0009_MW007_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.04	<0.05	<0.02	<0.05	0.66	0.3	<0.02	0.03	<0.02	0.31	0.99	1.98	7.66	0.44	0.7	<0.05	<0.02	<0.02	<0.02	**92.7**	0.92	100	107
MW009	0009_MW009_HT_211027	27/10/2021	<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.1	0.62	<0.02	0.04	<0.05	<0.02	<0.02	<0.02	**0.23**	0.04	0.85	1.17
	0009_MW009_LT_211028	28/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.09	0.43	0.02	0.04	<0.05	<0.02	<0.02	<0.02	**0.21**	0.03	0.64	0.94
	0009_MW009_211208	8/12/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.03	0.04	0.13	0.86	<0.04	0.07	<0.05	<0.02	<0.02	<0.02	**0.28**	0.05	1.14	1.53
MW011	0009_MW011_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.03	0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	0.11	0.04	0.21
	0009_MW011_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.03	0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	0.11	0.05	0.21
MW013	0009_MW013_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.16	<0.1	<0.02	<0.02	<0.02	0.12	0.14	0.51	2	0.21	0.18	<0.05	<0.02	<0.02	0.1	**4.16**	0.21	6.16	7.79
	0009_MW013_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.13	<0.1	<0.02	<0.02	<0.02	0.09	0.1	0.38	1.55	0.16	0.12	<0.05	<0.02	<0.02	0.1	**4.19**	0.16	5.74	6.98
MW014	0009_MW014_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.22	<0.05	<0.02	<0.05	0.5	0.3	<0.02	<0.02	<0.02	0.44	0.86	3.91	10.7	0.63	0.6	<0.05	<0.02	<0.02	0.02	**54.6**	0.85	65.3	73.6
	0009_MW014_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.12	<0.05	<0.02	<0.05	0.54	0.3	<0.02	0.07	<0.02	0.33	0.67	3.14	8.5	0.5	0.46	<0.05	<0.02	<0.02	<0.02	**41.9**	0.65	50.4	57.2
MW015	0009_MW015_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.18	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**1.43**	0.01	1.61	1.66
	0009_MW015_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.23	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.97**	0.01	1.2	1.25
MW016	0009_MW016_HT_211027	27/10/2021	<0.05	0.18	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.15	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.32	1.08	0.08	0.18	<0.05	<0.02	<0.02	<0.02	**0.27**	<0.01	1.35	2.29
	0009_MW016_LT_211028	28/10/2021	<0.05	0.24	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.29	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.48	2.03	0.1	0.23	<0.05	<0.02	<0.02	<0.02	**0.16**	0.01	2.19	3.59
	0009_MW016_211208	8/12/2021	<0.05	0.12	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.27	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.46	1.75	0.09	0.33	<0.05	<0.02	<0.02	<0.02	**0.15**	<0.02	1.9	3.23
MW017	0009_MW017_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.02	0.04	0.12	0.64	0.04	0.07	<0.05	<0.02	<0.02	<0.02	**2.08**	0.06	2.72	3.11
	0009_MW017_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.03	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	0.03	0.08	0.45	0.02	0.03	<0.05	<0.02	<0.02	<0.02	**2.25**	0.04	2.7	2.93
MW018	0009_MW018_HT_211027	27/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.04	<0.05	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.09
	0009_MW018_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_MW018_211208	8/12/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.06	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.03	<0.01	<0.01	<0.01
MW019	0009_MW019_HT_211027	27/10/2021	<0.05	0.63	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.07	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	0.03	0.06	0.1	0.23	0.06	0.02	<0.05	<0.02	<0.02	<0.02	**2.11**	0.06	2.34	3.32
	0009_MW019_LT_211028	28/10/2021	<0.05	0.38	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.08	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	0.04	0.07	0.13	0.28	0.08	0.03	<0.05	<0.02	<0.02	<0.02	**2.4**	0.07	2.68	3.5
	0009_MW019_211208	8/12/2021	<0.05	0.12	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.09	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.05	0.08	0.16	0.32	0.08	0.04	<0.05	<0.02	<0.02	<0.02	**2.16**	0.08	2.48	3.13
Former WWII RAN Fuel Installation																																
MW031	0009_MW031_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.12**	<0.01	0.14	0.14
MW035	0009_MW035_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than
NEMP is National Environmental Management Plan
Denotes first time detection above LOR of PFOS + PFHxS or PFOA
Denotes new exceedance of ecological or human health guideline values

Table T3: Surface Water Quality Parameter Results

Property ID	Sample ID	Sample Date	Sample Time	DO (mg/L)	EC (uS/cm)	pH	Redox (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method
HMAS Cairns													
0009	SW030	27/10/2021	11:20	5.78	69384	7.61	157.5	31.9	Clear	Clear	No odour	No sheen	Grab
0009	SW031	27/10/2021	11:28	5.83	74160	7.77	64.9	32.2	Clear	Clear	No odour	No sheen	Grab
0009	SW032	28/10/2021	07:38	5.9	54400	6.91	206	27.3	Medium	Brown	No odour	No sheen	Grab
0009	SW033	28/10/2021	07:54	3.73	35923	7.23	82.5	27.1	Medium	Brown	No odour	No sheen	Grab
0009	SW034	27/10/2021	12:01	5.68	73115	8	84.1	31.4	Clear	Brown	No odour	No sheen	Grab
0009	SW035	27/10/2021	12:09	5.74	72769	7.88	67.3	31.1	Clear	Brown	No odour	No sheen	Grab
Former WWII RAN Fuel Installation													
0009	SW036	27/10/2021	08:15	4.99	41022	7.39	210.3	27.1	Low	Brown	No odour	Slight oil sheen	Grab
0009	SW100	27/10/2021	09:06	5.65	39211	7.87	134.4	27.5	Low	Brown	No odour	No sheen	Grab
0009	SW101	27/10/2021	09:11	4.87	2075	7.93	42.6	25.6	Clear	Dark red brown	No odour	No sheen	Grab

DO	Dissolved Oxygen
EC	Electrical Conductivity
Redox	Redox Oxidation Potential
Temp	Temperature
mg/L	milligrams per litre
µs/cm	microsiemens per centimetre
mV	millivolt
°C	degrees Celcius

Table T4: Surface Water Analytical Results

		4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
NHMRC (2019) PFAS Recreational Water																													**10**	**2**	
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													***0.13***	***220***		
Location ID	**Sample ID**	**Sample Date**																														
HMAS Cairns																																
SW030	0009_SW030_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
SW031	0009_SW031_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
SW032	0009_SW032_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW033	0009_SW033_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW034	0009_SW034_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW035	0009_SW035_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
Former WWII RAN Fuel Installation																																
SW036	0009_SW036_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW100	0009_SW100_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
SW101	0009_SW101_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than
NEMP is National Environmental Management Plan
NHMRC is National Health Medical Research Council

Denotes first time detection above LOR of PFOS + PFHxS, PFOS or PFOA

Denotes new exceedance of ecological or human health guideline values

Table T5: Sediment Observation Results

Property ID	Location ID	Sample Date	Sample Time	Sample Description	Odour	Sheen	Sample Method
HMAS Cairns							
0009	SD030	27/10/2021	11:20	SAND, medium to course sands, loose, saturated, yellow to light brown, high shell content, trace coarse sub angular to sub rounded gravel.	No odour	No sheen	Grab
0009	SD031	27/10/2021	11:30	SAND, medium to course sands, loose, saturated, yellow to light brown, high shell content, trace coarse sub angular to sub rounded gravel.	No odour	No sheen	Grab
0009	SD032	28/10/2021	07:38	Sandy silty CLAY, low to medium plasticity, firm, saturated, dark brown, grey, black, medium to coarse grained sand, trace of shells, layer of algae on top (mangrove mud).	Organic odour	No sheen	Grab
0009	SD033	28/10/2021	07:54	Silty CLAY, low to medium plasticity, soft, saturated, dark brown to grey, layer of algae (mangrove mud).	No odour	No sheen	Grab
0009	SD034	27/10/2021	12:00	Silty CLAY, low to medium plasticty, firm, saturated, dark brown, layer of algae on top (mangrove mud).	Organic odour	No sheen	Grab
0009	SD035	27/10/2021	12:14	Silty CLAY, low to medium plasticty, firm, saturated, dark brown, layer of algae on top (mangrove mud).	Organic odour	No sheen	Grab
Former WWII RAN Fuel Installation							
0009	SD036	27/10/2021	08:14	Silty CLAY, low plasticity, firm, moist, dark brown (mangrove mud).	No odour	No sheen	Grab
0009	SD036	8/12/2021	08:45	Silty CLAY, medium plasticity, wet, grey/brown, soft. Contained organic content.	No odour	No sheen	Trowel
0009	SD100	27/10/2021	08:53	Silty CLAY, low to medium plasticity, firm, wet, dark brown.	No odour	No sheen	Grab
0009	SD101	27/10/2021	09:10	Sandy GRAVEL, fine angular gravel, dark brown, orange, light browngravels, medium to course sands, loose, saturated , trace organics (roots).	No odour	No sheen	Grab

Table T6: Sediment Analytical Results

Location ID	Sample ID	Date	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
Units			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			0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HMAS Cairns																																		
SD030	0009_SD030_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0047	<0.0002	0.0047	0.005
SD031	0009_SD031_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.002	<0.0002	0.002	0.002
SD032	0009_SD032_211028	28/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003
SD033	0009_SD033_211028	28/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
SD034	0009_SD034_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
SD035	0009_SD035_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	0.0007	0.0007
Former WWII RAN Fuel Installation																																		
SD036	0009_SD036_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	0.0002	0.0006	0.0008
	0009_SD036_211208	8/12/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0009
SD100	0009_SD100_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
SD101	0009_SD101_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

LOR is limit of reporting
mg/kg is milligrams per kilogram
"<" denotes concentration less than
Denotes first time detection above LOR of PFOS + PFHxS or PFOA
Concentrations reported at the LOR have not been highlighted.

Table T7: Historical Ground Water Results

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																														
HMAS Cairns																																
MW001	MW01_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	<0.05	<0.01	<0.01	<0.01	0.042	0.031	0.29	0.71	0.038	0.11	<0.01	<0.01	<0.01	<0.01	0.025	0.067	0.735	1.529
	MW01_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.066	0.027	<0.001	<0.001	<0.001	0.023	0.039	0.16	0.37	0.027	0.054	<0.001	<0.001	<0.001	<0.001	0.022	0.035	0.392	0.873
	MW01_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.045	0.011	<0.001	<0.001	<0.001	0.013	0.025	0.058	0.25	0.014	0.032	<0.001	<0.001	<0.001	<0.001	0.038	0.019	0.288	0.555
	MW01_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.049	0.02	<0.001	<0.001	<0.001	0.016	0.006	0.1	0.33	0.021	0.046	<0.001	<0.001	<0.001	<0.001	0.1	0.016	0.43	0.734
	0009_MW001_HT_200930	30/09/2020	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	0.04	0.02	0.24	0.73	0.04	0.09	<0.05	<0.02	<0.02	<0.02	**0.16**	0.05	0.89	1.56
	0009_MW001_LT_200930	30/09/2020	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.53	0.1	<0.02	<0.02	<0.02	0.11	0.08	0.76	2.02	0.15	0.42	<0.05	<0.02	<0.02	<0.02	**0.26**	0.17	2.28	4.66
	0009_MW001_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.13	0.32	0.03	0.05	<0.05	<0.02	<0.02	<0.02	**0.23**	0.03	0.55	0.88
	0009_MW001_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.11	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.22	0.54	0.04	0.10	<0.05	<0.02	<0.02	<0.02	0.09	0.04	0.63	1.17
	0009_MW001_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.13	0.32	0.02	0.04	<0.05	<0.02	<0.02	<0.02	0.08	0.02	0.4	0.67
	0009_MW001_LT_211028	28/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.17	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.36**	0.02	0.53	0.67
MW002	MW02_HIGH_190522	22/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	3.2	1.4	<0.1	<0.1	<0.1	1.9	2.2	14	36	2.4	3	<0.1	<0.1	<0.1	<0.1	**46**	4.1	82	-
	MW02_LOW_190523	23/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	3.2	1.4	<0.1	<0.1	<0.1	1.6	1.4	12	32	2	2.7	<0.1	<0.1	<0.1	<0.1	**41**	3.8	73	-
	MW02_LOW_20190618	18/06/2019	<0.001	0.046	0.02	<0.001	<0.005	<0.005	<0.005	0.052	<0.005	<0.005	<0.005	3.2	1.4	0.013	0.009	<0.001	1.8	2.4	11	31	2.4	3.3	<0.001	<0.001	<0.001	0.067	**49**	3.8	80	112.407
	MW02_HIGH_20190619	19/06/2019	<0.001	0.064	0.024	<0.001	<0.005	<0.005	<0.005	0.056	<0.005	<0.005	<0.005	3.6	1.4	0.013	0.006	<0.001	1.9	1.9	11	26	1.1	2.4	<0.001	<0.001	<0.001	0.062	**53**	3.8	79	108.825
	0009_MW002_HT_200930	30/09/2020	<0.32	<0.32	<0.32	<0.32	<0.81	<0.32	<0.81	<0.32	<0.81	<0.32	<0.81	3.73	<1.6	<0.32	<0.32	<0.32	1.49	2.95	10.6	32.2	2.24	3.18	<0.81	<0.32	<0.32	<0.32	**77.5**	3.63	110	138
	0009_MW002_LT_200930	30/09/2020	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	2.6	<2.5	<0.50	<0.50	<0.50	1.5	2.35	9.35	29.2	1.65	2.5	<1.25	<0.50	<0.50	<0.50	**66**	3.35	95.2	118
	0009_MW002_LT_210408	8/04/2021	<0.37	<0.37	<0.37	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	1.59	<1.8	<0.37	<0.37	<0.37	1.07	2.11	6.55	18.10	1.37	1.59	<0.92	<0.37	<0.37	<0.37	**85.1**	2.40	103.00	120.00
	0009_MW002_HT_210409	9/04/2021	<0.38	<0.38	<0.38	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	1.34	<1.9	<0.38	<0.38	<0.38	1.03	1.80	6.04	14.10	1.38	1.45	<0.96	<0.38	<0.38	<0.38	**78.6**	2.25	92.70	108.00
	0009_MW002_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.07	<0.05	<0.02	<0.05	2.48	1.1	<0.02	<0.02	<0.02	1.52	4.54	10.2	34	1.82	3.36	<0.05	<0.02	<0.02	0.06	**70**	3.57	104	133
	0009_MW002_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.13	<0.05	<0.02	<0.05	2.44	1	<0.02	0.12	<0.02	1.66	4.8	9.94	29.7	1.98	2.45	<0.05	<0.02	<0.02	0.06	**84.6**	3.38	114	142
MW003	MW03_HIGH_190522	22/05/2019	<0.001	<0.005	0.002	<0.001	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	<0.005	0.21	0.09	0.008	<0.001	<0.001	0.11	0.24	0.54	2.4	0.18	0.42	<0.001	<0.001	0.001	0.021	**7.8**	0.23	10.2	12.453
	MW03_LOW_190523	23/05/2019	<0.001	0.007	0.002	<0.001	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.16	0.083	0.008	<0.001	<0.001	0.1	0.35	0.59	2.1	0.13	0.4	<0.001	<0.001	0.001	0.019	**5.4**	0.24	7.5	9.8
	MW03_LOW_20190618	18/06/2019	<0.001	0.011	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.9	0.27	0.003	<0.001	<0.001	0.3	0.57	2.5	8.8	0.42	1	<0.001	<0.001	<0.001	0.012	**2**	0.61	10.8	17.906
	MW03_HIGH_20190619	19/06/2019	<0.001	0.012	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1.1	0.28	0.003	<0.001	<0.001	0.33	0.6	3	9.4	0.81	1	<0.001	<0.001	<0.001	0.014	**1.9**	0.62	11.3	19.629
	0009_MW003_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.33	<0.2	<0.03	<0.03	<0.03	0.11	0.15	0.75	3.16	0.21	0.31	<0.08	<0.03	<0.03	<0.03	**5.58**	0.24	8.74	10.8
	0009_MW003_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.36	<0.2	<0.03	<0.03	<0.03	0.12	0.18	0.85	3.59	0.22	0.35	<0.08	<0.03	<0.03	<0.03	**6.62**	0.29	10.2	12.6
	0009_MW003_LT_210408	8/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.69	0.20	<0.02	<0.02	<0.02	0.25	0.24	1.79	5.43	0.41	0.60	<0.05	<0.02	<0.02	0.02	**4.45**	0.46	9.88	14.60
	0009_MW003_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.94	0.30	<0.02	0.02	<0.02	0.33	0.32	2.58	6.59	0.53	0.86	<0.05	<0.02	<0.02	<0.02	**4.84**	0.64	11.40	18.00
	0009_MW003_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.03	0.4	<0.02	<0.02	<0.02	0.39	0.57	3.6	9.05	0.61	1.18	<0.05	<0.02	<0.02	<0.02	**3.34**	0.76	12.4	20.9
	0009_MW003_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.11	0.4	<0.02	<0.02	<0.02	0.45	0.64	3.89	9.65	0.68	1.3	<0.05	<0.02	<0.02	<0.02	**3.34**	0.78	13	22.2
MW004	MW04_HIGH_190522	22/05/2019	<0.001	0.006	0.015	<0.001	<0.005	<0.005	<0.005	0.034	<0.005	<0.005	<0.005	0.4	0.22	0.01	<0.001	<0.001	0.28	0.44	1	3.5	0.54	0.81	<0.001	<0.001	<0.001	0.018	**9.5**	0.47	13	17.483
	MW04_LOW_190523	23/05/2019	<0.001	0.005	0.012	<0.001	<0.005	<0.005	<0.005	0.045	<0.005	<0.005	<0.005	0.41	0.25	0.008	<0.001	<0.001	0.34	0.93	1.2	3.7	0.5	0.89	<0.001	<0.001	<0.001	0.022	**8.5**	0.65	12.2	17.782
	MW04_LOW_20190618	18/06/2019	<0.001	0.008	0.011	<0.001	<0.005	<0.005	<0.005	0.05	<0.005	<0.005	<0.005	0.41	0.23	0.01	<0.001	<0.001	0.32	0.41	1.2	4.9	0.44	0.57	<0.001	<0.001	0.001	0.017	**11**	0.56	15.9	20.497
	MW04_HIGH_20190619	19/06/2019	<0.001	0.006	0.007	<0.001	<0.005	<0.005	<0.005	0.046	<0.005	<0.005	<0.005	0.44	0.26	0.007	<0.001	<0.001	0.35	0.45	1.4	5	0.53	0.66	<0.001	<0.001	<0.001	0.015	**7.7**	0.56	12.7	17.721
	0009_MW004_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.58	0.3	<0.03	<0.03	<0.03	0.37	0.37	1.35	5.22	0.66	0.52	<0.08	<0.03	<0.03	<0.03	**10.6**	0.72	15.8	20.7
	0009_MW004_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.48	0.2	<0.03	<0.03	<0.03	0.29	0.3	1.09	4.2	0.56	0.43	<0.08	<0.03	<0.03	<0.03	**8.24**	0.56	12.4	16.4
	0009_MW004_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	0.66	<0.9	<0.18	<0.18	<0.18	0.53	0.59	1.67	7.01	0.81	0.52	<0.46	<0.18	<0.18	<0.18	**27**	1.16	34.00	40.00
	0009_MW004_HT_210409	9/04/2021	<0.19	<0.19	<0.19	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	0.90	<0.9	<0.19	<0.19	<0.19	0.73	0.92	2.56	7.93	1.27	0.73	<0.47	<0.19	<0.19	<0.19	**31.5**	1.51	39.40	48.00
	0009_MW004_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.08	<0.05	<0.02	<0.05	0.43	0.3	0.02	<0.02	<0.02	0.36	0.29	1.31	3.8	0.52	0.41	<0.05	<0.02	<0.02	<0.02	**8.62**	0.41	12.4	16.6
	0009_MW004_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.08	<0.05	<0.02	<0.05	0.44	0.3	0.02	0.04	<0.02	0.37	0.37	1.32	4.25	0.51	0.36	<0.05	<0.02	<0.02	<0.02	**11**	0.56	15.2	19.6
MW005	MW05_HIGH_190522	22/05/2019	<0.001	0.011	0.011	<0.001	<0.005	<0.005	<0.005	0.027	<0.005	<0.005	<0.005	0.32	0.22	0.012	0.004	<0.001	0.26	0.8	1.1	3.8	0.61	0.78	<0.001	<0.001	0.003	0.05	**23**	0.62	26.8	31.888
	MW05_LOW_190523	23/05/2019	<0.001	0.011	0.022	<0.001	<0.005	<0.005	<0.005	0.043	<0.005	<0.005	<0.005	0.31	0.19	0.026	0.005	<0.001	0.3	0.59	1.2	3.8	0.5	0.72	<0.001	<0.001	0.006	0.056	**31**	0.67	34.8	-
	MW05_LOW_20190618	18/06/2019	<0.001	0.009	0.007	<0.001	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	0.25	0.15	0.009	0.003	<0.001	0.21	0.58	0.97	4.1	0.42	0.4	<0.001	<0.001	0.002	0.035	**18**	0.48	22.1	25.983
	MW05_HIGH_20190619	19/06/2019	<0.001	0.009	0.005	<0.001	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	0.26	0.14	0.008	0.002	<0.001	0.19	0.56	0.92	3.6	0.4	0.41	<0.001	<0.001	0.002	0.033	**14**	0.43	17.6	21.317
	0009_MW005_HT_200930	30/09/2020	<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	0.42	<0.3	<0.06	<0.06	<0.06	0.24	0.45	1.03	5.1	0.79	0.4	<0.16	<0.06	<0.06	0.06	**24.4**	0.58	29.5	33.5
	0009_MW005_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.39	0.2	<0.03	<0.03	<0.03	0.22	0.35	0.87	4.3	0.62	0.36	<0.08	<0.03	<0.03	0.06	**20.7**	0.52	25	28.6
	0009_MW005_LT_210408	8/04/2021	<0.08	<0.08	<0.08	<0.08	<0.19	<0.08	<0.19	<0.08	<0.19	<0.08	<0.19	0.49	0.40	<0.08	<0.08	<0.08	0.40	0.65	1.48	6.70	0.84	0.50	<0.19	<0.08	<0.08	0.13	**40.6**	0.89	47.30	53.10
	0009_MW005_HT_210409	9/04/2021	<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	0.65	<1	<0.19	<0.19	<0.19	0.49	0.80	1.96	6.94	1.04	0.55	<0.48	<0.19	<0.19	<0.19	**47.3**	1.08	54.20	60.80
	0009_MW005_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.05	<0.05	<0.02	<0.05	0.4	0.2	<0.02	0.04	<0.02	0.21	0.34	1.04	4.05	0.51	0.39	<0.05	<0.02	<0.02	0.04	**19.5**	0.43	23.6	27.2
	0009_MW005_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.05	<0.05	<0.02	<0.05	0.32	0.2	<0.02	0.03	<0.02	0.24	0.36	1	4.01	0.5	0.32	<0.05	<0.02	<0.02	0.03	**18.2**	0.44	22.2	25.7
MW007	MW07_HIGH_190522	22/05/2019	<0.001	0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.19	0.079	<0.001	<0.001	<0.001	0.079	0.28	0.53	2	0.14	0.42	<0.001	<0.001	<0.001	0.003	**30**	0.24	32	34.092
	MW07_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	0.23	0.1	0.003	0.003	<0.001	0.1	0.65	0.7	2.3	0.14	0.58	<0.001	<0.001	<0.001	0.004	**36**	0.34	38.3	41.818
	MW07_LOW_20190618	18/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.86	0.31	<0.1	<0.1	<0.1	0.35	0.84	2.2	9.9	0.48	1.1	0.21	<0.1	<0.1	<0.1	**110**	0.99	119.9	127.49
	MW07_HIGH_20190619	19/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.65	0.24	<0.1	<0.1	<0.1	0.3	0.74	2	7.8	0.36	0.93	<0.1	<0.1	<0.1	<0.1	**88**	0.95	95.8	102.16
	0009_MW007_HT_200930	30/09/2020	<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	0.28	<0.3	<0.06	<0.06	<0.06	0.11	0.28	0.76	3.28	0.24	0.35	<0.16	<0.06	<0.06	<0.06	**42.2**	0.33	45.5	47.8
	0009_MW007_LT_200930	30/09/2020	<0.16	<0.16	<0.16	<0.16	<0.41	<0.16	<0.41	<0.16	<0.41	<0.16	<0.41	0.39	<0.8	<0.16	<0.16	<0.16	<0.16	0.32	1.02	4.14	0.29	0.44	<0.41	<0.16	<0.16	<0.16	**51.1**	0.37	55.2	58.1
	0009_MW007_LT_210408	8/04/2021	<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	0.19	<1	<0.19	<0.19	<0.19	<0.19	0.34	0.71	2.58	0.23	0.29	<0.48	<0.19	<0.19	<0.19	**35**	0.38	37.60	39.70
	0009_MW007_HT_210409	9/04/2021	<0.24	<0.24	<0.24	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	0.39	<1.2	<0.24	<0.24	<0.24	<0.32	0.36	1.29	4.27	0.34	0.66	<0.61	<0.24	<0.24	<0.24	**45.5**	0.58	49.80	53.40
	0009_MW007_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.03	<0.05	<0.02	<0.05	0.62	0.3	<0.02	<0.02	<0.02	0.27	0.82	1.87	6.7	0.41	0.77	<0.05	<0.02	<0.02	<0.02	**94.6**	0.85	101	107
	0009_MW007_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.04	<0.05	<0.02	<0.05	0.66	0.3	<0.02	0.03	<0.02	0.31	0.99	1.98	7.66	0.44	0.7	<0.05	<0.02	<0.02	<0.02	**92.7**	0.92	100	107

Table T7: Historical Ground Water Results

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																														
MW009	MW09_LOW_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.2	0.064	<0.01	<0.01	<0.01	0.15	0.023	0.98	1.8	0.08	0.33	<0.01	<0.01	<0.01	<0.01	**0.19**	0.1	1.99	3.968
	MW09_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	0.065	<0.01	<0.01	<0.01	0.16	0.031	0.93	2	0.091	0.34	<0.01	<0.01	<0.01	<0.01	**0.32**	0.12	2.32	4.319
	MW09_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	<0.001	0.003	0.002	0.021	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	0.071	0.002	0.092	0.104
	MW09_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.005	<0.001	<0.001	<0.001	0.001	0.003	0.005	0.056	0.002	0.003	<0.001	<0.001	<0.001	<0.001	0.093	0.002	0.149	0.168
	0009_MW009_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.12	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.27**	<0.01	0.39	0.39
	0009_MW009_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.16	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.25**	<0.01	0.41	0.43
	0009_MW009_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.10	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.10	<0.01	0.20	0.20
	0009_MW009_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.18**	<0.01	0.26	0.26
	0009_MW009_HT_211027	27/10/2021	<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.1	0.62	<0.02	0.04	<0.05	<0.02	<0.02	<0.02	**0.23**	0.04	0.85	1.17
	0009_MW009_LT_211028	28/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.09	0.43	0.02	0.04	<0.05	<0.02	<0.02	<0.02	**0.21**	0.03	0.64	0.94
	0009_MW009_211208	8/12/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.03	0.04	0.13	0.86	<0.04	0.07	<0.05	<0.02	<0.02	<0.02	**0.28**	0.05	1.14	1.53
MW011	MW11_HIGH_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.019	<0.01	0.021	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	0.12	0.078	0.27
	MW11_LOW_190524	24/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	0.003	<0.001	<0.001	0.015	0.004	0.026	0.005	0.008	<0.001	<0.001	<0.001	<0.001	0.005	0.048	0.13	0.053	0.244
	MW11_LOW_20190619	19/06/2019	<0.001	0.006	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	0.006	0.004	<0.001	<0.001	0.042	0.007	0.025	0.022	0.017	0.003	<0.001	<0.001	<0.001	0.019	0.12	0.32	0.142	0.593
	MW11_HIGH_20190620	20/06/2019	<0.001	0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	0.007	0.006	<0.001	<0.001	0.048	0.009	0.03	0.036	0.013	0.004	<0.001	<0.001	<0.001	0.021	**0.17**	0.3	0.206	0.652
	0009_MW011_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.07	<0.02	0.06	0.05	0.04	<0.02	<0.05	<0.02	<0.02	0.03	**0.35**	0.36	0.4	0.96
	0009_MW011_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.07	<0.02	0.06	0.07	0.04	<0.02	<0.05	<0.02	<0.02	0.03	**0.34**	0.38	0.41	0.99
	0009_MW011_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	0.07	0.14	0.27
	0009_MW011_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.04	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**0.23**	0.18	0.23	0.52
	0009_MW011_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.03	0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	0.11	0.04	0.21
	0009_MW011_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.03	0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	0.11	0.05	0.21
MW013	MW13_HIGH_190522	22/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.047	0.033	0.003	<0.001	<0.001	0.041	0.059	0.14	0.87	0.083	0.086	<0.001	<0.001	0.002	0.13	**4.1**	0.084	4.97	5.708
	MW13_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.042	0.032	0.003	<0.001	<0.001	0.034	0.072	0.14	0.79	0.061	0.072	<0.001	<0.001	0.001	0.11	**2.3**	0.071	3.09	3.778
	MW13_LOW_20190618	18/06/2019	<0.001	0.006	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.064	0.038	0.002	<0.001	<0.001	0.055	0.065	0.17	1.1	0.086	0.098	<0.001	<0.001	<0.001	0.11	**1.7**	0.085	2.8	3.619
	MW13_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.059	0.039	0.002	<0.001	<0.001	0.058	0.085	0.18	1.6	0.083	0.1	<0.001	<0.001	<0.001	0.15	**2.4**	0.089	4	4.885
	MW13_HIGH_20190619_TOPA	19/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.2	<0.01	<0.01	<0.01	0.08	0.08	1.3	1.2	0.15	0.1	<0.01	<0.01	<0.01	0.16	**3.4**	0.14	4.6	6.71
	0009_MW013_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.11	<0.2	<0.05	<0.05	<0.05	0.05	<0.05	0.27	1.1	0.08	0.09	<0.12	<0.05	<0.05	0.09	**2.27**	0.09	3.37	4.15
	0009_MW013_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.09	<0.2	<0.05	<0.05	<0.05	0.05	0.06	0.25	1.21	0.1	0.09	<0.12	<0.05	<0.05	0.11	**3.06**	0.11	4.27	5.13
	0009_MW013_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.05	0.06	0.17	0.97	0.10	0.08	<0.05	<0.02	<0.02	0.24	**3.58**	0.09	4.55	5.40
	0009_MW013_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.05	0.05	0.15	0.55	0.07	0.05	<0.05	<0.02	<0.02	0.08	**2.49**	0.08	3.04	3.63
	0009_MW013_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.16	<0.1	<0.02	<0.02	<0.02	0.12	0.14	0.51	2	0.21	0.18	<0.05	<0.02	<0.02	0.1	**4.16**	0.21	6.16	7.79
	0009_MW013_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.13	<0.1	<0.02	<0.02	<0.02	0.09	0.1	0.38	1.55	0.16	0.12	<0.05	<0.02	<0.02	0.1	**4.19**	0.16	5.74	6.98
MW014	MW14_HIGH_190522	22/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.16	<0.1	<0.1	<0.1	0.45	0.51	<0.1	<0.1	<0.1	0.61	0.59	4.3	11	1.1	0.53	<0.1	<0.1	<0.1	<0.1	**77**	1.3	88	-
	MW14_LOW_190523	23/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	0.24	<0.1	0.11	<0.1	<0.1	<0.1	0.38	0.54	<0.1	<0.1	<0.1	0.34	0.66	3.6	8.9	0.6	0.44	<0.1	<0.1	<0.1	<0.1	**65**	1.1	73.9	-
	MW14_LOW_20190618	18/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.4	0.25	<0.1	<0.1	<0.1	0.35	0.61	2.6	9.7	0.32	0.38	0.018	<0.1	<0.1	<0.1	**86**	0.76	95.7	101.768
	MW14_LOW_20190618_TOPA	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.58	0.83	0.04	0.05	<0.01	1	1.5	54	18	2.4	1.1	<0.01	<0.01	0.01	0.08	**120**	2.8	138	202.46
	MW14_HIGH_20190619	19/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.27	<0.1	<0.1	<0.1	0.34	0.22	<0.1	<0.1	<0.1	0.33	0.6	2.7	8.8	0.42	0.38	0.016	<0.1	<0.1	<0.1	**84**	0.69	92.8	98.916
	0009_MW014_HT_200930	30/09/2020	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	7.9	<0.50	<0.50	<1.25	<0.50	<0.50	<0.50	**120**	0.85	128	132
	0009_MW014_LT_200930	30/09/2020	<0.25	<0.25	<0.25	<0.25	<0.63	<0.25	<0.63	0.35	<0.63	<0.25	<0.63	0.3	<1.2	<0.25	<0.25	<0.25	0.35	0.43	3.92	7.31	0.48	0.33	<0.63	<0.25	<0.25	<0.25	**101**	0.93	108	115
	0009_MW014_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	0.69	<0.9	<0.18	<0.18	<0.18	0.46	0.69	3.03	11.50	0.64	0.51	<0.46	<0.18	<0.18	<0.18	**48.5**	0.91	60.00	66.90
	0009_MW014_HT_210409	9/04/2021	<0.18	<0.18	<0.18	<0.18	<0.45	<0.18	<0.45	<0.18	<0.45	<0.18	<0.45	0.58	<0.9	<0.18	<0.18	<0.18	0.36	0.54	2.89	7.99	0.65	0.49	<0.45	<0.18	<0.18	<0.18	**42**	0.73	50.00	56.20
	0009_MW014_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.22	<0.05	<0.02	<0.05	0.5	0.3	<0.02	<0.02	<0.02	0.44	0.86	3.91	10.7	0.63	0.6	<0.05	<0.02	<0.02	0.02	**54.6**	0.85	65.3	73.6
	0009_MW014_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.12	<0.05	<0.02	<0.05	0.54	0.3	<0.02	0.07	<0.02	0.33	0.67	3.14	8.5	0.5	0.46	<0.05	<0.02	<0.02	<0.02	**41.9**	0.65	50.4	57.2
MW015	MW15_HIGH_190522	22/05/2019	<0.001	0.009	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.012	<0.001	<0.001	<0.001	0.012	0.014	0.069	0.22	0.028	0.016	<0.001	<0.001	<0.001	0.002	**2.1**	0.022	2.32	2.515
	MW15_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.016	0.016	<0.001	<0.001	<0.001	0.018	0.029	0.095	0.33	0.036	0.029	<0.001	<0.001	<0.001	0.003	**3**	0.034	3.33	-
	MW15_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.012	0.014	<0.001	<0.001	<0.001	0.013	0.016	0.096	0.25	0.034	0.016	<0.001	<0.001	<0.001	0.001	**1**	0.021	1.25	1.473
	MW15_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.014	0.015	<0.001	<0.001	<0.001	0.017	0.02	0.097	0.28	0.035	0.019	<0.001	<0.001	<0.001	0.002	**1.7**	0.024	1.98	2.249
	0009_MW015_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	0.35	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	**1.74**	<0.05	2.09	2.25
	0009_MW015_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.21	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	**1.17**	<0.02	1.38	1.46
	0009_MW015_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.21	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**1.44**	0.02	1.65	1.78
	0009_MW015_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.10	0.27	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	**2.52**	0.03	2.79	2.98
	0009_MW015_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.18	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**1.43**	0.01	1.61	1.66
	0009_MW015_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.23	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.97**	0.01	1.2	1.25
MW016	MW16_LOW_190521	21/05/2019	<0.001	0.058	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.17	0.049	<0.001	<0.001	<0.001	0.033	0.11	0.34	1.5	0.098	0.27	<0.001	<0.001	<0.001	0.002	**1.6**	0.075	3.1	4.355
	MW16_HIGH_190522	22/05/2019	<0.001	0.048	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.2	0.054	<0.001	<0.001	<0.001	0.036	0.1	0.41	1.4	0.11	0.36	<0.001	<0.001	<0.001	0.002	**1.6**	0.067	3	4.447
	MW16_LOW_20190618	18/06/2019	<0.001	0.017	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.18	0.047	<0.001	<0.001	<0.001	0.029	0.035	0.4	1.1	0.12	0.23	<0.001	<0.001	<0.001	<0.001	**0.57**	0.027	1.67	2.825
	MW16_HIGH_20190619	19/06/2019	<0.001	0.02	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.19	0.051	<0.001	<0.001	<0.001	0.033	0.042	0.42	1.3	0.089	0.23	<0.001	<0.001	<0.001	<0.001	**0.53**	0.024	1.83	3.009
	0009_MW016_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.35	<0.2	<0.05	<0.05	<0.05	0.07	<0.05	0.69	3.2	0.11	0.45	<0.12	<0.05	<0.05	<0.05	0.07	<0.05	3.27	4.94
	0009_MW016_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.36	<0.2	<0.05	<0.05	<0.05	0.07	<0.05	0.67	3.08	<0.05	0.44	<0.12	<0.05	<0.05	<0.05	0.1	<0.05	3.18	4.72
	0009_MW016_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.31	<0.1	<0.02	<0.02	<0.02	0.08	<0.02	0.58	2.59	0.16	0.38	<0.05	<0.02	<0.02	<0.02	**0.15**	0.02	2.74	4.27
	0009_MW016_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.20	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.42	1.72	0.09	0.34	<0.05	<0.02	<0.02	<0.02	**0.22**	0.01	1.94	3.05
	0009_MW016_HT_211027	27/10/2021	<0.05	0.18	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.15	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.32	1.08	0.08	0.18	<0.05	<0.02	<0.02	<0.02	**0.27**	<0.01	1.35	2.29
	0009_MW016_LT_211028	28/10/2021	<0.05	0.24	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.29	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.48	2.03	0.1	0.23	<0.05	<0.02	<0.02	<0.02	**0.16**	0.01	2.19	3.59
	0009_MW016_211208	8/12/2021	<0.05	0.12	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.27	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.46	1.75	0.09	0.33	<0.05	<0.02	<0.02	<0.02	**0.15**	<0.02	1.9	3.23
MW017	MW17_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.014	<0.05	<0.01	<0.01	<0.01	0.014	0.013	0.056	0.22	0.026	0.026	<0.01	<0.01	<0.01	<0.01	**1.1**	0.033	1.32	1.516
	MW17_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.019	0.014	<0.001	<0.001	<0.001	0.016	0.026	0.064	0.31	0.025	0.035	<0.001	<0.001	<0.001	0.001	**1**	0.03	1.31	1.54
	MW17_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.008	<0.001	<0.001	<0.001	0.008	0.007	0.037	0.16	0.018	0.017	<0.001	<0.001	<0.001	<0.001	**0.38**	0.013	0.54	0.659
	MW17_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.034	0.019	<0.001	<0.001	<0.001	0.021	0.03	0.094	0.5	0.034	0.051	<0.001	<0.001	<0.001	0.002	**1.3**	0.041	1.8	2.126
	0009_MW017_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.31	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	**1.13**	0.03	1.44	1.58
	0009_MW017_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.21	<0.02	0.02	<0.05	<0.02	<0.02	<0.02	**0.87**	0.02	1.08	1.17
	0009_MW017_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.34	0.03	0.04	<0.05	<0.02	<0.02	<0.02	**1.67**	0.03	2.01	2.22
	0009_MW017_HT_210409	9/04/2021	<0.05

Table T7: Historical Ground Water Results

		4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																												**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																													
	0009_MW017_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	0.03	0.08	0.45	0.02	0.03	<0.05	<0.02	<0.02	<0.02	**2.25**	0.04	2.7	2.93

Table T7: Historical Ground Water Results

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																														
MW018	MW18_LOW_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	0.003	0.001	0.004	0.014	0.003	0.001	<0.001	<0.001	<0.001	<0.001	0.068	0.012	0.082	0.107
	MW18_HIGH_190522	22/05/2019	<0.001	<0.005	0.001	zxxxxxxx	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.003	0.005	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.013	0.011	0.018	0.046
	MW18_LOW_20190619	19/06/2019	<0.001	0.007	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.003	0.005	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.012	0.009	0.017	0.036
	MW18_HIGH_20190620	20/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.003	0.005	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.012	0.009	0.017	0.036
	0009_MW018_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.08	<0.01	0.08	0.08
	0009_MW018_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_MW018_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_MW018_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_MW018_HT_211027	27/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.09
	0009_MW018_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_MW018_211208	8/12/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.06	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.03	<0.01	<0.01	<0.01
MW019	MW19_HIGH_190521	21/05/2019	<0.001	0.078	0.002	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.081	0.055	<0.001	<0.001	<0.001	0.18	0.34	0.41	1.1	0.29	0.16	<0.001	<0.001	<0.001	0.017	**5.4**	0.38	6.5	8.513
	MW19_LOW_190524	24/05/2019	<0.001	0.11	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.076	0.053	<0.001	<0.001	<0.001	0.17	0.36	0.39	1.2	0.28	0.14	<0.001	<0.001	<0.001	0.021	**8.3**	0.38	9.5	11.503
	MW19_LOW_20190619	19/06/2019	<0.001	0.047	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.034	0.03	<0.001	<0.001	<0.001	0.071	0.1	0.18	0.55	0.12	0.046	<0.001	<0.001	<0.001	0.006	**1.7**	0.11	2.25	3.004
	MW19_HIGH_20190620	20/06/2019	<0.001	0.036	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.035	0.03	<0.001	<0.001	<0.001	0.065	0.093	0.18	0.54	0.13	0.052	<0.001	<0.001	<0.001	0.006	**1.2**	0.1	1.74	2.477
	0009_MW019_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.06	<0.2	<0.05	<0.05	<0.05	<0.05	0.09	0.2	0.55	0.07	<0.05	<0.12	<0.05	<0.05	<0.05	**3.16**	0.12	3.71	4.25
	0009_MW019_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.07	<0.2	<0.05	<0.05	<0.05	0.06	0.14	0.24	0.63	0.06	<0.05	<0.12	<0.05	<0.05	<0.05	**4.82**	0.18	5.45	6.2
	0009_MW019_LT_210408	8/04/2021	<0.1	0.31	<0.1	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.5	<0.1	<0.1	<0.1	0.11	0.24	0.26	0.86	0.15	<0.1	<0.24	<0.1	<0.1	<0.1	**11.7**	0.26	12.60	13.90
	0009_MW019_HT_210409	9/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.07	0.13	0.16	0.47	0.10	0.05	<0.05	<0.02	<0.02	<0.02	**4.21**	0.14	4.68	5.43
	0009_MW019_HT_211027	27/10/2021	<0.05	0.63	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	0.03	0.06	0.1	0.23	0.06	0.02	<0.05	<0.02	<0.02	<0.02	**2.11**	0.06	2.34	3.32
	0009_MW019_LT_211028	28/10/2021	<0.05	0.38	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	0.04	0.07	0.13	0.28	0.08	0.03	<0.05	<0.02	<0.02	<0.02	**2.4**	0.07	2.68	3.5
	0009_MW019_211208	8/12/2021	<0.05	0.12	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.09	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.05	0.08	0.16	0.32	0.08	0.04	<0.05	<0.02	<0.02	<0.02	**2.16**	0.08	2.48	3.13
Former WWII RAN Fuel Installation																																
MW031	MW31_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.005	0.001	<0.001	<0.001	<0.001	0.001	0.011	0.035	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	**0.31**	0.002	0.345	0.366
	MW31_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	<0.001	0.002	0.006	0.026	0.003	0.003	<0.001	<0.001	<0.001	<0.001	**0.32**	0.001	0.346	0.363
	0009_MW031_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.26**	<0.01	0.31	0.31
	0009_MW031_210408	8/04/2021	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.24**	<0.01	0.30	0.37
	0009_MW031_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.12	<0.01	0.14	0.14
MW035	CRC_MW01_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.2	0.035	<0.001	<0.001	<0.001	0.004	0.027	0.054	0.8	0.02	0.32	<0.001	<0.001	<0.001	<0.001	0.097	0.009	0.897	1.626
	CRC_MW01_190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.19	0.046	<0.001	<0.001	<0.001	0.003	0.025	0.078	0.67	0.017	0.2	<0.001	<0.001	<0.001	<0.001	**0.34**	0.01	1.01	1.679
	0009_MW035_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.1	0.1
	0009_MW035_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.50	<0.02	0.16	<0.05	<0.02	<0.02	<0.02	0.13	<0.01	0.63	0.96
	0009_MW035_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
MW036	CRC_MW02_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.017	<0.001	<0.001	<0.001	0.004	0.008	0.044	0.21	0.018	0.036	<0.001	<0.001	<0.001	<0.001	**0.16**	0.01	0.37	0.557
	CRC_MW02_190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.027	0.01	<0.001	<0.001	<0.001	0.002	0.008	0.044	0.17	0.011	0.031	<0.001	<0.001	<0.001	<0.001	**0.28**	0.008	0.45	0.601
	0009_MW036_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.11	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.29**	<0.01	0.4	0.4
	0009_MW036_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.25	<0.02	0.06	<0.05	<0.02	<0.02	<0.02	**0.29**	0.01	0.54	0.71

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than

Table T8: Historical Surface Water Results

		4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
NHMRC (2019) PFAS Recreational Water																													10	2	
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													***0.13***	***220***		
Location ID	**Sample Date**																															
HMAS Cairns																																
SW030	4/03/2016	-	<0.1	<0.1	-	<0.05	-	<0.5	<0.02	<0.5	-	<0.5	<0.02	-	<0.02	<0.02	<0.05	<0.02	-	0.04	0.04	-	-	<0.5	<0.05	<0.05	<0.02	***0.2***	0.01	-	-
	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.06	0.3	0.02	0.03	<0.05	<0.02	<0.02	<0.02	***1.24***	0.04	1.54	1.74
	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	***0.15***	<0.01	0.20	0.20
	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
SW031	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.12	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	***1.03***	0.03	1.15	1.22
	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.06	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	0.11	0.25	1.24	2.08	0.21	0.17	<0.05	<0.02	<0.02	<0.02	***6.87***	0.2	**8.95**	11.3
	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
SW032	4/03/2016	-	<0.1	<0.1	-	<0.05	-	<0.5	<0.02	<0.5	-	<0.5	<0.02	-	<0.02	<0.02	<0.05	<0.02	-	0.06	0.27	-	-	<0.5	<0.05	<0.05	<0.02	***0.24***	0.01	-	-
	4/04/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.004	0.007	<0.001	<0.001	<0.001	0.006	0.006	0.018	0.084	0.008	0.008	<0.001	<0.001	<0.001	<0.001	***0.38***	0.014	0.464	0.535
	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.1	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	***0.6***	0.01	0.7	0.71
	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.28	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	***0.42***	0.03	0.7	0.83
	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW033	4/03/2016	-	<0.1	<0.1	-	<0.05	-	<0.5	<0.02	<0.5	-	<0.5	<0.02	-	<0.02	<0.02	<0.05	<0.02	-	<0.02	<0.02	-	-	<0.5	<0.05	<0.05	<0.02	0.06	0.03	-	-
	4/04/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	0.003	<0.001	<0.001	<0.001	0.003	<0.001	0.004	0.006	0.004	<0.001	<0.001	<0.001	0.001	0.025	0.007	0.031	0.053
	4/04/2019	<0.001	0.005	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.004	0.007	<0.001	<0.001	<0.001	0.008	0.003	0.023	0.084	0.018	0.006	<0.001	<0.001	0.002	0.005	***0.25***	0.009	0.334	0.427
	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	***0.22***	<0.01	0.22	0.22
	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.06	0.01	0.06	0.07
	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.03	0.03
	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW034	4/04/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	0.003	0.001	0.01	0.033	0.01	0.002	<0.001	<0.001	<0.001	0.002	0.094	0.004	0.127	0.162
	17/06/2019	<0.001	0.007	0.002	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	0.012	<0.001	<0.001	<0.001	0.012	0.005	0.038	0.064	<0.05	0.006	0.016	<0.001	<0.001	0.003	***0.28***	0.012	0.344	0.462
	17/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.02	<0.01	0.11	0.08	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	***0.25***	0.01	0.33	0.51
	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.06	<0.01	0.08	0.08
	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.09	<0.01	0.12	0.12
	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW035	17/06/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	0.008	<0.001	<0.001	<0.001	0.009	0.001	0.031	0.053	<0.05	0.004	<0.001	<0.001	<0.001	0.003	***0.16***	0.008	0.213	0.281
	17/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.01	<0.01	0.08	0.06	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	***0.2***	0.01	0.26	0.39
	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01

Table T8: Historical Surface Water Results

		4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
Former WWII RAN Fuel Installation																																
SW036	13/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<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	0.003	0.001	0.004	0.006
	18/06/2019	<0.001	<0.005	0.013	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0057	0.001	0.0077	0.0257
	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	0.01	<0.01	0.01	<0.1
	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
	8/04/2021	<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	0.08
	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
SW100	12/09/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0037	<0.001	0.0057	0.0057
	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
SW101	12/09/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0034	0.001	0.0054	0.0064
	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than

Table T9: Historical Sediment Results

Location ID	Date	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units	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	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HMAS Cairns																																
SD030	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.02	<0.005	0.02	<0.05
	30/09/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0026	<0.0002	0.003	0.003
	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0115	<0.0002	0.0121	0.0129
	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0047	<0.0002	0.0047	0.005
SD031	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.001	<0.0002	0.001	0.001
	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0024	<0.0002	0.0024	0.0027
	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.002	<0.0002	0.002	0.002
SD032	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0024	<0.0002	0.0024	0.0024
	28/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003
SD033	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	28/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
SD034	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.001	<0.0002	0.0012	0.0012
	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
SD035	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	0.0007	0.0007
	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0009	<0.0002	0.0009	0.0009
	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	0.0007	0.0007
Former WWII RAN Fuel Installation																																
SD036	13/05/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	18/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	0.0002	0.0006	0.0008
	8/12/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0009
SD100	12/09/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	0.0003	0.0003
	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
SD101	12/09/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

LOR is limit of reporting
mg/kg is milligrams per kilogram
"<" denotes concentration less than

Appendix C

Analytical Data Validation

DATA VALIDATION REPORT

Project No.:	60612487	**Validation by:**	[redacted]	**Date:**	13/01/2022
Client:	Department of Defence				
Site:	HMAS Cairns and Former WWII RAN Fuel Installation				
Matrix type:	Groundwater, surface water, sediment	**Data verified by:**	[redacted]	**Date:**	20/01/2022
No. of primary samples:	36 groundwater, 9 surface water, 10 sediment				
Laboratory:	ALS (Brisbane), NMI (Sydney)	**Project Manager:**	[redacted]		
Lab reference:	ET2105170, RN1333732, ET2106086, RN1338033				

Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication on data interpretation and therefore decision-making on the project. The data are considered appropriate for use to meet the project objectives and meet the DQOs set out in Section 3.5 of the report.

Field QA/QC

Sampling personnel	Sampling was conducted between 26 and 28 October 2021 and resampling occurred between 7 and 8 December 2021.
Sampling Methodology	Samples were collected using appropriate methods as identified within the main body of the report.
Chain of Custody (COC)	COC documents were completed as per AECOM procedures.
Rinsate Blank	Rinsate blank samples were collected at a frequency of one per day of sampling (three in total). Rinsates were collected from the decontaminated interface probe. Concentrations were reported below the LOR for all analytes tested (see **Table C4**).
Trip Blanks	Trip blank samples were collected at a frequency of one per batch of samples submitted to ALS. Two batch with one associated trip blank was submitted to the laboratory. Trip blank analysis reported concentrations below the LOR (see **Table C5**).
Frequency of field QC	Field duplicate (inter-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected at a frequency of one in ten primary samples (five duplicates and triplicates for groundwater, one duplicate and triplicate for surface water and two duplicates and triplicates for sediment). The target frequency of 10% for field duplicates and triplicates was achieved for groundwater, surface water and sediment.
Handling and preservation	Primary, duplicate and triplicate samples were received preserved and chilled at the laboratory. Sample receipt temperature was reported at 5.1 ºC (ET2105170) and 6.6 ºC (ET2106086), where reported. All samples were received at the laboratory in appropriate sample containers with no sample container / preservation non-compliances noted.
Equipment Calibration	Calibration of the water quality meter was conducted at the beginning of each field day.

Laboratory QA/QC

Tests requested/reported	Samples were analysed and reported as requested on the COC.
Holding time compliance	Samples were extracted and analysed within recommended holding times.

Laboratory Accreditation	The laboratory analysis was conducted by ALS Environmental Pty Ltd (Brisbane) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate samples were analysed at the national Measurement Institute (Sydney), also a NATA accredited laboratory.
Frequency of laboratory QC	Laboratory QC samples were analysed at or exceeding the expected rate of 10%.
Method Blank	Method blank concentrations were not detected above the LOR for all analytes tested.
Laboratory duplicate RPDs	Laboratory duplicate Relative Percentage Differences (RPD) were within control limits for all samples.
Laboratory control spike recovery	No non-compliances were reported for Laboratory Control Spikes (LCS).
Matrix spike recovery	All matrix spike (MS) recoveries were within control limits with the exception of: • PFBS, PFPeS, PFHxS, PFOS, PFHxA and PFOA in 0009_MW003_LT_211028; • PFHxS, PFHpS, PFOS, PFHxA and PFOA in 0009_MW007_HT_211027; and • PFOS in 0009_MW017_LT_211028 • PFBS, PFPeS, PFHxS, PFHpS, PFOS, PFHxA and PFOA in 0009_MW009_211208. The matrix spike recovery was not determined in these samples as background level was greater than four time the spike level.
Surrogate spike recovery	Surrogate spike recoveries were within control limits.
QA/QC Data Evaluation	
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted.
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.
Limits of reporting	Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted screening levels.
Field duplicate RPDs	RPDs for groundwater, surface water, and sediment are reported in **Tables C1**, **C2**, and **C3** respectively. All duplicate RPDs were reported within the control limits.
Field triplicate RPDs	RPDs for groundwater, surface water, and sediment are reported in **Tables C1**, **C2**, and **C3** respectively. Field triplicate RPDs were reported within control limits with the exception of the following (the sample with the higher concentration is in bold): • **0009_MW013_HT_211027** and 0009_QC200_211027 for PFHxA (37%) and PFOA (33%) • **0009_MW016_HT_211027** and 0009_QC203_211027 for PFOS (57%) • 0009_MW009_LT_211028 and **0009_QC204_211028** for PFHxS (42%) and PFOS (136%) • **0009_MW007_LT_211028** and 0009_QC205_211028 for PFHpS (66%), PFPxA (41%), PFPeA (35%) and PFOA (36%) • **0009_MW019_211208** and 0009_QC201_211208 for PFDS (36%). The non-compliant RPDs are likely to be due to different extraction methods used by the laboratories as the duplicate and primary sample are comparable. The minor non-compliance is not considered to affect the interpretation of the data.

Table C1: Groundwater RPDs

Lab Report Number	ET2105170	ET2105170		RN1333732		ET2105170	ET2105170		RN1333732	
Field ID	0009_MW013_HT_211027	0009_QC100_211027	RPD	0009_QC200_211027	RPD	0009_MW016_HT_211027	0009_QC103_211027	RPD	0009_QC203_211027	RPD
Sampled Date/Time	27/10/2021 14:46	27/10/2021 14:46		27/10/2021 14:46		27/10/2021 15:15	27/10/2021 15:15		27/10/2021 15:15	

Chemical Name	Units	EQL										
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	0.035	NC	0.18	0.16	12	0.19	5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC	<0.05	<0.05	NC	<0.05	NC
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC	<0.05	<0.05	NC	<0.05	NC
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.16	0.14	13	0.14	13	0.15	0.13	14	0.17	13
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.18	0.17	6	0.13	32	0.18	0.16	12	0.19	5
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	2	1.88	6	1.5	29	1.08	0.98	10	1.3	18
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.14	0.13	7	0.075	60	<0.02	<0.02	NC	<0.01	NC
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	4.16	3.92	6	3.2	26	0.27	0.26	4	**0.15**	**57**
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	NC	0.097	NC	<0.1	<0.1	0	0.052	NC
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.51	0.47	8	**0.35**	**37**	0.32	0.29	10	0.28	13
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.21	0.2	5	0.18	15	0.08	0.07	13	0.068	16
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.12	0.11	9	0.087	32	0.03	0.03	0	0.032	6
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.21	0.2	5	**0.15**	**33**	<0.01	<0.01	NC	<0.01	NC
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	0	<0.02	<0.02	NC	<0.01	NC
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	0.1	0.11	10	0.088	13	<0.02	<0.02	NC	<0.01	NC
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	NC	<0.02	NC	<0.02	<0.02	NC	<0.02	NC
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 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
NC = not calculated due to value below EQL

Table C1: Groundwater RPDs

Lab Report Number	ET2105170	ET2105170		RN1333732		ET2105170	ET2105170		RN1333732	
Field ID	0009_MW009_LT_211028	0009_QC104_211028	RPD	0009_QC204_211028	RPD	0009_MW007_LT_211028	0009_QC105_211028	RPD	0009_QC205_211028	RPD
Sampled Date/Time	28/10/2021 9:39	28/10/2021 9:39		28/10/2021 9:39		28/10/2021 10:32	28/10/2021 10:32		28/10/2021 10:32	
Chemical Name	**Units**	**EQL**								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	0.05	0.06	18	0.061	20	<0.05	<0.05	NC	0.028	NC
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC	<0.05	<0.05	NC	<0.05	NC
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	0.04	0.04	0	<0.01	120
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC	<0.05	<0.05	NC	<0.05	NC
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.05	0.05	0	0.045	11	0.66	0.61	8	0.61	8
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.04	0	0.041	2	0.7	0.67	4	0.66	6
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.43	0.48	11	**0.66**	**42**	7.66	7.15	7	6.2	21
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.02	0.02	0	0.017	16	0.99	0.91	8	**0.5**	**66**
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0.21	0.22	5	**1.1**	**136**	92.7	92.7	0	76	20
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	0.03	0.03	0	<0.01	100
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	NC	<0.05	NC	0.3	0.3	0	0.23	26
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.09	0.1	11	0.088	2	1.98	1.87	6	**1.3**	**41**
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.02	0.02	0	0.022	10	0.44	0.42	5	**0.31**	**35**
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	0.016	NC	0.31	0.28	10	0.25	21
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.03	0.03	0	0.038	24	0.92	0.87	6	**0.64**	**36**
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	NC	<0.02	NC	<0.02	<0.02	NC	<0.02	NC
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL);
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratori
NC = not calculated due to value below EQL

Table C1: Groundwater RPDs

Lab Report Number	ET2106086	ET2106086		RN1338033	
Field ID	0009_MW019_211208	0009_QC101_211208	RPD	0009_QC201_211208	RPD
Sampled Date/Time	8/12/2021 11:03	8/12/2021 11:03		8/12/2021 11:03	

Chemical Name	Units	EQL					
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	0.12	0.12	0	0.091	27
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.04	0	0.03	29
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.04	0	0.029	32
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.32	0.3	6	0.25	25
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.08	0.08	0	0.048	50
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0.0007	0.0006	15	<0.002	NC
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	2.16	2.22	3	**1.5**	**36**
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	NC	<0.05	NC
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.16	0.15	6	0.098	48
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.08	0.08	0	0.078	3
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.05	0.05	0	0.033	41
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.08	0.08	0	0.06	29
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	NC	<0.02	NC
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL); 5
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratori
NC = not calculated due to value below EQL

Table C2: Surface Water RPDs

Lab Report Number	ET2105170	ET2105170		ET2105170	RN1333732	
Field ID	0009_SW031_211027	0009_QC101_211027	RPD	0009_SW031_211027	0009_QC201_211027	RPD
Sampled Date/Time	27/10/2021 11:28	27/10/2021 11:28		27/10/2021 11:28	27/10/2021 11:28	
Chemical Name	**Units**	**EQL**				
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.05	<0.01	NC
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.05	<0.01	NC
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.05	<0.01	NC
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.05	<0.01	NC
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.05	<0.02	NC
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	NC	<0.05	<0.05	NC
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.05	<0.02	NC
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	NC	<0.05	<0.05	NC
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	NC	<0.01	<0.01	NC
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0.01	0.02	67	0.01	<0.02	NC
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	NC	<0.1	<0.05	NC
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	NC	<0.02	<0.02	NC
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	NC	<0.01	<0.01	NC
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.05	<0.02	NC
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	NC	<0.02	<0.02	NC
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.02	<0.01	NC

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 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
NC = not calculated due to value below EQL

Table C3: Sediment RPDs

Lab Report Number	ET2105170	ET2105170		RN1333732		ET2106086	ET2106086		RN1338033	
Field ID	0009_SD031_211027	0009_QC102_211027	RPD	0009_QC202_211027	RPD	0009_SD036_211208	0009_QC100_211208	RPD	0009_QC200_211208	RPD
Sampled Date/Time	27/10/2021 11:30	27/10/2021 11:30		27/10/2021 11:30		8/12/2021 10:47	8/12/2021 10:47		8/12/2021 10:47	
ChemName	**Units**	**EQL**								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	NC	<0.001	NC	<0.0005	<0.0005	NC	<0.001	NC
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	NC	<0.001	NC	<0.0005	<0.0005	NC	<0.001	NC
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	NC	<0.001	NC	<0.0005	<0.0005	NC	<0.001	NC
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.0005	NC	<0.002	NC	<0.0005	<0.0005	NC	<0.002	NC
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.0005	NC	<0.002	NC	<0.0005	<0.0005	NC	<0.002	NC
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	NC	<0.002	NC	<0.0002	<0.0002	NC	<0.002	NC
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	NC	<0.005	NC	<0.0005	<0.0005	NC	<0.005	NC
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	NC	<0.001	NC	<0.0002	<0.0002	NC	<0.001	NC
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.0005	NC	<0.002	NC	<0.0005	<0.0005	NC	<0.002	NC
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	NC	<0.002	NC	<0.0002	<0.0002	NC	<0.002	NC
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	NC	<0.005	NC	<0.0005	<0.0005	NC	<0.005	NC
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	NC	<0.001	NC	<0.0002	<0.0002	NC	<0.001	NC
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	NC	<0.001	NC	<0.0002	<0.0002	NC	<0.001	NC
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	NC	<0.001	NC	<0.0002	<0.0002	NC	<0.001	NC
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	NC	<0.001	NC	<0.0002	<0.0002	NC	<0.001	NC
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002 : 0.002 (Interlab)	0.002	0.002	0	0.0029	37	0.0007	0.0006	15	<0.002	NC
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC	<0.0002	<0.0002	NC	<0.001	NC
Perfluorobutanoic acid (PFBA)	mg/kg	0.001	<0.001	<0.001	NC	<0.002	NC	<0.001	<0.001	NC	<0.002	NC
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	NC	<0.001	NC	<0.0002	<0.0002	NC	<0.001	NC
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	NC	<0.002	NC	<0.0002	<0.0002	NC	<0.002	NC
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	NC	<0.001	NC	<0.0002	<0.0002	NC	<0.001	NC
Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	NC	<0.001	NC	0.0002	0.0002	0	<0.001	NC
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	NC	<0.001	NC	<0.0002	0.0002	NC	<0.001	NC
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	NC	<0.002	NC	<0.0002	<0.0002	NC	<0.002	NC
Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	NC	<0.001	NC	<0.0002	<0.0002	NC	<0.001	NC
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.0005	NC	<0.002	NC	<0.0005	<0.0005	NC	<0.002	NC
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	NC	<0.002	NC	<0.0002	<0.0002	NC	<0.002	NC
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	NC	<0.002	NC	<0.0002	<0.0002	NC	<0.002	NC

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 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
NC = not calculated due to value below EQL

Table C4: Rinsate Analytical Results

Lab Report Number			ET2105170	ET2105170	ET2106086
Field ID			0009_QC300_211027	0009_QC301_211028	0009_QC300_211208
Sampled_Date/Time			27/10/2021 16:13	28/10/2021 10:11	8/12/2021 11:58
Sample Type			Rinsate	Rinsate	Rinsate
ChemName	**Units**	**EQL**			
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer Sulfonate (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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02

Table C5: Trip Blank Analytical Results

Lab Report Number	ET2105170	ET2106086
Field ID	0009_QC500_211027	0009_QC500_211208
Sampled_Date/Time	27/10/2021 7:31	8/12/2021 13:14
Sample Type	Trip_B	Trip_B

ChemName	Units	EQL		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02

Appendix D

Chain of Custody Forms

CHAIN OF CUSTODY

(ALS) COC#: 29292 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0009_QC500_211027		27/10/2021 07:31 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
002	0009_SD036_211027		27/10/2021 08:14 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
003	0009_SW036_211027		27/10/2021 08:15 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
004	0009_SD100_211027		27/10/2021 08:53 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
005	0009_SW100_211027		27/10/2021 09:06 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
006	0009_SD101_211027		27/10/2021 09:10 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
007	0009_SW101_211027		27/10/2021 09:11 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
008	0009_MW035_211027		27/10/2021 09:50 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
009	0009_SD030_211027		27/10/2021 11:20 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			

Environmental Division
Townsville
Work Order Reference
ET2105170

Telephone : +61 7 4773 0000

CHAIN OF CUSTODY

(ALS) COC#: 29292 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0009_SW030_211027		27/10/2021 11:20 AM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol lab Qc
011	0009_QC102_211027		27/10/2021 11:49 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
012	0009_MW001_HT_211027		27/10/2021 03:24 PM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol lab qc
013	0009_QC101_211027		27/10/2021 11:44 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
014	0009_SW031_211027		27/10/2021 11:28 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
015	0009_SD031_211027		27/10/2021 11:30 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
016	0009_SW034_211027		27/10/2021 12:01 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
017	0009_SD034_211027		27/10/2021 12:00 PM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
018	0009_SW035_211027		27/10/2021 12:09 PM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol lab qc

CHAIN OF CUSTODY

ALS COC#: 29292 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0009_SD035_211027		27/10/2021 12:14 PM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
020	0009_MW019_HT_211027		27/10/2021 02:16 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
021	0009_MW007_HT_211027		27/10/2021 02:44 PM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol for lab QC
022	0009_MW016_HT_211027		27/10/2021 03:15 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
023	0009_QC103_211027		27/10/2021 03:16 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
024	0009_MW002_HT_211027		27/10/2021 03:10 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
025	0009_MW003_HT_211027		27/10/2021 02:59 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
026	0009_MW004_HT_211027		27/10/2021 02:12 PM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol lab qc
027	0009_MW009_HT_211027		27/10/2021 03:30 PM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol lab we

CHAIN OF CUSTODY

(ALS) COC#: 29292 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0009_MW005_HT_211027		27/10/2021 02:25 PM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol lab qc
029	0009_MW013_HT_211027		27/10/2021 02:46 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
030	0009_QC100_211027		27/10/2021 02:46 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
031	0009_MW014_HT_211027		27/10/2021 03:58 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
032	0009_MW011_HT_211027		27/10/2021 03:51 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
033	0009_QC300_211027		27/10/2021 04:13 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
034	0009_MW015_HT_211027		27/10/2021 04:16 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
035	0009_MW017_HT_211027		27/10/2021 04:30 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
036	0009_MW031_211027		27/10/2021 05:20 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

(ALS) COC#: 29292 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0009_MW018_HT_211027		27/10/2021 04:40 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
038	0009_SD032_211028		28/10/2021 07:38 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
039	0009_SW032_211028		28/10/2021 07:38 AM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol lab qc
040	0009_SW033_211028		28/10/2021 07:54 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
041	0009_SD033_211028		28/10/2021 07:54 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
042	0009_MW019_LT_211028		28/10/2021 08:51 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
043	0009_MW011_LT_211028		28/10/2021 09:09 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
044	0009_MW009_LT_211028		28/10/2021 09:39 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
045	0009_QC104_211028		28/10/2021 09:40 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

ALS COC#: 29292 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0009_MW001_LT_211028		28/10/2021 09:17 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
047	0009_MW002_LT_211028		28/10/2021 09:06 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
048	0009_MW003_LT_211028		28/10/2021 08:55 AM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol lab qc
049	0009_MW004_LT_211028		28/10/2021 08:24 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
050	0009_MW005_LT_211028		28/10/2021 08:35 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
051	0009_MW013_LT_211028		28/10/2021 08:45 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
052	0009_MW016_LT_211028		28/10/2021 09:57 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
053	0009_MW014_LT_211028		28/10/2021 10:06 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
054	0009_QC301_211028		28/10/2021 10:11 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

(ALS) COC#: 29292 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0009_MW015_LT_211028		28/10/2021 10:14 AM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol lab qc
056	0009_MW007_LT_211028		28/10/2021 10:32 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
057	0009_QC105_211028		28/10/2021 10:33 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
058	0009_MW017_LT_211028		28/10/2021 10:41 AM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol lab qc
059	0009_MW018_LT_211028		28/10/2021 10:55 AM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol lab qc

CHAIN OF CUSTODY

(ALS) COC#: 29292 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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	PARTIAL ANALYSIS GROUP NAME	MATRIX	SELECTED ANALYSIS NAME
001	0009_QC500_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
002	0009_SD036_211027	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
003	0009_SW036_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
004	0009_SD100_211027	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
005	0009_SW100_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
006	0009_SD101_211027	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
007	0009_SW101_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
008	0009_MW035_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
009	0009_SD030_211027	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
010	0009_SW030_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
011	0009_QC102_211027	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
012	0009_MW001_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
013	0009_QC101_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
014	0009_SW031_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
015	0009_SD031_211027	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

ALS COC#: 29292 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

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:

016	0009_SW034_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
017	0009_SD034_211027	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
018	0009_SW035_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
019	0009_SD035_211027	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
020	0009_MW019_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
021	0009_MW007_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
022	0009_MW016_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
023	0009_QC103_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
024	0009_MW002_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
025	0009_MW003_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
026	0009_MW004_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
027	0009_MW009_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
028	0009_MW005_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
029	0009_MW013_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
030	0009_QC100_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
031	0009_MW014_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

(ALS) COC#: 29292 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:

032	0009_MW011_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
033	0009_QC300_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
034	0009_MW015_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
035	0009_MW017_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
036	0009_MW031_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
037	0009_MW018_HT_211027	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
038	0009_SD032_211028	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
039	0009_SW032_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
040	0009_SW033_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
041	0009_SD033_211028	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
042	0009_MW019_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
043	0009_MW011_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
044	0009_MW009_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
045	0009_QC104_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
046	0009_MW001_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
047	0009_MW002_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

(ALS) COC#: 29292 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:

048	0009_MW003_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
049	0009_MW004_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
050	0009_MW005_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
051	0009_MW013_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
052	0009_MW016_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
053	0009_MW014_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
054	0009_QC301_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
055	0009_MW015_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
056	0009_MW007_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
057	0009_QC105_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
058	0009_MW017_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
059	0009_MW018_LT_211028	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

(ALS) COC#: 29292 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

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: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0009_QC500_211027	HDPE (no PTFE)	20 mL	00352010056706	Grey	No	
001	0009_QC500_211027	HDPE (no PTFE)	20 mL	00352010056709	Grey	No	
002	0009_SD036_211027	HDPE Soil Jar	200 mL	00620719071609	Grey	No	
003	0009_SW036_211027	HDPE (no PTFE)	20 mL	00352101016109	Grey	No	
003	0009_SW036_211027	HDPE (no PTFE)	20 mL	00352101016135	Grey	No	
004	0009_SD100_211027	HDPE Soil Jar	200 mL	00620719071622	Grey	No	
005	0009_SW100_211027	HDPE (no PTFE)	20 mL	00352101016120	Grey	No	
005	0009_SW100_211027	HDPE (no PTFE)	20 mL	00352101015905	Grey	No	
006	0009_SD101_211027	HDPE Soil Jar	200 mL	00620719071575	Grey	No	
007	0009_SW101_211027	HDPE (no PTFE)	20 mL	00352101015880	Grey	No	
007	0009_SW101_211027	HDPE (no PTFE)	20 mL	00352101016072	Grey	No	
008	0009_MW035_211027	HDPE (no PTFE)	20 mL	00352101015959	Grey	No	
008	0009_MW035_211027	HDPE (no PTFE)	20 mL	00352101016060	Grey	No	
009	0009_SD030_211027	HDPE Soil Jar	200 mL	00620719071619	Grey	No	
010	0009_SW030_211027	HDPE (no PTFE)	20 mL	00352010056632	Grey	No	
010	0009_SW030_211027	HDPE (no PTFE)	20 mL	00352101015966	Grey	No	
010	0009_SW030_211027	HDPE (no PTFE)	20 mL	00352101015933	Grey	No	
010	0009_SW030_211027	HDPE (no PTFE)	20 mL	00352010056665	Grey	No	
011	0009_QC102_211027	HDPE Soil Jar	200 mL	00620719070658	Grey	No	
012	0009_MW001_HT_211027	HDPE (no PTFE)	20 mL	00352010065649	Grey	No	
012	0009_MW001_HT_211027	HDPE (no PTFE)	20 mL	00352010065700	Grey	No	
012	0009_MW001_HT_211027	HDPE (no PTFE)	20 mL	00352010056634	Grey	No	
012	0009_MW001_HT_211027	HDPE (no PTFE)	20 mL	00352010056519	Grey	No	
013	0009_QC101_211027	HDPE (no PTFE)	20 mL	00352010056574	Grey	No	
013	0009_QC101_211027	HDPE (no PTFE)	20 mL	00352010056613	Grey	No	
014	0009_SW031_211027	HDPE (no PTFE)	20 mL	00352010056501	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 29292 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

014	0009_SW031_211027	HDPE (no PTFE)	20 mL	00352010056646	Grey	No	
015	0009_SD031_211027	HDPE Soil Jar	200 mL	00620719071593	Grey	No	
016	0009_SW034_211027	HDPE (no PTFE)	20 mL	00352010056562	Grey	No	
016	0009_SW034_211027	HDPE (no PTFE)	20 mL	00352010056747	Grey	No	
017	0009_SD034_211027	HDPE Soil Jar	200 mL	00620719070771	Grey	No	
018	0009_SW035_211027	HDPE (no PTFE)	20 mL	00352010056671	Grey	No	
018	0009_SW035_211027	HDPE (no PTFE)	20 mL	00352010056701	Grey	No	
018	0009_SW035_211027	HDPE (no PTFE)	20 mL	00352010056831	Grey	No	
018	0009_SW035_211027	HDPE (no PTFE)	20 mL	00352010056772	Grey	No	
019	0009_SD035_211027	HDPE Soil Jar	200 mL	00620719071673	Grey	No	
020	0009_MW019_HT_211027	HDPE (no PTFE)	20 mL	00352010056568	Grey	No	
020	0009_MW019_HT_211027	HDPE (no PTFE)	20 mL	00352010056659	Grey	No	
021	0009_MW007_HT_211027	HDPE (no PTFE)	20 mL	00352101016018	Grey	No	
021	0009_MW007_HT_211027	HDPE (no PTFE)	20 mL	00352101016086	Grey	No	
021	0009_MW007_HT_211027	HDPE (no PTFE)	20 mL	00352101015886	Grey	No	
021	0009_MW007_HT_211027	HDPE (no PTFE)	20 mL	00352101016041	Grey	No	
022	0009_MW016_HT_211027	HDPE (no PTFE)	20 mL	00352010056601	Grey	No	
022	0009_MW016_HT_211027	HDPE (no PTFE)	20 mL	00352010056597	Grey	No	
023	0009_QC103_211027	HDPE (no PTFE)	20 mL	00352010056694	Grey	No	
023	0009_QC103_211027	HDPE (no PTFE)	20 mL	00352010056729	Grey	No	
024	0009_MW002_HT_211027	HDPE (no PTFE)	20 mL	00352101015937	Grey	No	
024	0009_MW002_HT_211027	HDPE (no PTFE)	20 mL	00352101016155	Grey	No	
025	0009_MW003_HT_211027	HDPE (no PTFE)	20 mL	00352101015986	Grey	No	
025	0009_MW003_HT_211027	HDPE (no PTFE)	20 mL	00352101016071	Grey	No	
026	0009_MW004_HT_211027	HDPE (no PTFE)	20 mL	00352010056602	Grey	No	
026	0009_MW004_HT_211027	HDPE (no PTFE)	20 mL	00352101015954	Grey	No	
026	0009_MW004_HT_211027	HDPE (no PTFE)	20 mL	00352101015950	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 29292 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

026	0009_MW004_HT_211027	HDPE (no PTFE)	20 mL	00352010056561	Grey	No	
027	0009_MW009_HT_211027	HDPE (no PTFE)	20 mL	00352010056515	Grey	No	
027	0009_MW009_HT_211027	HDPE (no PTFE)	20 mL	00352010056493	Grey	No	
027	0009_MW009_HT_211027	HDPE (no PTFE)	20 mL	00352010056723	Grey	No	
027	0009_MW009_HT_211027	HDPE (no PTFE)	20 mL	00352010056525	Grey	No	
028	0009_MW005_HT_211027	HDPE (no PTFE)	20 mL	00352101015953	Grey	No	
028	0009_MW005_HT_211027	HDPE (no PTFE)	20 mL	00352010056507	Grey	No	
028	0009_MW005_HT_211027	HDPE (no PTFE)	20 mL	00352010056527	Grey	No	
028	0009_MW005_HT_211027	HDPE (no PTFE)	20 mL	00352101016112	Grey	No	
029	0009_MW013_HT_211027	HDPE (no PTFE)	20 mL	00352101016016	Grey	No	
029	0009_MW013_HT_211027	HDPE (no PTFE)	20 mL	00352101016170	Grey	No	
030	0009_QC100_211027	HDPE (no PTFE)	20 mL	00352101015976	Grey	No	
030	0009_QC100_211027	HDPE (no PTFE)	20 mL	00352101016137	Grey	No	
031	0009_MW014_HT_211027	HDPE (no PTFE)	20 mL	00352101016104	Grey	No	
031	0009_MW014_HT_211027	HDPE (no PTFE)	20 mL	00352101016083	Grey	No	
032	0009_MW011_HT_211027	HDPE (no PTFE)	20 mL	00352010056783	Grey	No	
032	0009_MW011_HT_211027	HDPE (no PTFE)	20 mL	00352010056731	Grey	No	
033	0009_QC300_211027	HDPE (no PTFE)	20 mL	00352010056734	Grey	No	
033	0009_QC300_211027	HDPE (no PTFE)	20 mL	00352010056753	Grey	No	
034	0009_MW015_HT_211027	HDPE (no PTFE)	20 mL	00352101016122	Grey	No	
034	0009_MW015_HT_211027	HDPE (no PTFE)	20 mL	00352101015903	Grey	No	
035	0009_MW017_HT_211027	HDPE (no PTFE)	20 mL	00352101016124	Grey	No	
035	0009_MW017_HT_211027	HDPE (no PTFE)	20 mL	00352101016117	Grey	No	
036	0009_MW031_211027	HDPE (no PTFE)	20 mL	00352101016035	Grey	No	
036	0009_MW031_211027	HDPE (no PTFE)	20 mL	00352101015985	Grey	No	
037	0009_MW018_HT_211027	HDPE (no PTFE)	20 mL	00352010056599	Grey	No	
037	0009_MW018_HT_211027	HDPE (no PTFE)	20 mL	00352010056528	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 29292 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

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:

038	0009_SD032_211028	HDPE Soil Jar	200 mL	00620719070651	Grey	No	
039	0009_SW032_211028	HDPE (no PTFE)	20 mL	00352010056524	Grey	No	
039	0009_SW032_211028	HDPE (no PTFE)	20 mL	00352010056779	Grey	No	
039	0009_SW032_211028	HDPE (no PTFE)	20 mL	00352010056748	Grey	No	
039	0009_SW032_211028	HDPE (no PTFE)	20 mL	00352010056754	Grey	No	
040	0009_SW033_211028	HDPE (no PTFE)	20 mL	00352010056752	Grey	No	
040	0009_SW033_211028	HDPE (no PTFE)	20 mL	00352010056674	Grey	No	
041	0009_SD033_211028	HDPE Soil Jar	200 mL	00620719070691	Grey	No	
042	0009_MW019_LT_211028	HDPE (no PTFE)	20 mL	00352010056544	Grey	No	
042	0009_MW019_LT_211028	HDPE (no PTFE)	20 mL	00352010056639	Grey	No	
043	0009_MW011_LT_211028	HDPE (no PTFE)	20 mL	00352010017771	Grey	No	
043	0009_MW011_LT_211028	HDPE (no PTFE)	20 mL	00352010017734	Grey	No	
044	0009_MW009_LT_211028	HDPE (no PTFE)	20 mL	00352010056621	Grey	No	
044	0009_MW009_LT_211028	HDPE (no PTFE)	20 mL	00352010056509	Grey	No	
045	0009_QC104_211028	HDPE (no PTFE)	20 mL	00352010056633	Grey	No	
045	0009_QC104_211028	HDPE (no PTFE)	20 mL	00352010056699	Grey	No	
046	0009_MW001_LT_211028	HDPE (no PTFE)	20 mL	00352010056532	Grey	No	
046	0009_MW001_LT_211028	HDPE (no PTFE)	20 mL	00352010056584	Grey	No	
047	0009_MW002_LT_211028	HDPE (no PTFE)	20 mL	00352010078048	Grey	No	
047	0009_MW002_LT_211028	HDPE (no PTFE)	20 mL	00352010078113	Grey	No	
048	0009_MW003_LT_211028	HDPE (no PTFE)	20 mL	00352010056494	Grey	No	
048	0009_MW003_LT_211028	HDPE (no PTFE)	20 mL	00352010056580	Grey	No	
048	0009_MW003_LT_211028	HDPE (no PTFE)	20 mL	00352010056719	Grey	No	
048	0009_MW003_LT_211028	HDPE (no PTFE)	20 mL	00352010056523	Grey	No	
049	0009_MW004_LT_211028	HDPE (no PTFE)	20 mL	00352010056508	Grey	No	
049	0009_MW004_LT_211028	HDPE (no PTFE)	20 mL	00352010056538	Grey	No	
050	0009_MW005_LT_211028	HDPE (no PTFE)	20 mL	00352010056539	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 29292 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:

050	0009_MW005_LT_211028	HDPE (no PTFE)	20 mL	00352010056521	Grey	No	
051	0009_MW013_LT_211028	HDPE (no PTFE)	20 mL	00352010056735	Grey	No	
051	0009_MW013_LT_211028	HDPE (no PTFE)	20 mL	00352010056773	Grey	No	
052	0009_MW016_LT_211028	HDPE (no PTFE)	20 mL	00352010056702	Grey	No	
052	0009_MW016_LT_211028	HDPE (no PTFE)	20 mL	00352010056787	Grey	No	
053	0009_MW014_LT_211028	HDPE (no PTFE)	20 mL	00352010056571	Grey	No	
053	0009_MW014_LT_211028	HDPE (no PTFE)	20 mL	00352010056696	Grey	No	
054	0009_QC301_211028	HDPE (no PTFE)	20 mL	00352010056769	Grey	No	
054	0009_QC301_211028	HDPE (no PTFE)	20 mL	00352010056728	Grey	No	
055	0009_MW015_LT_211028	HDPE (no PTFE)	20 mL	00352010078231	Grey	No	
055	0009_MW015_LT_211028	HDPE (no PTFE)	20 mL	00352010078300	Grey	No	
055	0009_MW015_LT_211028	HDPE (no PTFE)	20 mL	00352010065661	Grey	No	
055	0009_MW015_LT_211028	HDPE (no PTFE)	20 mL	00352010065627	Grey	No	
056	0009_MW007_LT_211028	HDPE (no PTFE)	20 mL	00352010078263	Grey	No	
056	0009_MW007_LT_211028	HDPE (no PTFE)	20 mL	00352010078315	Grey	No	
057	0009_QC105_211028	HDPE (no PTFE)	20 mL	00352010065479	Grey	No	
057	0009_QC105_211028	HDPE (no PTFE)	20 mL	00352010065456	Grey	No	
058	0009_MW017_LT_211028	HDPE (no PTFE)	20 mL	00352010078105	Grey	No	
058	0009_MW017_LT_211028	HDPE (no PTFE)	20 mL	00352010056552	Grey	No	
058	0009_MW017_LT_211028	HDPE (no PTFE)	20 mL	00352010078114	Grey	No	
058	0009_MW017_LT_211028	HDPE (no PTFE)	20 mL	00352010056586	Grey	No	
059	0009_MW018_LT_211028	HDPE (no PTFE)	20 mL	00352010056707	Grey	No	
059	0009_MW018_LT_211028	HDPE (no PTFE)	20 mL	00352010056788	Grey	No	
059	0009_MW018_LT_211028	HDPE (no PTFE)	20 mL	00352010056713	Grey	No	
059	0009_MW018_LT_211028	HDPE (no PTFE)	20 mL	00352010056755	Grey	No	

Total Bottle Count: ALS: 132, Non ALS: 0

CHAIN OF CUSTODY

(ALS) *COC#:* **31359** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0009_SD036_211208		08/12/2021 09:47 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
002	0009_QC100_211208		08/12/2021 08:45 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
003	0009_MW019_211208		08/12/2021 10:03 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
004	0009_QC101_211208		08/12/2021 10:05 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
005	0009_MW016_211208		08/12/2021 10:27 AM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol for lab QC
006	0009_MW009_211208		08/12/2021 10:33 AM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol for lab qc
007	0009_MW018_211208		08/12/2021 10:54 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
008	0009_QC300_211208		08/12/2021 10:58 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
009	0009_QC500_211208		08/12/2021 12:14 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

COC#: 31359 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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	PARTIAL ANALYSIS GROUP NAME	MATRIX	SELECTED ANALYSIS NAME
001	0009_SD036_211208	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
002	0009_QC100_211208	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
003	0009_MW019_211208	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
004	0009_QC101_211208	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
005	0009_MW016_211208	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
006	0009_MW009_211208	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
007	0009_MW018_211208	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
008	0009_QC300_211208	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
009	0009_QC500_211208	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

(ALS) *COC#:* **31359** *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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	0009_SD036_211208	HDPE Soil Jar	200 mL	00620719071614	Grey	No	
002	0009_QC100_211208	HDPE Soil Jar	200 mL	00620719070653	Grey	No	
003	0009_MW019_211208	HDPE (no PTFE)	20 mL	00352010056743	Grey	No	
003	0009_MW019_211208	HDPE (no PTFE)	20 mL	00352010056725	Grey	No	
004	0009_QC101_211208	HDPE (no PTFE)	20 mL	00352010065713	Grey	No	
004	0009_QC101_211208	HDPE (no PTFE)	20 mL	00352010065607	Grey	No	
005	0009_MW016_211208	HDPE (no PTFE)	20 mL	00352010079500	Grey	No	
005	0009_MW016_211208	HDPE (no PTFE)	20 mL	00352010065604	Grey	No	
005	0009_MW016_211208	HDPE (no PTFE)	20 mL	00352010065638	Grey	No	
005	0009_MW016_211208	HDPE (no PTFE)	20 mL	00352010079395	Grey	No	
006	0009_MW009_211208	HDPE (no PTFE)	20 mL	00352010065476	Grey	No	
006	0009_MW009_211208	HDPE (no PTFE)	20 mL	00352010065493	Grey	No	
006	0009_MW009_211208	HDPE (no PTFE)	20 mL	00352010056504	Grey	No	
006	0009_MW009_211208	HDPE (no PTFE)	20 mL	00352010056518	Grey	No	
007	0009_MW018_211208	HDPE (no PTFE)	20 mL	00352010056724	Grey	No	
007	0009_MW018_211208	HDPE (no PTFE)	20 mL	00352010056742	Grey	No	
008	0009_QC300_211208	HDPE (no PTFE)	20 mL	00352010056683	Grey	No	
008	0009_QC300_211208	HDPE (no PTFE)	20 mL	00352010056605	Grey	No	
009	0009_QC500_211208	HDPE (no PTFE)	20 mL	00352010056771	Grey	No	
009	0009_QC500_211208	HDPE (no PTFE)	20 mL	00352010056790	Grey	No	

Total Bottle Count: ALS: 20, Non ALS: 0

AECOQ6/211102
Due 9/11/21 MW

AECOM

Q4AN(EV)-007-FM1

ANZ

FQM - Generic Chain of Custody Form

CONSULTANT: AECOM	ADDRESS: Townsville	SAMPLER: [redacted]	**Destination Laboratory**
PROJECT MANAGER (PM): [redacted]	SITE:	MOBILE:	PHONE: NMI
PROJECT NUMBER & TASK CO: QLD_0009_PFASOMP_20	P.O. NO.: 60612487_4.1	EMAIL REPORT TO: [redacted]	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		WATER - PFAS Standard 28 analytes	SOIL - PFAS Standard 28 analytes													HOLD	
Lab ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles																
	0009_QC200_211027	W	27/10/21		4 x 125mL Plastic	4	x															N21/024358
	0009_QC201_211027	W	27/10/21		4 x 125mL Plastic	4	x															N21/024359
	0009_QC202_211027	S	27/10/21		1 x plastic jar	1		X														N21/024360
	0009_QC203_211027	W	27/10/21		4 x 125mL Plastic	4	x															N21/024361
	0009_QC204_211026	W	28/10/21		4 x 125mL Plastic	4	x															N21/024362
	0009_QC205_211026	W	28/10/21		4 x 125mL Plastic	4	x															N21/024363

RECEIVED
02 NOV 2021
BY [redacted] 11:00

RELINQUISHED BY	RECEIVED BY	RECEIVED BY	METHOD OF SHIPMENT
Name: [redacted]	Name:	Name:	Con' Note No:
Of: AECOM	Of:	Of:	Transport Co:
Date: 11/11/21	Date:	Date:	
Time: 15:38	Time:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitnc 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. **Soil Container Codes:** Jar = Unpreserved glass jar

COC Page of

CHAIN OF CUSTODY DOCUMENTATION

√23/12

AECO06|21 1215 Rv

NMI

CLIENT: **AECOM Australia**

ADDRESS / OFFICE: AECOM Townsville, level 5,7-13 Tomlins St, South Townsville

PROJECT MANAGER (PM): [redacted]

PROJECT ID: **QLD_0009_PFASOMP_20**

SITE: QLD_0009 P.O. NO.: 60612487_4.1

RESULTS REQUIRED (**Date**): Standard TAT QUOTE NO.:

SAMPLER: [redacted]

MOBILE:

PHONE:

EMAIL REPORT TO: [redacted]

EMAIL INVOICE TO: (if different to report) [redacted]

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No N/A

SAMPLE TEMPERATURE

CHILLED Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water) | CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	WATER - PFAS Standard 28 analytes	SOIL - PFAS Standard 28 analytes	HOLD
	0009_QC200_211208	S	8/12/21	8:45	1P	1		x	
	0009_QC201_211208	W	8/12/21	9:58	1P	1	X		

N21/027874

N21/027875

RECEIVED
15 DEC 2021
[redacted]

RELINQUISHED BY:

Name: [redacted]

Of: AECOM Time: 14:00

Name: Date: 13/12/2021

Of: Time:

RECEIVED BY

Name: Date:

Of: Time:

Name: Date:

Of: Time:

METHOD OF SHIPMENT

Con' Note No:

Transport Co:

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; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; 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

ENFM (204/5)

Appendix E

Laboratory Analytical Certificates and QA/QC Reports

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ET2105170**	Page	: 1 of 29
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: [redacted]
Order number	: 60612487_4.1	Date Analysis Commenced	: [redacted]
C-O-C number	: 29292	Issue Date	: [redacted]
Sampler	: [redacted]		
Site	: QLD_0009		
Quote number	: TV/007/21 - Compass		
No. of samples received	: 59		
No. of samples analysed	: 59		

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 Inorganics, Smithfield, NSW
	LCMS Coordinator	Sydney Organics, Smithfield, NSW
	Analyst	Sydney Inorganics, 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 Contact 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.
- EP231X: PFAS results for sample #10, #59 confirmed by instrument QC duplicate.
- $$ conducted by ALS Townsville, NATA accreditation no. 825, (Site no. 23472 for Chemical Testing and Site no. 23313 for Biological Testing)
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- 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.
- 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: SEDIMENT (Matrix: SOIL)				Sample ID	0009_SD036_211027	0009_SD100_211027	0009_SD101_211027	0009_SD030_211027	0009_QC102_211027
				Sampling date / time	27-Oct-2021 08:14	27-Oct-2021 08:53	27-Oct-2021 09:10	27-Oct-2021 11:20	27-Oct-2021 11:49
Compound	CAS Number	LOR	Unit		ET2105170-002	ET2105170-004	ET2105170-006	ET2105170-009	ET2105170-011
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**43.4**	**46.3**	**25.8**	**27.3**	**27.4**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0006**	**0.0006**	<0.0002	**0.0047**	**0.0020**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		**0.0002**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0009_SD036_211027	0009_SD100_211027	0009_SD101_211027	0009_SD030_211027	0009_QC102_211027
				Sampling date / time	27-Oct-2021 08:14	27-Oct-2021 08:53	27-Oct-2021 09:10	27-Oct-2021 11:20	27-Oct-2021 11:49
Compound	CAS Number	LOR	Unit		ET2105170-002	ET2105170-004	ET2105170-006	ET2105170-009	ET2105170-011
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0008**	**0.0006**	<0.0002	**0.0050**	**0.0020**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0006**	**0.0006**	<0.0002	**0.0047**	**0.0020**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0008**	**0.0006**	<0.0002	**0.0047**	**0.0020**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**110**	**110**	**102**	**110**	**106**
13C8-PFOA	----	0.0002	%		**104**	**102**	**100**	**110**	**108**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0009_SD032_211028	0009_SD033_211028	----	----	----
				Sampling date / time	28-Oct-2021 07:38	28-Oct-2021 07:54	----	----	----
Compound	CAS Number	LOR	Unit		ET2105170-038	ET2105170-041	--------	--------	--------
					Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**56.5**	**49.8**	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		<0.0002	**0.0005**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		**0.0003**	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0009_SD032_211028	0009_SD033_211028	----	----	----
				Sampling date / time	28-Oct-2021 07:38	28-Oct-2021 07:54	----	----	----
Compound	CAS Number	LOR	Unit		ET2105170-038	ET2105170-041	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0003**	**0.0005**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	**0.0005**	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	**0.0005**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**100**	**110**	----	----	----
13C8-PFOA	----	0.0002	%		**108**	**114**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD031_211027	0009_SD034_211027	0009_SD035_211027	----	----
				Sampling date / time	27-Oct-2021 11:30	27-Oct-2021 12:00	27-Oct-2021 12:14	----	----
Compound	CAS Number	LOR	Unit		ET2105170-015	ET2105170-017	ET2105170-019	--------	--------
					Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**28.9**	**51.6**	**48.6**	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0020**	**0.0006**	**0.0007**	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD031_211027	0009_SD034_211027	0009_SD035_211027	----	----
				Sampling date / time	27-Oct-2021 11:30	27-Oct-2021 12:00	27-Oct-2021 12:14	----	----
Compound	CAS Number	LOR	Unit		ET2105170-015	ET2105170-017	ET2105170-019	--------	--------
					Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0020**	**0.0006**	**0.0007**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0020**	**0.0006**	**0.0007**	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0020**	**0.0006**	**0.0007**	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**112**	**106**	**114**	----	----
13C8-PFOA	----	0.0002	%		**114**	**114**	**105**	----	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_QC500_211027	0009_SW036_211027	0009_SW100_211027	0009_SW101_211027	0009_MW035_211027
				Sampling date / time	27-Oct-2021 07:31	27-Oct-2021 08:15	27-Oct-2021 09:06	27-Oct-2021 09:11	27-Oct-2021 09:50
					ET2105170-001	ET2105170-003	ET2105170-005	ET2105170-007	ET2105170-008
					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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC500_211027	0009_SW036_211027	0009_SW100_211027	0009_SW101_211027	0009_MW035_211027
				Sampling date / time	27-Oct-2021 07:31	27-Oct-2021 08:15	27-Oct-2021 09:06	27-Oct-2021 09:11	27-Oct-2021 09:50
Compound	CAS Number	LOR	Unit		ET2105170-001	ET2105170-003	ET2105170-005	ET2105170-007	ET2105170-008
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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**	**0.02**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.01**	**0.01**	**0.02**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**0.01**	**0.01**	**0.02**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**104**	**106**	**114**	**103**	**110**
13C8-PFOA	----	0.02	%		**109**	**106**	**106**	**106**	**107**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW030_211027	0009_MW001_HT_211027	0009_QC101_211027	0009_SW031_211027	0009_SW034_211027
				Sampling date / time	27-Oct-2021 11:20	27-Oct-2021 15:24	27-Oct-2021 11:44	27-Oct-2021 11:28	27-Oct-2021 12:01
					ET2105170-010	ET2105170-012	ET2105170-013	ET2105170-014	ET2105170-016
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.06**	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.04**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.32**	<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		**0.02**	**0.08**	**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	**0.13**	<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	**0.02**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW030_211027	0009_MW001_HT_211027	0009_QC101_211027	0009_SW031_211027	0009_SW034_211027
				Sampling date / time	27-Oct-2021 11:20	27-Oct-2021 15:24	27-Oct-2021 11:44	27-Oct-2021 11:28	27-Oct-2021 12:01
Compound	CAS Number	LOR	Unit		ET2105170-010	ET2105170-012	ET2105170-013	ET2105170-014	ET2105170-016
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**0.02**	**0.67**	**0.02**	**0.01**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.02**	**0.40**	**0.02**	**0.01**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.02**	**0.63**	**0.02**	**0.01**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**105**	**102**	**101**	**102**	**109**
13C8-PFOA	----	0.02	%		**109**	**106**	**107**	**104**	**107**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW035_211027	0009_MW019_HT_211027	0009_MW007_HT_211027	0009_MW016_HT_211027	0009_QC103_211027
				Sampling date / time	27-Oct-2021 12:09	27-Oct-2021 14:16	27-Oct-2021 14:44	27-Oct-2021 15:15	27-Oct-2021 15:16
Compound	CAS Number	LOR	Unit		ET2105170-018	ET2105170-020	ET2105170-021	ET2105170-022	ET2105170-023
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.02**	**0.62**	**0.15**	**0.13**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.02**	**0.77**	**0.18**	**0.16**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.23**	**6.70**	**1.08**	**0.98**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	**0.06**	**0.82**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	**2.11**	**94.6**	**0.27**	**0.26**
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	**0.3**	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	**0.06**	**0.41**	**0.08**	**0.07**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.10**	**1.87**	**0.32**	**0.29**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**0.03**	**0.27**	**0.03**	**0.03**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.06**	**0.85**	<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	**0.03**	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW035_211027	0009_MW019_HT_211027	0009_MW007_HT_211027	0009_MW016_HT_211027	0009_QC103_211027
				Sampling date / time	27-Oct-2021 12:09	27-Oct-2021 14:16	27-Oct-2021 14:44	27-Oct-2021 15:15	27-Oct-2021 15:16
Compound	CAS Number	LOR	Unit		ET2105170-018	ET2105170-020	ET2105170-021	ET2105170-022	ET2105170-023
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.63**	<0.05	**0.18**	**0.16**
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	**3.32**	**107**	**2.29**	**2.08**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**2.34**	**101**	**1.35**	**1.24**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**3.24**	**106**	**2.11**	**1.92**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**110**	**110**	**101**	**109**	**106**
13C8-PFOA	----	0.02	%		**105**	**105**	**106**	**105**	**108**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW002_HT_21102 7	0009_MW003_HT_21102 7	0009_MW004_HT_21102 7	0009_MW009_HT_21102 7	0009_MW005_HT_21102 7
				Sampling date / time	27-Oct-2021 15:10	27-Oct-2021 14:59	27-Oct-2021 14:12	27-Oct-2021 15:30	27-Oct-2021 14:25
					ET2105170-024	ET2105170-025	ET2105170-026	ET2105170-027	ET2105170-028
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**2.48**	**1.03**	**0.43**	**0.04**	**0.40**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**3.36**	**1.18**	**0.41**	**0.04**	**0.39**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**34.0**	**9.05**	**3.80**	**0.62**	**4.05**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**4.54**	**0.57**	**0.29**	**0.02**	**0.34**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**70.0**	**3.34**	**8.62**	**0.23**	**19.5**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**0.04**
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		**1.1**	**0.4**	**0.3**	<0.1	**0.2**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**1.82**	**0.61**	**0.52**	<0.02	**0.51**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**10.2**	**3.60**	**1.31**	**0.10**	**1.04**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**1.52**	**0.39**	**0.36**	<0.02	**0.21**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**3.57**	**0.76**	**0.41**	**0.04**	**0.43**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		**0.06**	<0.02	<0.02	<0.02	**0.04**
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		**0.07**	<0.02	**0.08**	<0.02	**0.05**
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

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW002_HT_21102 7	0009_MW003_HT_21102 7	0009_MW004_HT_21102 7	0009_MW009_HT_21102 7	0009_MW005_HT_21102 7
				Sampling date / time	27-Oct-2021 15:10	27-Oct-2021 14:59	27-Oct-2021 14:12	27-Oct-2021 15:30	27-Oct-2021 14:25
					ET2105170-024	ET2105170-025	ET2105170-026	ET2105170-027	ET2105170-028
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.08**	<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		**133**	**20.9**	**16.6**	**1.17**	**27.2**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**104**	**12.4**	**12.4**	**0.85**	**23.6**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**125**	**19.2**	**15.8**	**1.11**	**26.3**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**102**	**102**	**113**	**100**	**104**
13C8-PFOA	----	0.02	%		**106**	**109**	**104**	**107**	**104**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW013_HT_211027	0009_QC100_211027	0009_MW014_HT_211027	0009_MW011_HT_211027	0009_QC300_211027
				Sampling date / time	27-Oct-2021 14:46	27-Oct-2021 14:46	27-Oct-2021 15:58	27-Oct-2021 15:51	27-Oct-2021 16:13
					ET2105170-029	ET2105170-030	ET2105170-031	ET2105170-032	ET2105170-033
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.16**	**0.14**	**0.50**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.18**	**0.17**	**0.60**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**2.00**	**1.88**	**10.7**	**0.01**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.14**	**0.13**	**0.86**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**4.16**	**3.92**	**54.6**	**0.03**	<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	**0.3**	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.21**	**0.20**	**0.63**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.51**	**0.47**	**3.91**	**0.03**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.12**	**0.11**	**0.44**	**0.03**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.21**	**0.20**	**0.85**	**0.11**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		**0.10**	**0.11**	**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	**0.22**	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW013_HT_211027	0009_QC100_211027	0009_MW014_HT_211027	0009_MW011_HT_211027	0009_QC300_211027
				Sampling date / time	27-Oct-2021 14:46	27-Oct-2021 14:46	27-Oct-2021 15:58	27-Oct-2021 15:51	27-Oct-2021 16:13
Compound	CAS Number	LOR	Unit		ET2105170-029	ET2105170-030	ET2105170-031	ET2105170-032	ET2105170-033
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**7.79**	**7.33**	**73.6**	**0.21**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**6.16**	**5.80**	**65.3**	**0.04**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**7.37**	**6.92**	**71.9**	**0.21**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**105**	**105**	**97.0**	**104**	**99.8**
13C8-PFOA	----	0.02	%		**105**	**106**	**103**	**108**	**108**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW015_HT_211027	0009_MW017_HT_211027	0009_MW031_211027	0009_MW018_HT_211027	0009_SW032_211028
				Sampling date / time	27-Oct-2021 16:16	27-Oct-2021 16:30	27-Oct-2021 17:20	27-Oct-2021 16:40	28-Oct-2021 07:38
					ET2105170-034	ET2105170-035	ET2105170-036	ET2105170-037	ET2105170-039
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.04**	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.07**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.18**	**0.64**	**0.02**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	**0.04**	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**1.43**	**2.08**	**0.12**	**0.02**	<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	**0.04**	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.04**	**0.12**	<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**	**0.06**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW015_HT_211027	0009_MW017_HT_211027	0009_MW031_211027	0009_MW018_HT_211027	0009_SW032_211028
				Sampling date / time	27-Oct-2021 16:16	27-Oct-2021 16:30	27-Oct-2021 17:20	27-Oct-2021 16:40	28-Oct-2021 07:38
Compound	CAS Number	LOR	Unit		ET2105170-034	ET2105170-035	ET2105170-036	ET2105170-037	ET2105170-039
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**1.66**	**3.11**	**0.14**	**0.09**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**1.61**	**2.72**	**0.14**	**0.02**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.66**	**3.00**	**0.14**	**0.07**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**103**	**104**	**98.3**	**102**	**99.1**
13C8-PFOA	----	0.02	%		**106**	**106**	**104**	**108**	**105**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW033_211028	0009_MW019_LT_211028	0009_MW011_LT_211028	0009_MW009_LT_211028	0009_QC104_211028
				Sampling date / time	28-Oct-2021 07:54	28-Oct-2021 08:51	28-Oct-2021 09:09	28-Oct-2021 09:39	28-Oct-2021 09:40
					ET2105170-040	ET2105170-042	ET2105170-043	ET2105170-044	ET2105170-045
					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	**0.05**	**0.05**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.03**	<0.02	**0.04**	**0.04**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.28**	**0.01**	**0.43**	**0.48**
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		<0.01	**2.40**	**0.04**	**0.21**	**0.22**
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	**0.08**	<0.02	**0.02**	**0.02**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.13**	**0.03**	**0.09**	**0.10**
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	**0.07**	**0.11**	**0.03**	**0.03**
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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW033_211028	0009_MW019_LT_211028	0009_MW011_LT_211028	0009_MW009_LT_211028	0009_QC104_211028
				Sampling date / time	28-Oct-2021 07:54	28-Oct-2021 08:51	28-Oct-2021 09:09	28-Oct-2021 09:39	28-Oct-2021 09:40
Compound	CAS Number	LOR	Unit		ET2105170-040	ET2105170-042	ET2105170-043	ET2105170-044	ET2105170-045
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.38**	<0.05	**0.05**	**0.06**
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	**3.50**	**0.21**	**0.94**	**1.02**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**2.68**	**0.05**	**0.64**	**0.70**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**3.40**	**0.21**	**0.88**	**0.96**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**106**	**96.7**	**100**	**103**	**99.6**
13C8-PFOA	----	0.02	%		**107**	**102**	**103**	**106**	**102**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW001_LT_21102 8	0009_MW002_LT_21102 8	0009_MW003_LT_21102 8	0009_MW004_LT_21102 8	0009_MW005_LT_21102 8
				Sampling date / time	28-Oct-2021 09:17	28-Oct-2021 09:06	28-Oct-2021 08:55	28-Oct-2021 08:24	28-Oct-2021 08:35
					ET2105170-046	ET2105170-047	ET2105170-048	ET2105170-049	ET2105170-050
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**2.44**	**1.11**	**0.44**	**0.32**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**2.45**	**1.30**	**0.36**	**0.32**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.17**	**29.7**	**9.65**	**4.25**	**4.01**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	**4.80**	**0.64**	**0.37**	**0.36**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.36**	**84.6**	**3.34**	**11.0**	**18.2**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	**0.12**	<0.02	**0.04**	**0.03**
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	**1.0**	**0.4**	**0.3**	**0.2**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	**1.98**	**0.68**	**0.51**	**0.50**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.07**	**9.94**	**3.89**	**1.32**	**1.00**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**1.66**	**0.45**	**0.37**	**0.24**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.02**	**3.38**	**0.78**	**0.56**	**0.44**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	**0.06**	<0.02	<0.02	**0.03**
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	**0.13**	<0.02	**0.08**	**0.05**
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

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW001_LT_21102 8	0009_MW002_LT_21102 8	0009_MW003_LT_21102 8	0009_MW004_LT_21102 8	0009_MW005_LT_21102 8
				Sampling date / time	28-Oct-2021 09:17	28-Oct-2021 09:06	28-Oct-2021 08:55	28-Oct-2021 08:24	28-Oct-2021 08:35
					ET2105170-046	ET2105170-047	ET2105170-048	ET2105170-049	ET2105170-050
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**0.67**	**142**	**22.2**	**19.6**	**25.7**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.53**	**114**	**13.0**	**15.2**	**22.2**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.67**	**135**	**20.3**	**18.8**	**24.9**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**98.6**	**104**	**98.7**	**101**	**105**
13C8-PFOA	----	0.02	%		**104**	**102**	**102**	**107**	**105**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW013_LT_211028	0009_MW016_LT_211028	0009_MW014_LT_211028	0009_QC301_211028	0009_MW015_LT_211028
				Sampling date / time	28-Oct-2021 08:45	28-Oct-2021 09:57	28-Oct-2021 10:06	28-Oct-2021 10:11	28-Oct-2021 10:14
					ET2105170-051	ET2105170-052	ET2105170-053	ET2105170-054	ET2105170-055
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.13**	**0.29**	**0.54**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.12**	**0.23**	**0.46**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**1.55**	**2.03**	**8.50**	<0.01	**0.23**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.10**	<0.02	**0.67**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**4.19**	**0.16**	**41.9**	<0.01	**0.97**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	**0.07**	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	**0.3**	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.16**	**0.10**	**0.50**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.38**	**0.48**	**3.14**	<0.02	**0.04**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.09**	**0.05**	**0.33**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.16**	**0.01**	**0.65**	<0.01	**0.01**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		**0.10**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW013_LT_211028	0009_MW016_LT_211028	0009_MW014_LT_211028	0009_QC301_211028	0009_MW015_LT_211028
				Sampling date / time	28-Oct-2021 08:45	28-Oct-2021 09:57	28-Oct-2021 10:06	28-Oct-2021 10:11	28-Oct-2021 10:14
Compound	CAS Number	LOR	Unit		ET2105170-051	ET2105170-052	ET2105170-053	ET2105170-054	ET2105170-055
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.24**	<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		**6.98**	**3.59**	**57.2**	<0.01	**1.25**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**5.74**	**2.19**	**50.4**	<0.01	**1.20**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**6.66**	**3.36**	**55.9**	<0.01	**1.25**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**104**	**104**	**108**	**109**	**101**
13C8-PFOA	----	0.02	%		**106**	**106**	**107**	**104**	**104**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW007_LT_211028	0009_QC105_211028	0009_MW017_LT_211028	0009_MW018_LT_211028	----
				Sampling date / time	28-Oct-2021 10:32	28-Oct-2021 10:33	28-Oct-2021 10:41	28-Oct-2021 10:55	----
					ET2105170-056	ET2105170-057	ET2105170-058	ET2105170-059	--------
					Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.66**	**0.61**	**0.03**	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.70**	**0.67**	**0.03**	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**7.66**	**7.15**	**0.45**	<0.01	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.99**	**0.91**	**0.03**	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**92.7**	**92.7**	**2.25**	**0.01**	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		**0.03**	**0.03**	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		**0.3**	**0.3**	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.44**	**0.42**	**0.02**	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**1.98**	**1.87**	**0.08**	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.31**	**0.28**	<0.02	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.92**	**0.87**	**0.04**	<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		**0.04**	**0.04**	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<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	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW007_LT_211028	0009_QC105_211028	0009_MW017_LT_211028	0009_MW018_LT_211028	----
				Sampling date / time	28-Oct-2021 10:32	28-Oct-2021 10:33	28-Oct-2021 10:41	28-Oct-2021 10:55	----
Compound	CAS Number	LOR	Unit		ET2105170-056	ET2105170-057	ET2105170-058	ET2105170-059	--------
					Result	Result	Result	Result	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**107**	**106**	**2.93**	**0.01**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**100**	**99.8**	**2.70**	**0.01**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**105**	**104**	**2.87**	**0.01**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**104**	**100**	**107**	**106**	----
13C8-PFOA	----	0.02	%		**106**	**103**	**108**	**103**	----

Surrogate Control Limits

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SOIL		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

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP231D: (n:2) Fluorotelomer Sulfonic Acids
(WATER) EP231P: PFAS Sums
(WATER) EP231A: Perfluoroalkyl Sulfonic Acids
(WATER) EP231B: Perfluoroalkyl Carboxylic Acids
(WATER) EP231C: Perfluoroalkyl Sulfonamides
(WATER) EP231S: PFAS Surrogate
(SOIL) EP231B: Perfluoroalkyl Carboxylic Acids
(SOIL) EP231D: (n:2) Fluorotelomer Sulfonic Acids
(SOIL) EP231C: Perfluoroalkyl Sulfonamides
(SOIL) EP231A: Perfluoroalkyl Sulfonic Acids
(SOIL) EP231P: PFAS Sums
(SOIL) EP231S: PFAS Surrogate
(SOIL) EA055: Moisture Content (Dried @ 105-110°C)

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ET2105170**	Page	: 1 of 18
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	:
Order number	: 60612487_4.1	Date Analysis Commenced	:
C-O-C number	: 29292	Issue Date	:
Sampler	: [redacted]		
Site	: QLD_0009		
Quote number	: TV/007/21 - Compass		
No. of samples received	: 59		
No. of samples analysed	: 59		

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 Inorganics, Smithfield, NSW
	LCMS Coordinator	Sydney Organics, Smithfield, NSW
	Analyst	Sydney Inorganics, 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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4006462)									
ES2140390-007	Anonymous	EA055: Moisture Content	----	0.1	%	21.6	23.4	8.0	0% - 20%
ES2140490-010	Anonymous	EA055: Moisture Content	----	0.1	%	16.0	16.0	0.0	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4006463)									
ET2105170-017	0009_SD034_211027	EA055: Moisture Content	----	0.1	%	51.6	54.9	6.2	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4007799)									
ET2105170-002	0009_SD036_211027	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0006	0.0006	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4007799)									
ET2105170-002	0009_SD036_211027	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 4007799)									
ET2105170-002	0009_SD036_211027	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4007799)									
ET2105170-002	0009_SD036_211027	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	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 (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4006008)									
ET2105170-010	0009_SW030_211027	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	0.02	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: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ET2105170-018	0009_SW035_211027	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: 4006279)									
ET2105170-028	0009_MW005_HT_211027	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	4.05	4.12	1.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	19.5	19.6	0.4	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: 4006279) - continued									
ET2105170-028	0009_MW005_HT_211027	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.40	0.38	2.9	0% - 50%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.39	0.40	3.7	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.34	0.36	4.9	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	0.04	0.04	0.0	No Limit
ET2105170-039	0009_SW032_211028	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: 4006280)									
ET2105170-055	0009_MW015_LT_211028	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.23	0.22	0.0	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.97	0.94	3.2	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
ET2105170-059	0009_MW018_LT_211028	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: 4006008)									
ET2105170-010	0009_SW030_211027	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
ET2105170-018	0009_SW035_211027	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 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: 4006008) - continued									
ET2105170-018	0009_SW035_211027	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: 4006279)									
ET2105170-028	0009_MW005_HT_211027	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.43	0.43	0.0	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.51	0.52	2.2	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	1.04	1.05	1.7	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.21	0.22	0.0	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.04	0.04	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	0.2	0.2	0.0	No Limit
ET2105170-039	0009_SW032_211028	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: 4006280)									
ET2105170-055	0009_MW015_LT_211028	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	0.02	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

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: 4006280) - continued									
ET2105170-055	0009_MW015_LT_211028	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ET2105170-059	0009_MW018_LT_211028	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: 4006008)									
ET2105170-010	0009_SW030_211027	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
ET2105170-018	0009_SW035_211027	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: 4006279)									
ET2105170-028	0009_MW005_HT_211027	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	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 (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4006279) - continued									
ET2105170-028	0009_MW005_HT_211027	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
ET2105170-039	0009_SW032_211028	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: 4006280)									
ET2105170-055	0009_MW015_LT_211028	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
ET2105170-059	0009_MW018_LT_211028	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	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: 4006280) - continued									
ET2105170-059	0009_MW018_LT_211028	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: 4006008)									
ET2105170-010	0009_SW030_211027	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
ET2105170-018	0009_SW035_211027	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: 4006279)									
ET2105170-028	0009_MW005_HT_211027	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
ET2105170-039	0009_SW032_211028	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 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: 4006279) - continued									
ET2105170-039	0009_SW032_211028	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: 4006280)									
ET2105170-055	0009_MW015_LT_211028	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
ET2105170-059	0009_MW018_LT_211028	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: 4006008)									
ET2105170-010	0009_SW030_211027	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ET2105170-018	0009_SW035_211027	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4006279)									
ET2105170-028	0009_MW005_HT_211027	EP231X: Sum of PFAS	----	0.01	µg/L	27.2	27.4	0.8	0% - 20%
ET2105170-039	0009_SW032_211028	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4006280)									
ET2105170-055	0009_MW015_LT_211028	EP231X: Sum of PFAS	----	0.01	µg/L	1.25	1.22	2.4	0% - 20%
ET2105170-059	0009_MW018_LT_211028	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: **SOIL**

				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: 4007799)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.4	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4007799)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	112	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	121	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4007799)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	115	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	113	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	128	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	122	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4007799)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	139	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	134	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	125	65.0	137

Sub-Matrix: **SOIL**

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: 4007799) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	136	69.2	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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4006008)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.6	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	95.6	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	85.4	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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4006279)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	84.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	93.4	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	93.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	88.6	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4006280)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	82.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	89.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	95.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	96.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	89.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4006008)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	82.8	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	87.2	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	94.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	92.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.4	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	90.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4006279)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4006279) - continued								
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	100	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	102	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	108	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	105	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	97.6	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	98.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4006280)								
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	94.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	94.8	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	96.4	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	91.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	98.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	105	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4006008)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	95.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	99.0	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	84.3	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	86.2	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4006279)								
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	97.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	99.3	62.6	147

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4006279) - continued								
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	89.1	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	101	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4006280)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	86.6	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	102	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	83.4	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	92.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4006008)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	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	89.2	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	86.8	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	87.8	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4006279)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	106	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	91.6	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	102	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	85.6	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4006280)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.0	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	95.6	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	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	79.0	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: **SOIL**

				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: 4007799)							
ET2105170-002	0009_SD036_211027	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	87.2	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	104	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	92.4	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	84.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	91.6	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	108	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4007799)							
ET2105170-002	0009_SD036_211027	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	104	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	106	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	98.8	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	116	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	98.4	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	113	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	106	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	100	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	116	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	108	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	133	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4007799)							
ET2105170-002	0009_SD036_211027	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	93.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	113	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	102	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	104	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	110	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	113	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	82.0	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4007799)							
ET2105170-002	0009_SD036_211027	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	139	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	138	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	137	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	143	69.2	143

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: 4006008)							
ET2105170-021	0009_MW007_HT_211027	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	109	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	80.2	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	# Not Determined	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	106	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4006279)							
ET2105170-048	0009_MW003_LT_211028	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	# Not Determined	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	100	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	103	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4006280)							
ET2105170-058	0009_MW017_LT_211028	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	86.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	104	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	116	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	101	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	101	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4006008)							
ET2105170-021	0009_MW007_HT_211027	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.8	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	128	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	105	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.0	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	89.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.6	69.0	133

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
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4006008) - continued							
ET2105170-021	0009_MW007_HT_211027	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	113	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	92.2	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4006279)							
ET2105170-048	0009_MW003_LT_211028	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	99.8	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	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	128	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	90.8	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	91.2	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	85.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	105	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4006280)							
ET2105170-058	0009_MW017_LT_211028	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	106	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	99.2	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	99.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	111	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	97.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	108	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	93.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	102	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	87.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	108	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4006008)							
ET2105170-021	0009_MW007_HT_211027	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	86.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.5	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	90.2	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	90.3	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: 4006008) - continued							
ET2105170-021	0009_MW007_HT_211027	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	79.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	93.6	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4006279)							
ET2105170-048	0009_MW003_LT_211028	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	90.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	95.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	94.5	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	100	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	89.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	86.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4006280)							
ET2105170-058	0009_MW017_LT_211028	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	97.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	88.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	99.1	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.4	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	86.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	88.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4006008)							
ET2105170-021	0009_MW007_HT_211027	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	88.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	84.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	111	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	93.6	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4006279)							
ET2105170-048	0009_MW003_LT_211028	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	81.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	93.4	64.0	140

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: 4006279) - continued							
ET2105170-048	0009_MW003_LT_211028	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	95.2	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	84.4	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4006280)							
ET2105170-058	0009_MW017_LT_211028	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	96.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	101	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	102	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ET2105170**	Page	: 1 of 11
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	[redacted]	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 02-Nov-2021
Site	: QLD_0009	Issue Date	: 12-Nov-2021
Sampler	: [redacted]	No. of samples received	: 59
Order number	: 60612487_4.1	No. of samples analysed	: 59

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, 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: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ET2105170--048	0009_MW003_LT_211028	**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	ET2105170--048	0009_MW003_LT_211028	**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	ET2105170--021	0009_MW007_HT_211027	**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	ET2105170--048	0009_MW003_LT_211028	**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	ET2105170--021	0009_MW007_HT_211027	**Perfluoroheptane sulfonic acid (PFHpS)**	375-92-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ET2105170--021	0009_MW007_HT_211027	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ET2105170--048	0009_MW003_LT_211028	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ET2105170--058	0009_MW017_LT_211028	**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	ET2105170--021	0009_MW007_HT_211027	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	ET2105170--048	0009_MW003_LT_211028	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	ET2105170--021	0009_MW007_HT_211027	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	ET2105170--048	0009_MW003_LT_211028	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

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: **SOIL**

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
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
0009_SD036_211027, 0009_SD100_211027, 0009_SD101_211027, 0009_SD030_211027, 0009_QC102_211027, 0009_SD031_211027, 0009_SD034_211027, 0009_SD035_211027	**27-Oct-2021**	**----**	----	----	**10-Nov-2021**	10-Nov-2021	✓
HDPE Soil Jar (EA055)							
0009_SD032_211028, 0009_SD033_211028	**28-Oct-2021**	**----**	----	----	**10-Nov-2021**	11-Nov-2021	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0009_SD036_211027, 0009_SD100_211027, 0009_SD101_211027, 0009_SD030_211027, 0009_QC102_211027, 0009_SD031_211027, 0009_SD034_211027, 0009_SD035_211027	**27-Oct-2021**	**11-Nov-2021**	25-Apr-2022	✓	**11-Nov-2021**	21-Dec-2021	✓
HDPE Soil Jar (EP231X)							
0009_SD032_211028, 0009_SD033_211028	**28-Oct-2021**	**11-Nov-2021**	26-Apr-2022	✓	**11-Nov-2021**	21-Dec-2021	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
0009_SD036_211027, 0009_SD100_211027, 0009_SD101_211027, 0009_SD030_211027, 0009_QC102_211027, 0009_SD031_211027, 0009_SD034_211027, 0009_SD035_211027	**27-Oct-2021**	**11-Nov-2021**	25-Apr-2022	✓	**11-Nov-2021**	21-Dec-2021	✓
HDPE Soil Jar (EP231X)							
0009_SD032_211028, 0009_SD033_211028	**28-Oct-2021**	**11-Nov-2021**	26-Apr-2022	✓	**11-Nov-2021**	21-Dec-2021	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
0009_SD036_211027, 0009_SD100_211027, 0009_SD101_211027, 0009_SD030_211027, 0009_QC102_211027, 0009_SD031_211027, 0009_SD034_211027, 0009_SD035_211027	**27-Oct-2021**	**11-Nov-2021**	25-Apr-2022	✓	**11-Nov-2021**	21-Dec-2021	✓
HDPE Soil Jar (EP231X)							
0009_SD032_211028, 0009_SD033_211028	**28-Oct-2021**	**11-Nov-2021**	26-Apr-2022	✓	**11-Nov-2021**	21-Dec-2021	✓

Matrix: **SOIL**

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 Soil Jar (EP231X)							
0009_SD036_211027, 0009_SD100_211027, 0009_SD101_211027, 0009_SD030_211027, 0009_QC102_211027, 0009_SD031_211027, 0009_SD034_211027, 0009_SD035_211027	**27-Oct-2021**	**11-Nov-2021**	25-Apr-2022	✓	**11-Nov-2021**	21-Dec-2021	✓
HDPE Soil Jar (EP231X)							
0009_SD032_211028, 0009_SD033_211028	**28-Oct-2021**	**11-Nov-2021**	26-Apr-2022	✓	**11-Nov-2021**	21-Dec-2021	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
0009_SD036_211027, 0009_SD100_211027, 0009_SD101_211027, 0009_SD030_211027, 0009_QC102_211027, 0009_SD031_211027, 0009_SD034_211027, 0009_SD035_211027	**27-Oct-2021**	**11-Nov-2021**	25-Apr-2022	✓	**11-Nov-2021**	21-Dec-2021	✓
HDPE Soil Jar (EP231X)							
0009_SD032_211028, 0009_SD033_211028	**28-Oct-2021**	**11-Nov-2021**	26-Apr-2022	✓	**11-Nov-2021**	21-Dec-2021	✓

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

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)							
0009_QC500_211027, 0009_SW036_211027, 0009_SW100_211027, 0009_SW101_211027, 0009_MW035_211027, 0009_SW030_211027, 0009_MW001_HT_211027, 0009_QC101_211027, 0009_SW031_211027, 0009_SW034_211027, 0009_SW035_211027, 0009_MW019_HT_211027, 0009_QC103_211027, 0009_MW007_HT_211027, 0009_MW016_HT_211027, 0009_MW002_HT_211027, 0009_MW003_HT_211027, 0009_MW004_HT_211027, 0009_MW009_HT_211027, 0009_MW005_HT_211027, 0009_MW013_HT_211027, 0009_QC100_211027, 0009_MW014_HT_211027, 0009_MW011_HT_211027, 0009_QC300_211027, 0009_MW015_HT_211027, 0009_MW017_HT_211027, 0009_MW031_211027, 0009_MW018_HT_211027	**27-Oct-2021**	**10-Nov-2021**	25-Apr-2022	✓	**11-Nov-2021**	25-Apr-2022	✓
HDPE (no PTFE) (EP231X)							
0009_SW032_211028, 0009_SW033_211028, 0009_MW019_LT_211028, 0009_MW011_LT_211028, 0009_MW009_LT_211028, 0009_QC104_211028, 0009_MW001_LT_211028, 0009_MW002_LT_211028, 0009_MW003_LT_211028, 0009_MW004_LT_211028, 0009_MW005_LT_211028, 0009_QC301_211028, 0009_MW013_LT_211028, 0009_MW016_LT_211028, 0009_MW014_LT_211028, 0009_MW015_LT_211028, 0009_MW007_LT_211028, 0009_QC105_211028, 0009_MW017_LT_211028, 0009_MW018_LT_211028	**28-Oct-2021**	**10-Nov-2021**	26-Apr-2022	✓	**11-Nov-2021**	26-Apr-2022	✓

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)							
0009_QC500_211027, 0009_SW036_211027, 0009_SW100_211027, 0009_SW101_211027, 0009_MW035_211027, 0009_SW030_211027, 0009_MW001_HT_211027, 0009_QC101_211027, 0009_SW031_211027, 0009_SW034_211027, 0009_SW035_211027, 0009_MW019_HT_211027, 0009_QC103_211027, 0009_MW007_HT_211027, 0009_MW016_HT_211027, 0009_MW002_HT_211027, 0009_MW003_HT_211027, 0009_MW004_HT_211027, 0009_MW009_HT_211027, 0009_MW005_HT_211027, 0009_MW013_HT_211027, 0009_QC100_211027, 0009_MW014_HT_211027, 0009_MW011_HT_211027, 0009_QC300_211027, 0009_MW015_HT_211027, 0009_MW017_HT_211027, 0009_MW031_211027, 0009_MW018_HT_211027	**27-Oct-2021**	**10-Nov-2021**	25-Apr-2022	✓	**11-Nov-2021**	25-Apr-2022	✓
HDPE (no PTFE) (EP231X)							
0009_SW032_211028, 0009_SW033_211028, 0009_MW019_LT_211028, 0009_MW011_LT_211028, 0009_MW009_LT_211028, 0009_QC104_211028, 0009_MW001_LT_211028, 0009_MW002_LT_211028, 0009_MW003_LT_211028, 0009_MW004_LT_211028, 0009_MW005_LT_211028, 0009_QC301_211028, 0009_MW013_LT_211028, 0009_MW016_LT_211028, 0009_MW014_LT_211028, 0009_MW015_LT_211028, 0009_MW007_LT_211028, 0009_QC105_211028, 0009_MW017_LT_211028, 0009_MW018_LT_211028	**28-Oct-2021**	**10-Nov-2021**	26-Apr-2022	✓	**11-Nov-2021**	26-Apr-2022	✓

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)							
0009_QC500_211027, 0009_SW036_211027, 0009_SW100_211027, 0009_SW101_211027, 0009_MW035_211027, 0009_SW030_211027, 0009_MW001_HT_211027, 0009_QC101_211027, 0009_SW031_211027, 0009_SW034_211027, 0009_SW035_211027, 0009_MW019_HT_211027, 0009_QC103_211027, 0009_MW007_HT_211027, 0009_MW016_HT_211027, 0009_MW002_HT_211027, 0009_MW003_HT_211027, 0009_MW004_HT_211027, 0009_MW009_HT_211027, 0009_MW005_HT_211027, 0009_MW013_HT_211027, 0009_QC100_211027, 0009_MW014_HT_211027, 0009_MW011_HT_211027, 0009_QC300_211027, 0009_MW015_HT_211027, 0009_MW017_HT_211027, 0009_MW031_211027, 0009_MW018_HT_211027	**27-Oct-2021**	**10-Nov-2021**	25-Apr-2022	✓	**11-Nov-2021**	25-Apr-2022	✓
HDPE (no PTFE) (EP231X)							
0009_SW032_211028, 0009_SW033_211028, 0009_MW019_LT_211028, 0009_MW011_LT_211028, 0009_MW009_LT_211028, 0009_QC104_211028, 0009_MW001_LT_211028, 0009_MW002_LT_211028, 0009_MW003_LT_211028, 0009_MW004_LT_211028, 0009_MW005_LT_211028, 0009_QC301_211028, 0009_MW013_LT_211028, 0009_MW016_LT_211028, 0009_MW014_LT_211028, 0009_MW015_LT_211028, 0009_MW007_LT_211028, 0009_QC105_211028, 0009_MW017_LT_211028, 0009_MW018_LT_211028	**28-Oct-2021**	**10-Nov-2021**	26-Apr-2022	✓	**11-Nov-2021**	26-Apr-2022	✓

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)							
0009_QC500_211027, 0009_SW036_211027, 0009_SW100_211027, 0009_SW101_211027, 0009_MW035_211027, 0009_SW030_211027, 0009_MW001_HT_211027, 0009_QC101_211027, 0009_SW031_211027, 0009_SW034_211027, 0009_SW035_211027, 0009_MW019_HT_211027, 0009_QC103_211027, 0009_MW007_HT_211027, 0009_MW016_HT_211027, 0009_MW002_HT_211027, 0009_MW003_HT_211027, 0009_MW004_HT_211027, 0009_MW009_HT_211027, 0009_MW005_HT_211027, 0009_MW013_HT_211027, 0009_QC100_211027, 0009_MW014_HT_211027, 0009_MW011_HT_211027, 0009_QC300_211027, 0009_MW015_HT_211027, 0009_MW017_HT_211027, 0009_MW031_211027, 0009_MW018_HT_211027	**27-Oct-2021**	**10-Nov-2021**	25-Apr-2022	✓	**11-Nov-2021**	25-Apr-2022	✓
HDPE (no PTFE) (EP231X)							
0009_SW032_211028, 0009_SW033_211028, 0009_MW019_LT_211028, 0009_MW011_LT_211028, 0009_MW009_LT_211028, 0009_QC104_211028, 0009_MW001_LT_211028, 0009_MW002_LT_211028, 0009_MW003_LT_211028, 0009_MW004_LT_211028, 0009_MW005_LT_211028, 0009_QC301_211028, 0009_MW013_LT_211028, 0009_MW016_LT_211028, 0009_MW014_LT_211028, 0009_MW015_LT_211028, 0009_MW007_LT_211028, 0009_QC105_211028, 0009_MW017_LT_211028, 0009_MW018_LT_211028	**28-Oct-2021**	**10-Nov-2021**	26-Apr-2022	✓	**11-Nov-2021**	26-Apr-2022	✓

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)							
0009_QC500_211027, 0009_SW036_211027, 0009_SW100_211027, 0009_SW101_211027, 0009_MW035_211027, 0009_SW030_211027, 0009_MW001_HT_211027, 0009_QC101_211027, 0009_SW031_211027, 0009_SW034_211027, 0009_SW035_211027, 0009_MW019_HT_211027, 0009_QC103_211027, 0009_MW007_HT_211027, 0009_MW016_HT_211027, 0009_MW002_HT_211027, 0009_MW003_HT_211027, 0009_MW004_HT_211027, 0009_MW009_HT_211027, 0009_MW005_HT_211027, 0009_MW013_HT_211027, 0009_QC100_211027, 0009_MW014_HT_211027, 0009_MW011_HT_211027, 0009_QC300_211027, 0009_MW015_HT_211027, 0009_MW017_HT_211027, 0009_MW031_211027, 0009_MW018_HT_211027	**27-Oct-2021**	**10-Nov-2021**	25-Apr-2022	✓	**11-Nov-2021**	25-Apr-2022	✓
HDPE (no PTFE) (EP231X)							
0009_SW032_211028, 0009_SW033_211028, 0009_MW019_LT_211028, 0009_MW011_LT_211028, 0009_MW009_LT_211028, 0009_QC104_211028, 0009_MW001_LT_211028, 0009_MW002_LT_211028, 0009_MW003_LT_211028, 0009_MW004_LT_211028, 0009_MW005_LT_211028, 0009_QC301_211028, 0009_MW013_LT_211028, 0009_MW016_LT_211028, 0009_MW014_LT_211028, 0009_MW015_LT_211028, 0009_MW007_LT_211028, 0009_QC105_211028, 0009_MW017_LT_211028, 0009_MW018_LT_211028	**28-Oct-2021**	**10-Nov-2021**	26-Apr-2022	✓	**11-Nov-2021**	26-Apr-2022	✓

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: **SOIL**

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)							
Moisture Content	EA055	3	24	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
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

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	6	49	**12.24**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	49	**6.12**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	49	**6.12**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	49	**6.12**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed 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 soil 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 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 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
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	: **ET2105170**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	[redacted]	Contact	: [redacted]
Address		Address	:
E-mail		E-mail	:
Telephone	: ----	Telephone	:
Facsimile	: ----	Facsimile	:
Project	: QLD_0009_PFASOMP_20	Page	: 1 of 5
Order number	: 60612487_4.1	Quote number	: ET2021AECOMAU0001 (TV/007/21 - Compass)
C-O-C number	: 29292	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: QLD_0009		
Sampler	[redacted]		

Dates

Date Samples Received	: 02-Nov-2021 14:00	Issue Date	: 02-Nov-2021
Client Requested Due Date	: 09-Nov-2021	Scheduled Reporting Date	: **09-Nov-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.1'C - Ice present
Receipt Detail	: ESKY	No. of samples received / analysed	: 59 / 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
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- $$ conducted by ALS Townsville, NATA accreditation no. 825, (Site no. 23472 for Chemical Testing and Site no. 23313 for Biological Testing)
- 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.
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- 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.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ET2105170-012	: 27-Oct-2021 15:24	: 0009_MW001_HT_211027
ET2105170-020	: 27-Oct-2021 14:16	: 0009_MW019_HT_211027
ET2105170-021	: 27-Oct-2021 14:44	: 0009_MW007_HT_211027
ET2105170-022	: 27-Oct-2021 15:15	: 0009_MW016_HT_211027
ET2105170-024	: 27-Oct-2021 15:10	: 0009_MW002_HT_211027
ET2105170-025	: 27-Oct-2021 14:59	: 0009_MW003_HT_211027
ET2105170-026	: 27-Oct-2021 14:12	: 0009_MW004_HT_211027
ET2105170-027	: 27-Oct-2021 15:30	: 0009_MW009_HT_211027
ET2105170-028	: 27-Oct-2021 14:25	: 0009_MW005_HT_211027
ET2105170-029	: 27-Oct-2021 14:46	: 0009_MW013_HT_211027
ET2105170-031	: 27-Oct-2021 15:58	: 0009_MW014_HT_211027
ET2105170-032	: 27-Oct-2021 15:51	: 0009_MW011_HT_211027
ET2105170-034	: 27-Oct-2021 16:16	: 0009_MW015_HT_211027
ET2105170-035	: 27-Oct-2021 16:30	: 0009_MW017_HT_211027
ET2105170-037	: 27-Oct-2021 16:40	: 0009_MW018_HT_211027
ET2105170-042	: 28-Oct-2021 08:51	: 0009_MW019_LT_211028
ET2105170-043	: 28-Oct-2021 09:09	: 0009_MW011_LT_211028
ET2105170-044	: 28-Oct-2021 09:39	: 0009_MW009_LT_211028
ET2105170-046	: 28-Oct-2021 09:17	: 0009_MW001_LT_211028
ET2105170-047	: 28-Oct-2021 09:06	: 0009_MW002_LT_211028
ET2105170-048	: 28-Oct-2021 08:55	: 0009_MW003_LT_211028
ET2105170-049	: 28-Oct-2021 08:24	: 0009_MW004_LT_211028
ET2105170-050	: 28-Oct-2021 08:35	: 0009_MW005_LT_211028
ET2105170-051	: 28-Oct-2021 08:45	: 0009_MW013_LT_211028
ET2105170-052	: 28-Oct-2021 09:57	: 0009_MW016_LT_211028
ET2105170-053	: 28-Oct-2021 10:06	: 0009_MW014_LT_211028
ET2105170-055	: 28-Oct-2021 10:14	: 0009_MW015_LT_211028
ET2105170-056	: 28-Oct-2021 10:32	: 0009_MW007_LT_211028
ET2105170-058	: 28-Oct-2021 10:41	: 0009_MW017_LT_211028
ET2105170-059	: 28-Oct-2021 10:55	: 0009_MW018_LT_211028

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: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ET2105170-002	27-Oct-2021 08:14	0009_SD036_211027	✓	✓
ET2105170-004	27-Oct-2021 08:53	0009_SD100_211027	✓	✓
ET2105170-006	27-Oct-2021 09:10	0009_SD101_211027	✓	✓
ET2105170-009	27-Oct-2021 11:20	0009_SD030_211027	✓	✓
ET2105170-011	27-Oct-2021 11:49	0009_QC102_211027	✓	✓
ET2105170-015	27-Oct-2021 11:30	0009_SD031_211027	✓	✓
ET2105170-017	27-Oct-2021 12:00	0009_SD034_211027	✓	✓
ET2105170-019	27-Oct-2021 12:14	0009_SD035_211027	✓	✓

			SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ET2105170-038	28-Oct-2021 07:38	0009_SD032_211028	✓	✓
ET2105170-041	28-Oct-2021 07:54	0009_SD033_211028	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (28 analytes)
ET2105170-001	27-Oct-2021 07:31	0009_QC500_211027	✓
ET2105170-003	27-Oct-2021 08:15	0009_SW036_211027	✓
ET2105170-005	27-Oct-2021 09:06	0009_SW100_211027	✓
ET2105170-007	27-Oct-2021 09:11	0009_SW101_211027	✓
ET2105170-008	27-Oct-2021 09:50	0009_MW035_211027	✓
ET2105170-010	27-Oct-2021 11:20	0009_SW030_211027	✓
ET2105170-012	27-Oct-2021 15:24	0009_MW001_HT_211027	✓
ET2105170-013	27-Oct-2021 11:44	0009_QC101_211027	✓
ET2105170-014	27-Oct-2021 11:28	0009_SW031_211027	✓
ET2105170-016	27-Oct-2021 12:01	0009_SW034_211027	✓
ET2105170-018	27-Oct-2021 12:09	0009_SW035_211027	✓
ET2105170-020	27-Oct-2021 14:16	0009_MW019_HT_211027	✓
ET2105170-021	27-Oct-2021 14:44	0009_MW007_HT_211027	✓
ET2105170-022	27-Oct-2021 15:15	0009_MW016_HT_211027	✓
ET2105170-023	27-Oct-2021 15:16	0009_QC103_211027	✓
ET2105170-024	27-Oct-2021 15:10	0009_MW002_HT_211027	✓
ET2105170-025	27-Oct-2021 14:59	0009_MW003_HT_211027	✓
ET2105170-026	27-Oct-2021 14:12	0009_MW004_HT_211027	✓
ET2105170-027	27-Oct-2021 15:30	0009_MW009_HT_211027	✓
ET2105170-028	27-Oct-2021 14:25	0009_MW005_HT_211027	✓
ET2105170-029	27-Oct-2021 14:46	0009_MW013_HT_211027	✓
ET2105170-030	27-Oct-2021 14:46	0009_QC100_211027	✓
ET2105170-031	27-Oct-2021 15:58	0009_MW014_HT_211027	✓
ET2105170-032	27-Oct-2021 15:51	0009_MW011_HT_211027	✓
ET2105170-033	27-Oct-2021 16:13	0009_QC300_211027	✓
ET2105170-034	27-Oct-2021 16:16	0009_MW015_HT_211027	✓
ET2105170-035	27-Oct-2021 16:30	0009_MW017_HT_211027	✓

			WATER - EP231X PFAS - Full Suite (28 analytes)
ET2105170-036	27-Oct-2021 17:20	0009_MW031_211027	✓
ET2105170-037	27-Oct-2021 16:40	0009_MW018_HT_211027	✓
ET2105170-039	28-Oct-2021 07:38	0009_SW032_211028	✓
ET2105170-040	28-Oct-2021 07:54	0009_SW033_211028	✓
ET2105170-042	28-Oct-2021 08:51	0009_MW019_LT_211028	✓
ET2105170-043	28-Oct-2021 09:09	0009_MW011_LT_211028	✓
ET2105170-044	28-Oct-2021 09:39	0009_MW009_LT_211028	✓
ET2105170-045	28-Oct-2021 09:40	0009_QC104_211028	✓
ET2105170-046	28-Oct-2021 09:17	0009_MW001_LT_211028	✓
ET2105170-047	28-Oct-2021 09:06	0009_MW002_LT_211028	✓
ET2105170-048	28-Oct-2021 08:55	0009_MW003_LT_211028	✓
ET2105170-049	28-Oct-2021 08:24	0009_MW004_LT_211028	✓
ET2105170-050	28-Oct-2021 08:35	0009_MW005_LT_211028	✓
ET2105170-051	28-Oct-2021 08:45	0009_MW013_LT_211028	✓
ET2105170-052	28-Oct-2021 09:57	0009_MW016_LT_211028	✓
ET2105170-053	28-Oct-2021 10:06	0009_MW014_LT_211028	✓
ET2105170-054	28-Oct-2021 10:11	0009_QC301_211028	✓
ET2105170-055	28-Oct-2021 10:14	0009_MW015_LT_211028	✓
ET2105170-056	28-Oct-2021 10:32	0009_MW007_LT_211028	✓
ET2105170-057	28-Oct-2021 10:33	0009_QC105_211028	✓
ET2105170-058	28-Oct-2021 10:41	0009_MW017_LT_211028	✓
ET2105170-059	28-Oct-2021 10:55	0009_MW018_LT_211028	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ET2106086**	Page	: 1 of 9
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: BRISBANE	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 10-Dec-2021 09:20
Order number	: 60612487_4.1	Date Analysis Commenced	: 13-Dec-2021
C-O-C number	: 31359	Issue Date	: 20-Dec-2021 18:14
Sampler	: [redacted]		
Site	: QLD_0009		
Quote number	: TV/007/21 - Compass		
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]	[redacted]

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 Contact 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.
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- EP231X - PFAS: The LOR of PFOA for sample "0009_MW016_211208", PFPeA for sample "0009_MW009_211208", & PFOS for sample "0009_MW018_211208" have been raised due to matrix interference.
- 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.
- 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: SOIL (Matrix: SOIL)			Sample ID	0009_SD036_211208	0009_QC100_211208	----	----	----
			Sampling date / time	08-Dec-2021 10:47	08-Dec-2021 09:45	----	----	----
Compound	CAS Number	LOR	Unit	ET2106086-001	ET2106086-002	--------	--------	--------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**50.9**	**51.2**	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0007**	**0.0006**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0002**	**0.0002**	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	**0.0002**	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD036_211208	0009_QC100_211208	----	----	----
				Sampling date / time	08-Dec-2021 10:47	08-Dec-2021 09:45	----	----	----
Compound	CAS Number	LOR	Unit		ET2106086-001	ET2106086-002	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0009**	**0.0010**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0007**	**0.0006**	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0009**	**0.0008**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**82.0**	**77.0**	----	----	----
13C8-PFOA	----	0.0002	%		**94.5**	**81.0**	----	----	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW019_211208	0009_QC101_211208	0009_MW016_211208	0009_MW009_211208	0009_MW018_211208
				Sampling date / time	08-Dec-2021 11:03	08-Dec-2021 11:05	08-Dec-2021 11:27	08-Dec-2021 11:33	08-Dec-2021 11:54
					ET2106086-003	ET2106086-004	ET2106086-005	ET2106086-006	ET2106086-007
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.04**	**0.04**	**0.27**	**0.07**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.04**	**0.04**	**0.33**	**0.07**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.32**	**0.30**	**1.75**	**0.86**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.08**	**0.08**	<0.02	**0.04**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**2.16**	**2.22**	**0.15**	**0.28**	<0.03
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		**0.08**	**0.08**	**0.09**	<0.04	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.16**	**0.15**	**0.46**	**0.13**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.05**	**0.05**	**0.06**	**0.03**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.08**	**0.08**	<0.02	**0.05**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW019_211208	0009_QC101_211208	0009_MW016_211208	0009_MW009_211208	0009_MW018_211208
				Sampling date / time	08-Dec-2021 11:03	08-Dec-2021 11:05	08-Dec-2021 11:27	08-Dec-2021 11:33	08-Dec-2021 11:54
Compound	CAS Number	LOR	Unit		ET2106086-003	ET2106086-004	ET2106086-005	ET2106086-006	ET2106086-007
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**0.12**	**0.12**	**0.12**	<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		**3.13**	**3.16**	**3.23**	**1.53**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**2.48**	**2.52**	**1.90**	**1.14**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**3.01**	**3.04**	**2.90**	**1.42**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**105**	**112**	**90.6**	**110**	**101**
13C8-PFOA	----	0.02	%		**101**	**102**	**101**	**101**	**102**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC300_211208	0009_QC500_211208	----	----	----
				Sampling date / time	08-Dec-2021 11:58	08-Dec-2021 13:14	----	----	----
Compound	CAS Number	LOR	Unit		ET2106086-008	ET2106086-009	--------	--------	--------
					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	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC300_211208	0009_QC500_211208	----	----	----
				Sampling date / time	08-Dec-2021 11:58	08-Dec-2021 13:14	----	----	----
Compound	CAS Number	LOR	Unit		ET2106086-008	ET2106086-009	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	%		**102**	**97.6**	----	----	----
13C8-PFOA	----	0.02	%		**99.6**	**101**	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(SOIL) EP231B: Perfluoroalkyl Carboxylic Acids
(SOIL) EP231D: (n:2) Fluorotelomer Sulfonic Acids
(SOIL) EP231C: Perfluoroalkyl Sulfonamides
(SOIL) EP231A: Perfluoroalkyl Sulfonic Acids
(SOIL) EP231P: PFAS Sums
(SOIL) EP231S: PFAS Surrogate
(SOIL) EA055: Moisture Content (Dried @ 105-110°C)
(WATER) EP231A: Perfluoroalkyl Sulfonic Acids
(WATER) EP231B: Perfluoroalkyl Carboxylic Acids
(WATER) EP231C: Perfluoroalkyl Sulfonamides
(WATER) EP231D: (n:2) Fluorotelomer Sulfonic Acids
(WATER) EP231P: PFAS Sums
(WATER) EP231S: PFAS Surrogate

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ET2106086**	Page	: 1 of 10
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: BRISBANE	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 10-Dec-2021
Order number	: 60612487_4.1	Date Analysis Commenced	: 13-Dec-2021
C-O-C number	: 31359	Issue Date	: 20-Dec-2021
Sampler	: [redacted]		
Site	: QLD_0009		
Quote number	: TV/007/21 - Compass		
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]	[redacted]

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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4071902)									
EB2135900-009	Anonymous	EA055: Moisture Content	----	0.1	%	9.2	9.2	0.0	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4071901)									
EB2135900-009	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EB2136000-018	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0005	0.0004	33.8	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4071901)									
EB2135900-009	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 4071901) - continued									
EB2135900-009	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EB2136000-018	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4071901)									
EB2135900-009	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EB2136000-018	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4071901)									

Sub-Matrix: **SOIL**

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: 4071901) - continued									
EB2135900-009	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EB2136000-018	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	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 (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4075678)									
ET2106086-005	0009_MW016_211208	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.75	1.68	3.9	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.15	0.17	11.2	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.27	0.26	0.0	0% - 50%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.33	0.34	0.0	0% - 50%
		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: 4075678)									
ET2106086-005	0009_MW016_211208	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.46	0.47	2.8	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.06	0.04	22.6	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: 4075678)									
ET2106086-005	0009_MW016_211208	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	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: 4075678) - continued									
ET2106086-005	0009_MW016_211208	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: 4075678)									
ET2106086-005	0009_MW016_211208	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	0.12	0.11	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: 4075678)									
ET2106086-005	0009_MW016_211208	EP231X: Sum of PFAS	----	0.01	µg/L	3.23	3.16	2.2	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.90	1.85	2.7	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	2.90	2.82	2.8	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: **SOIL**

				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: 4071901)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0011 mg/kg	84.1	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00117 mg/kg	120	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	99.6	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	124	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	86.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0012 mg/kg	99.2	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4071901)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	122	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.6	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	105	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4071901)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	115	59.6	143
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	105	62.8	140
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.5	61.5	139
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	97.8	61.9	137
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4071901)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	104	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00118 mg/kg	109	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	99.6	65.0	137

Sub-Matrix: **SOIL**

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: 4071901) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.0012 mg/kg	93.8	54.8	124

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: 4075678)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	124	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	125	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	116	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	132	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	126	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	122	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4075678)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	116	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	111	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	124	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	125	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	123	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	123	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	128	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	124	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	124	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4075678)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	121	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	134	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	109	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	124	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	125	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	129	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	126	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4075678)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	122	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	125	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: 4075678) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	118	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	109	64.2	133
EP231P: PFAS Sums (QCLot: 4075678)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

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: **SOIL**

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: 4071901)							
EB2135900-011	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0011 mg/kg	84.1	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00117 mg/kg	120	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00118 mg/kg	89.8	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	111	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	77.6	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0012 mg/kg	102	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4071901)							
EB2135900-011	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	129	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	101	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	97.6	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	103	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	101	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	103	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	100.0	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	102	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	100	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	97.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	102	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4071901)							
EB2135900-011	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	95.6	48.0	128
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	104	70.0	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4071901) - continued							
EB2135900-011	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	98.4	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	108	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	97.9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	98.8	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	100	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4071901)							
EB2135900-011	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	97.0	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00118 mg/kg	114	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	93.8	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0012 mg/kg	90.4	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4075678)							
ET2106086-006	0009_MW009_211208	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	125	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	108	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	112	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	106	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	136	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4075678)							
ET2106086-006	0009_MW009_211208	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	106	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	124	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	120	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	116	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	124	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	120	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	130	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	118	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	127	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4075678)							

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: 4075678) - continued							
ET2106086-006	0009_MW009_211208	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	114	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	126	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	121	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	120	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	124	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	123	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	124	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4075678)							
ET2106086-006	0009_MW009_211208	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	120	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	124	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	121	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	125	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ET2106086**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Telephone	: +[redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 10-Dec-2021
Site	: QLD_0009	Issue Date	: 20-Dec-2021
Sampler	: [redacted]	No. of samples received	: 9
Order number	: 60612487_4.1	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, 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: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ET2106086--006	0009_MW009_211208	**Perfluorohexane sulfonic acid (PFHxS)**	355-46-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

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: **SOIL**

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
EA055: Moisture Content (Dried @ 105-110°C)								
HDPE Soil Jar (EA055)								
0009_SD036_211208,	0009_QC100_211208	**08-Dec-2021**	**----**	----	----	**13-Dec-2021**	22-Dec-2021	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0009_SD036_211208,	0009_QC100_211208	**08-Dec-2021**	**13-Dec-2021**	06-Jun-2022	✓	**15-Dec-2021**	22-Jan-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
0009_SD036_211208,	0009_QC100_211208	**08-Dec-2021**	**13-Dec-2021**	06-Jun-2022	✓	**15-Dec-2021**	22-Jan-2022	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
0009_SD036_211208,	0009_QC100_211208	**08-Dec-2021**	**13-Dec-2021**	06-Jun-2022	✓	**15-Dec-2021**	22-Jan-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0009_SD036_211208,	0009_QC100_211208	**08-Dec-2021**	**13-Dec-2021**	06-Jun-2022	✓	**15-Dec-2021**	22-Jan-2022	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
0009_SD036_211208,	0009_QC100_211208	**08-Dec-2021**	**13-Dec-2021**	06-Jun-2022	✓	**15-Dec-2021**	22-Jan-2022	✓

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

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)							
0009_MW019_211208, 0009_MW016_211208, 0009_MW018_211208, 0009_QC500_211208, 0009_QC101_211208, 0009_MW009_211208, 0009_QC300_211208,	**08-Dec-2021**	**17-Dec-2021**	06-Jun-2022	✓	**17-Dec-2021**	06-Jun-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0009_MW019_211208, 0009_MW016_211208, 0009_MW018_211208, 0009_QC500_211208, 0009_QC101_211208, 0009_MW009_211208, 0009_QC300_211208,	**08-Dec-2021**	**17-Dec-2021**	06-Jun-2022	✓	**17-Dec-2021**	06-Jun-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0009_MW019_211208, 0009_MW016_211208, 0009_MW018_211208, 0009_QC500_211208, 0009_QC101_211208, 0009_MW009_211208, 0009_QC300_211208,	**08-Dec-2021**	**17-Dec-2021**	06-Jun-2022	✓	**17-Dec-2021**	06-Jun-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0009_MW019_211208, 0009_MW016_211208, 0009_MW018_211208, 0009_QC500_211208, 0009_QC101_211208, 0009_MW009_211208, 0009_QC300_211208,	**08-Dec-2021**	**17-Dec-2021**	06-Jun-2022	✓	**17-Dec-2021**	06-Jun-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0009_MW019_211208, 0009_MW016_211208, 0009_MW018_211208, 0009_QC500_211208, 0009_QC101_211208, 0009_MW009_211208, 0009_QC300_211208,	**08-Dec-2021**	**17-Dec-2021**	06-Jun-2022	✓	**17-Dec-2021**	06-Jun-2022	✓

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: **SOIL**

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)							
Moisture Content	EA055	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
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

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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed 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 soil 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 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 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
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.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ET2106086**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Contact	:
Address	: BRISBANE	Address	: [redacted]
E-mail	: [redacted]	E-mail	:
Telephone	:	Telephone	:
Facsimile	:	Facsimile	:
Project	: QLD_0009_PFASOMP_20	Page	: 1 of 3
Order number	: 60612487_4.1	Quote number	: ET2021AECOMAU0001 (TV/007/21 - Compass)
C-O-C number	: 31359	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: QLD_0009		
Sampler	: [redacted]		

Dates

Date Samples Received	: 10-Dec-2021 09:20	Issue Date	: 15-Dec-2021
Client Requested Due Date	: 22-Dec-2021	Scheduled Reporting Date	: **22-Dec-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 6.6 - Ice present
Receipt Detail	: MEDIUM ESKY	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
- ***15/12/21*: SRN has been resent to acknowledge the addition of report recipients.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- $$ conducted by ALS Townsville, NATA accreditation no. 825, (Site no. 23472 for Chemical Testing and Site no. 23313 for Biological Testing)
- 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.
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- 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: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ET2106086-001	08-Dec-2021 10:47	0009_SD036_211208	✓	✓
ET2106086-002	08-Dec-2021 09:45	0009_QC100_211208	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ET2106086-003	08-Dec-2021 11:03	0009_MW019_211208	✓
ET2106086-004	08-Dec-2021 11:05	0009_QC101_211208	✓
ET2106086-005	08-Dec-2021 11:27	0009_MW016_211208	✓
ET2106086-006	08-Dec-2021 11:33	0009_MW009_211208	✓
ET2106086-007	08-Dec-2021 11:54	0009_MW018_211208	✓
ET2106086-008	08-Dec-2021 11:58	0009_QC300_211208	✓
ET2106086-009	08-Dec-2021 13:14	0009_QC500_211208	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/211102
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 02-NOV-2021
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	[redacted]	**Phone**	[redacted]

Lab Reg No.	Sample Ref	Sample Description
N21/024360	0009_QC202_211027	SOIL 27/10/21

Lab Reg No.		N21/024360				
Date Sampled		27-OCT-2021				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	mg/kg	<0.002				NR70
PFPeA (2706-90-3)	mg/kg	<0.002				NR70
PFHxA (307-24-4)	mg/kg	<0.001				NR70
PFHpA (375-85-9)	mg/kg	<0.001				NR70
PFOA (335-67-1)	mg/kg	<0.001				NR70
PFNA (375-95-1)	mg/kg	<0.001				NR70
PFDA (335-76-2)	mg/kg	<0.001				NR70
PFUdA (2058-94-8)	mg/kg	<0.002				NR70
PFDoA (307-55-1)	mg/kg	<0.002				NR70
PFTrDA (72629-94-8)	mg/kg	<0.002				NR70
PFTeDA (376-06-7)	mg/kg	<0.002				NR70
PFHxDA (67905-19-5)	mg/kg	<0.002				NR70
PFODA (16517-11-6)	mg/kg	<0.005				NR70
FOUEA (70887-84-2)	mg/kg	<0.001				NR70
PFBS (375-73-5)	mg/kg	<0.001				NR70
PFPeS (2706-91-4)	mg/kg	<0.001				NR70
PFHxS (355-46-4)	mg/kg	<0.001				NR70
PFHpS (375-92-8)	mg/kg	<0.001				NR70
PFOS (1763-23-1)	mg/kg	0.0029				NR70
PFNS (68259-12-1)	mg/kg	<0.001				NR70
PFDS (335-77-3)	mg/kg	<0.001				NR70
PFOSA (754-91-6)	mg/kg	<0.001				NR70
N-MeFOSA (31506-32-8)	mg/kg	<0.002				NR70
N-EtFOSA (4151-50-2)	mg/kg	<0.002				NR70
N-MeFOSAA (2355-31-9)	mg/kg	<0.002				NR70
N-EtFOSAA(2991-50-6)	mg/kg	<0.002				NR70
N-MeFOSE (24448-09-7)	mg/kg	<0.005				NR70
N-EtFOSE (1691-99-2)	mg/kg	<0.005				NR70
4:2 FTS (757124-72-4)	mg/kg	<0.001				NR70
6:2 FTS (27619-97-2)	mg/kg	<0.001				NR70

REPORT OF ANALYSIS

Lab Reg No.		N21/024360				
Date Sampled		27-OCT-2021				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
8:2 FTS (39108-34-4)	mg/kg	<0.001				NR70
10:2 FTS (120226-60-0)	mg/kg	<0.002				NR70
8:2 diPAP (678-41-1)	mg/kg	<0.002				NR70
PFBA (Surrogate Recovery)	%	100				NR70
PFPeA (Surrogate Recovery)	%	110				NR70
PFHxA (Surrogate Recovery)	%	108				NR70
PFHpA (Surrogate Recovery)	%	97				NR70
PFOA (Surrogate Recovery)	%	97				NR70
PFNA (Surrogate Recovery)	%	122				NR70
PFDA (Surrogate Recovery)	%	115				NR70
PFUdA (Surrogate Recovery)	%	136				NR70
PFDoA (Surrogate Recovery)	%	87				NR70
PFTeDA (Surrogate Recovery)	%	129				NR70
PFHxDA (Surrogate Recovery)	%	105				NR70
FOUEA (Surrogate Recovery)	%	48				NR70
PFBS (Surrogate Recovery)	%	98				NR70
PFHxS (Surrogate Recovery)	%	102				NR70
PFOS (Surrogate Recovery)	%	108				NR70
PFOSA (Surrogate Recovery)	%	106				NR70
N-MeFOSA (Surrogate Recovery)	%	90				NR70
N-EtFOSA (Surrogate Recovery)	%	90				NR70
N-MeFOSAA (Surrogate Recovery)	%	106				NR70
N-EtFOSAA (Surrogate Recovery)	%	112				NR70
N-MeFOSE (Surrogate Recovery)	%	80				NR70
N-EtFOSE (Surrogate Recovery)	%	87				NR70
4:2 FTS (Surrogate Recovery)	%	74				NR70
6:2 FTS (Surrogate Recovery)	%	80				NR70
8:2 FTS (Surrogate Recovery)	%	124				NR70
8:2 diPAP (Surrogate Recovery)	%	119				NR70
Dates						
Date extracted		1-NOV-2021				
Date analysed		9-NOV-2021				

N21/024360
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]

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Accreditation No. 198

11-NOV-2021

Lab Reg No.		**N21/024360**				
Date Sampled		**27-OCT-2021**				
	Units					**Method**
Trace Elements						
Total Solids	%	69.0				NT2_49
Dates						
Date extracted		2-NOV-2021				
Date analysed		3-NOV-2021				

[redacted]

Inorganics - NSW
Accreditation No. 198

11-NOV-2021

All results are expressed on a dry weight basis.

REPORT OF ANALYSIS

Report No. RN1333732

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/211102
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 02-NOV-2021
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	[redacted]	**Phone**	[redacted]

Lab Reg No.	Sample Ref	Sample Description
N21/024358	0009_QC200_211027	WATER 27/10/21
N21/024359	0009_QC201_211027	WATER 27/10/21
N21/024361	0009_QC203_211027	WATER 27/10/21
N21/024362	0009_QC204_211028	WATER 28/10/21

Lab Reg No.			N21/024358	N21/024359	N21/024361	N21/024362	
Date Sampled			27-OCT-2021	27-OCT-2021	27-OCT-2021	28-OCT-2021	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
PFBA (375-22-4)		ug/L	0.097	<0.05	0.052	<0.05	NR70
PFPeA (2706-90-3)		ug/L	0.18	<0.02	0.068	0.022	NR70
PFHxA (307-24-4)		ug/L	0.35	<0.01	0.28	0.088	NR70
PFHpA (375-85-9)		ug/L	0.087	<0.01	0.032	0.016	NR70
PFOA (335-67-1)		ug/L	0.15	<0.01	<0.01	0.038	NR70
PFNA (375-95-1)		ug/L	0.088	<0.01	<0.01	<0.01	NR70
PFDA (335-76-2)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFUdA (2058-94-8)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDoA (307-55-1)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFTrDA (72629-94-8)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFTeDA (376-06-7)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFHxDA (67905-19-5)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFODA (16517-11-6)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70
FOUEA (70887-84-2)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDS (335-77-3)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFPeS (2706-91-4)		ug/L	0.13	<0.01	0.19	0.041	NR70
PFHxS (355-46-4)		ug/L	1.5	<0.01	1.3	0.66	NR70
PFHpS (375-92-8)		ug/L	0.075	<0.01	<0.01	0.017	NR70
PFOS (1763-23-1)		ug/L	3.2	<0.02	0.15	1.1	NR70
PFNS (68259-12-1)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFBS (375-73-5)		ug/L	0.14	<0.01	0.17	0.045	NR70
PFOSA (754-91-6)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSA (31506-32-8)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-EtFOSA (4151-50-2)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-MeFOSAA (2355-31-9)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-EtFOSAA(2991-50-6)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSE (24448-09-7)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70

REPORT OF ANALYSIS

Lab Reg No.			N21/024358	N21/024359	N21/024361	N21/024362	
Date Sampled			27-OCT-2021	27-OCT-2021	27-OCT-2021	28-OCT-2021	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
N-EtFOSE (1691-99-2)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70
4:2 FTS (757124-72-4)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
6:2 FTS (27619-97-2)		ug/L	0.035	<0.01	0.19	0.061	NR70
8:2 FTS (39108-34-4)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
10:2 FTS (120226-60-0)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 diPAP (678-41-1)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFBA (Surrogate Recovery)		%	105	101	106	105	NR70
PFPeA (Surrogate Recovery)		%	112	101	140	138	NR70
PFHxA (Surrogate Recovery)		%	96	106	95	94	NR70
PFHpA (Surrogate Recovery)		%	100	104	104	97	NR70
PFOA (Surrogate Recovery)		%	102	101	98	96	NR70
PFNA (Surrogate Recovery)		%	102	143	116	97	NR70
PFDA (Surrogate Recovery)		%	112	147	126	94	NR70
PFUdA (Surrogate Recovery)		%	99	110	120	104	NR70
PFDoA (Surrogate Recovery)		%	117	122	83	82	NR70
PFTeDA (Surrogate Recovery)		%	109	86	101	78	NR70
PFHxDA (Surrogate Recovery)		%	82	121	74	93	NR70
FOUEA (Surrogate Recovery)		%	94	85	83	87	NR70
PFBS (Surrogate Recovery)		%	98	94	95	97	NR70
PFHxS (Surrogate Recovery)		%	96	98	101	91	NR70
PFOS (Surrogate Recovery)		%	101	98	90	93	NR70
PFOSA (Surrogate Recovery)		%	91	107	75	75	NR70
N-MeFOSA (Surrogate Recovery)		%	79	80	61	66	NR70
N-EtFOSA (Surrogate Recovery)		%	73	72	59	61	NR70
N-MeFOSAA (Surrogate Recovery)		%	94	101	91	77	NR70
N-EtFOSAA (Surrogate Recovery)		%	124	114	102	83	NR70
N-MeFOSE (Surrogate Recovery)		%	88	100	86	92	NR70
N-EtFOSE (Surrogate Recovery)		%	98	71	79	69	NR70
4:2 FTS (Surrogate Recovery)		%	150	79	147	142	NR70
6:2 FTS (Surrogate Recovery)		%	107	86	108	111	NR70
8:2 FTS (Surrogate Recovery)		%	109	98	67	105	NR70
8:2 diPAP (Surrogate Recovery)		%	115	112	94	90	NR70
Dates							
Date extracted			9-NOV-2021	9-NOV-2021	9-NOV-2021	9-NOV-2021	
Date analysed			9-NOV-2021	9-NOV-2021	9-NOV-2021	9-NOV-2021	

N21/024358
to
N21/024363

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
High PFAS surrogate recoveries accepted - results corrected for recovery.
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.

[redacted]

Organics - NSW
Accreditation No. 198

11-NOV-2021

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/211102
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 02-NOV-2021
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	[redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N21/024363	0009_QC205_211028	WATER 28/10/21

Lab Reg No.			N21/024363				
Date Sampled			28-OCT-2021				
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
PFBA (375-22-4)		ug/L	0.23				NR70
PFPeA (2706-90-3)		ug/L	0.31				NR70
PFHxA (307-24-4)		ug/L	1.3				NR70
PFHpA (375-85-9)		ug/L	0.25				NR70
PFOA (335-67-1)		ug/L	0.64				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	0.66				NR70
PFHxS (355-46-4)		ug/L	6.2				NR70
PFHpS (375-92-8)		ug/L	0.50				NR70
PFOS (1763-23-1)		ug/L	76				NR70
PFNS (68259-12-1)		ug/L	0.033				NR70
PFBS (375-73-5)		ug/L	0.61				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	0.028				NR70

REPORT OF ANALYSIS

Lab Reg No.			N21/024363				
Date Sampled			28-OCT-2021				
		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)		%	118				NR70
PFPeA (Surrogate Recovery)		%	171				NR70
PFHxA (Surrogate Recovery)		%	86				NR70
PFHpA (Surrogate Recovery)		%	104				NR70
PFOA (Surrogate Recovery)		%	98				NR70
PFNA (Surrogate Recovery)		%	45				NR70
PFDA (Surrogate Recovery)		%	108				NR70
PFUdA (Surrogate Recovery)		%	85				NR70
PFDoA (Surrogate Recovery)		%	75				NR70
PFTeDA (Surrogate Recovery)		%	109				NR70
PFHxDA (Surrogate Recovery)		%	111				NR70
FOUEA (Surrogate Recovery)		%	92				NR70
PFBS (Surrogate Recovery)		%	96				NR70
PFHxS (Surrogate Recovery)		%	101				NR70
PFOS (Surrogate Recovery)		%	92				NR70
PFOSA (Surrogate Recovery)		%	74				NR70
N-MeFOSA (Surrogate Recovery)		%	72				NR70
N-EtFOSA (Surrogate Recovery)		%	72				NR70
N-MeFOSAA (Surrogate Recovery)		%	86				NR70
N-EtFOSAA (Surrogate Recovery)		%	96				NR70
N-MeFOSE (Surrogate Recovery)		%	116				NR70
N-EtFOSE (Surrogate Recovery)		%	82				NR70
4:2 FTS (Surrogate Recovery)		%	213				NR70
6:2 FTS (Surrogate Recovery)		%	174				NR70
8:2 FTS (Surrogate Recovery)		%	147				NR70
8:2 diPAP (Surrogate Recovery)		%	95				NR70
Dates							
Date extracted			9-NOV-2021				
Date analysed			9-NOV-2021				

[redacted]

Organics - NSW
Accreditation No. 198

11-NOV-2021

REPORT OF ANALYSIS

This Report supersedes reports: *RN1333718*

Measurement Uncertainty is available upon request.
Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/211102 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
				N21/024359				
PFBA (375-22-4)	NR70	0.05	<0.05	<0.05	<0.05	-	92	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	<0.02	<0.02	-	70	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	<0.01	<0.01	-	81	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	<0.01	<0.01	-	80	NA
PFOA (335-67-1)	NR70	0.01	<0.01	<0.01	<0.01	-	79	NA
PFNA (375-95-1)	NR70	0.01	<0.01	<0.01	<0.01	-	76	NA
PFDA (335-76-2)	NR70	0.01	<0.01	<0.01	<0.01	-	89	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	<0.01	<0.01	-	72	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	<0.01	<0.01	-	68	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	<0.02	<0.02	-	67	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	<0.02	<0.02	-	93	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	<0.02	<0.02	-	76	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	<0.05	<0.05	-	53	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	<0.01	<0.01	-	78	NA
PFBS (375-73-5)	NR70	0.01	<0.01	<0.01	<0.01	-	80	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	<0.01	<0.01	-	83	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	<0.01	<0.01	-	78	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	<0.01	<0.01	-	81	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	<0.02	<0.02	-	83	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	<0.01	<0.01	-	85	NA
PFDS (335-77-3)	NR70	0.01	<0.01	<0.01	<0.01	-	76	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	<0.01	<0.01	-	78	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	<0.02	<0.02	-	75	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	<0.02	<0.02	-	72	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	<0.01	<0.01	-	84	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	<0.01	<0.01	-	69	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	<0.05	<0.05	-	75	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	<0.05	<0.05	-	107	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	<0.01	<0.01	-	86	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	<0.01	<0.01	-	99	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	<0.01	<0.01	-	69	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	<0.01	<0.01	-	69	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	<0.02	<0.02	-	79	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: **11/11/2021**

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/211102 **Sample Matrix:** Solid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		mg/kg	mg/kg	mg/kg	mg/kg	%	%	%
PFBA (375-22-4)	NR70	0.002	<0.002	NA	NA	NA	113	NA
PFPeA (2706-90-3)	NR70	0.002	<0.002	NA	NA	NA	109	NA
PFHxA (307-24-4)	NR70	0.001	<0.001	NA	NA	NA	101	NA
PFHpA (375-85-9)	NR70	0.001	<0.001	NA	NA	NA	103	NA
PFOA (335-67-1)	NR70	0.001	<0.001	NA	NA	NA	91	NA
PFNA (375-95-1)	NR70	0.001	<0.001	NA	NA	NA	90	NA
PFDA (335-76-2)	NR70	0.001	<0.001	NA	NA	NA	88	NA
PFUdA (2058-94-8)	NR70	0.002	<0.002	NA	NA	NA	87	NA
PFDoA (307-55-1)	NR70	0.002	<0.002	NA	NA	NA	121	NA
PFTrDA (72629-94-8)	NR70	0.002	<0.002	NA	NA	NA	58	NA
PFTeDA (376-06-7)	NR70	0.002	<0.002	NA	NA	NA	110	NA
PFHxDA (67905-19-5)	NR70	0.002	<0.002	NA	NA	NA	122	NA
PFODA (16517-11-6)	NR70	0.005	<0.005	NA	NA	NA	98	NA
FOUEA (70887-84-2)	NR70	0.001	<0.001	NA	NA	NA	101	NA
PFBS (375-73-5)	NR70	0.001	<0.001	NA	NA	NA	98	NA
PFPeS (2706-91-4)	NR70	0.001	<0.001	NA	NA	NA	108	NA
PFHxS (355-46-4)	NR70	0.001	<0.001	NA	NA	NA	111	NA
PFHpS (375-92-8)	NR70	0.001	<0.001	NA	NA	NA	105	NA
PFOS (1763-23-1)	NR70	0.002	<0.002	NA	NA	NA	117	NA
PFNS (68259-12-1)	NR70	0.001	<0.001	NA	NA	NA	106	NA
PFDS (335-77-3)	NR70	0.001	<0.001	NA	NA	NA	104	NA
PFOSA (754-91-6)	NR70	0.001	<0.001	NA	NA	NA	98	NA
N-MeFOSA (31506-32-8)	NR70	0.002	<0.002	NA	NA	NA	102	NA
N-EtFOSA (4151-50-2)	NR70	0.002	<0.002	NA	NA	NA	103	NA
N-MeFOSAA (2355-31-9)	NR70	0.002	<0.002	NA	NA	NA	106	NA
N-EtFOSAA(2991-50-6)	NR70	0.002	<0.002	NA	NA	NA	109	NA
N-MeFOSE (24448-09-7)	NR70	0.005	<0.005	NA	NA	NA	76	NA
N-EtFOSE (1691-99-2)	NR70	0.005	<0.005	NA	NA	NA	67	NA
4:2 FTS (757124-72-4)	NR70	0.001	<0.001	NA	NA	NA	98	NA
6:2 FTS (27619-97-2)	NR70	0.001	<0.001	NA	NA	NA	92	NA
8:2 FTS (39108-34-4)	NR70	0.001	<0.001	NA	NA	NA	94	NA
10:2 FTS (120226-60-0)	NR70	0.002	<0.002	NA	NA	NA	84	NA
8:2 diPAP (678-41-1)	NR70	0.002	<0.002	NA	NA	NA	97	NA

Results expressed in percentage (%) or mg/kg 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: **10/11/2021**

Australian Government
Department of Industry, Science, Energy and Resources

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [redacted]

Customer: AECOM AUSTRALIA PTY LTD

Address: LEVEL 8
FORTITUDE VALLEY QLD 4006

Email: [redacted]

Telephone:

Fax:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: [redacted]

Address: 105 Delhi Road, North Ryde, NSW
NSW 2113

Email: [redacted]

Telephone:

Fax:

SAMPLE DETAILS

NMI Job Name: **AECO06/211102**

Total No. of Samples: **6**

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N21/024358	9-NOV-2021	0009_QC200_211027	WATER 27/10/21
N21/024359	9-NOV-2021	0009_QC201_211027	WATER 27/10/21
N21/024360	9-NOV-2021	0009_QC202_211027	SOIL 27/10/21
N21/024361	9-NOV-2021	0009_QC203_211027	WATER 27/10/21
N21/024362	9-NOV-2021	0009_QC204_211028	WATER 28/10/21
N21/024363	9-NOV-2021	0009_QC205_211028	WATER 28/10/21

SAMPLE RECEIVED CONDITION

Date samples received:	2-NOV-2021
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	60612487_4_1
Temperature of samples:	Chilled
Comments:	ALL OK
Mode of Delivery:	Courier

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.

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

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/211215
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 15-DEC-2021
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	[redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N21/027874	0009_QC200_211208	SOIL 08/12/21 08:45

Lab Reg No.		N21/027874				
Date Sampled		08-DEC-2021				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	mg/kg	<0.002				NR70
PFPeA (2706-90-3)	mg/kg	<0.002				NR70
PFHxA (307-24-4)	mg/kg	<0.001				NR70
PFHpA (375-85-9)	mg/kg	<0.001				NR70
PFOA (335-67-1)	mg/kg	<0.001				NR70
PFNA (375-95-1)	mg/kg	<0.001				NR70
PFDA (335-76-2)	mg/kg	<0.001				NR70
PFUdA (2058-94-8)	mg/kg	<0.002				NR70
PFDoA (307-55-1)	mg/kg	<0.002				NR70
PFTrDA (72629-94-8)	mg/kg	<0.002				NR70
PFTeDA (376-06-7)	mg/kg	<0.002				NR70
PFHxDA (67905-19-5)	mg/kg	<0.002				NR70
PFODA (16517-11-6)	mg/kg	<0.005				NR70
FOUEA (70887-84-2)	mg/kg	<0.001				NR70
PFBS (375-73-5)	mg/kg	<0.001				NR70
PFPeS (2706-91-4)	mg/kg	<0.001				NR70
PFHxS (355-46-4)	mg/kg	<0.001				NR70
PFHpS (375-92-8)	mg/kg	<0.001				NR70
PFOS (1763-23-1)	mg/kg	<0.002				NR70
PFNS (68259-12-1)	mg/kg	<0.001				NR70
PFDS (335-77-3)	mg/kg	<0.001				NR70
PFOSA (754-91-6)	mg/kg	<0.001				NR70
N-MeFOSA (31506-32-8)	mg/kg	<0.002				NR70
N-EtFOSA (4151-50-2)	mg/kg	<0.002				NR70
N-MeFOSAA (2355-31-9)	mg/kg	<0.002				NR70
N-EtFOSAA(2991-50-6)	mg/kg	<0.002				NR70
N-MeFOSE (24448-09-7)	mg/kg	<0.005				NR70
N-EtFOSE (1691-99-2)	mg/kg	<0.005				NR70
4:2 FTS (757124-72-4)	mg/kg	<0.001				NR70
6:2 FTS (27619-97-2)	mg/kg	<0.001				NR70

REPORT OF ANALYSIS

Lab Reg No.		N21/027874				
Date Sampled		08-DEC-2021				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
8:2 FTS (39108-34-4)	mg/kg	<0.001				NR70
10:2 FTS (120226-60-0)	mg/kg	<0.002				NR70
8:2 diPAP (678-41-1)	mg/kg	<0.002				NR70
PFBA (Surrogate Recovery)	%	129				NR70
PFPeA (Surrogate Recovery)	%	130				NR70
PFHxA (Surrogate Recovery)	%	123				NR70
PFHpA (Surrogate Recovery)	%	123				NR70
PFOA (Surrogate Recovery)	%	128				NR70
PFNA (Surrogate Recovery)	%	124				NR70
PFDA (Surrogate Recovery)	%	132				NR70
PFUdA (Surrogate Recovery)	%	117				NR70
PFDoA (Surrogate Recovery)	%	125				NR70
PFTeDA (Surrogate Recovery)	%	110				NR70
PFHxDA (Surrogate Recovery)	%	111				NR70
FOUEA (Surrogate Recovery)	%	95				NR70
PFBS (Surrogate Recovery)	%	123				NR70
PFHxS (Surrogate Recovery)	%	117				NR70
PFOS (Surrogate Recovery)	%	120				NR70
PFOSA (Surrogate Recovery)	%	112				NR70
N-MeFOSA (Surrogate Recovery)	%	106				NR70
N-EtFOSA (Surrogate Recovery)	%	104				NR70
N-MeFOSAA (Surrogate Recovery)	%	129				NR70
N-EtFOSAA (Surrogate Recovery)	%	121				NR70
N-MeFOSE (Surrogate Recovery)	%	91				NR70
N-EtFOSE (Surrogate Recovery)	%	87				NR70
4:2 FTS (Surrogate Recovery)	%	105				NR70
6:2 FTS (Surrogate Recovery)	%	120				NR70
8:2 FTS (Surrogate Recovery)	%	132				NR70
8:2 diPAP (Surrogate Recovery)	%	103				NR70
Dates						
Date extracted		20-DEC-2021				
Date analysed		20-DEC-2021				

N21/027874
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

Lab Reg No.		N21/027874				
Date Sampled		08-DEC-2021				
	Units					Method

[redacted]

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

22-DEC-2021

Lab Reg No.		N21/027874				
Date Sampled		08-DEC-2021				
	Units					Method
Trace Elements						
Total Solids	%	48.4				NT2_49
Dates						
Date extracted		21-DEC-2021				
Date analysed		22-DEC-2021				

[redacted]
Accreditation No. 198

22-DEC-2021

All results are expressed on a dry weight basis.

REPORT OF ANALYSIS

Report No. RN1338033

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/211215
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 15-DEC-2021
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	[redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N21/027875	0009_QC201_211208	WATER 08/12/21 09:58

Lab Reg No.			N21/027875				
Date Sampled			08-DEC-2021				
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
PFBA (375-22-4)		ug/L	<0.05				NR70
PFPeA (2706-90-3)		ug/L	0.078				NR70
PFHxA (307-24-4)		ug/L	0.098				NR70
PFHpA (375-85-9)		ug/L	0.033				NR70
PFOA (335-67-1)		ug/L	0.060				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	0.029				NR70
PFHxS (355-46-4)		ug/L	0.25				NR70
PFHpS (375-92-8)		ug/L	0.048				NR70
PFOS (1763-23-1)		ug/L	1.5				NR70
PFNS (68259-12-1)		ug/L	<0.01				NR70
PFBS (375-73-5)		ug/L	0.030				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	0.091				NR70

REPORT OF ANALYSIS

Lab Reg No.			N21/027875				
Date Sampled			08-DEC-2021				
		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)		%	111				NR70
PFPeA (Surrogate Recovery)		%	118				NR70
PFHxA (Surrogate Recovery)		%	105				NR70
PFHpA (Surrogate Recovery)		%	104				NR70
PFOA (Surrogate Recovery)		%	113				NR70
PFNA (Surrogate Recovery)		%	105				NR70
PFDA (Surrogate Recovery)		%	101				NR70
PFUdA (Surrogate Recovery)		%	111				NR70
PFDoA (Surrogate Recovery)		%	105				NR70
PFTeDA (Surrogate Recovery)		%	109				NR70
PFHxDA (Surrogate Recovery)		%	87				NR70
FOUEA (Surrogate Recovery)		%	85				NR70
PFBS (Surrogate Recovery)		%	114				NR70
PFHxS (Surrogate Recovery)		%	103				NR70
PFOS (Surrogate Recovery)		%	101				NR70
PFOSA (Surrogate Recovery)		%	60				NR70
N-MeFOSA (Surrogate Recovery)		%	60				NR70
N-EtFOSA (Surrogate Recovery)		%	57				NR70
N-MeFOSAA (Surrogate Recovery)		%	121				NR70
N-EtFOSAA (Surrogate Recovery)		%	136				NR70
N-MeFOSE (Surrogate Recovery)		%	70				NR70
N-EtFOSE (Surrogate Recovery)		%	69				NR70
4:2 FTS (Surrogate Recovery)		%	99				NR70
6:2 FTS (Surrogate Recovery)		%	124				NR70
8:2 FTS (Surrogate Recovery)		%	106				NR70
8:2 diPAP (Surrogate Recovery)		%	127				NR70
Dates							
Date extracted			21-DEC-2021				
Date analysed			21-DEC-2021				

N21/027875
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

Lab Reg No.			N21/027875				
Date Sampled			08-DEC-2021				
		Units					Method

[redacted]

Organics - NSW
Accreditation No. 198

22-DEC-2021

ACCREDITED FOR TECHNICAL COMPETENCE

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.

This Report supersedes reports: *RN1338011*

Measurement Uncertainty is available upon request.
Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

Appendix F

Equipment Calibration Certificates

AirMet Scientific P/L
135 Sydney Street
Mackay
QLD 4740, Australia
Tel: 07 4951 7500
Fax: 07 4951 7575

Calibration Certificate

This document certifies that the instrument detailed has been calibrated to the parameters

Certificate Print Date: 16-Nov-2020
Calibration Date: 16-Nov-2020
Next Calibration Due: 16-Nov-2021

Call ID / Order No: 246888
Job No / Pack No: S2468880001

Customer: AECOM Australia Pty Ltd (Townsville)-ID 407250
Serial No: 18K102334
Description: Xylem ProDSS Handheld, No GPS

Calibration Summary

Frequency: 1 Years
Temp: 24.2°C
Humidity: 45%
As Found: Out of Tolerance
Certificate: S2468880001
Result: Pass

Desc	As Found Actual	As Found Result	As Left (Cal Status) Actual	As Left (Cal Status) Result
PH4 (4.00)	3.91	Pass	4.0	Pass
PH7 (7.01)	6.85	Pass	7.01	Pass
Cond (2707uS/cm)	2773.0	Fail	2707.0	Pass
DO (0.0%)	0.0	Pass	0.0	Pass
Turbidity (100NTU)	110.73	Fail	99.42	Pass
ORP (231.9mV)	277.3	Fail	231.7	Pass

Standard Used Equip ID	Description	Valid Until	Cert

Completed By: [redacted]

Signed: [redacted]

Multi Parameter Water Meter

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Instrument **YSI Quatro Pro Plus**
Serial No. **18L102023**

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.02	**NIST**	368681	pH 7.02
2. pH 4.00		pH 4.00	**NIST**	368314	pH 4.00
3. mV		233.0mV	**NIST**	358632/358822	233.0mV
4. EC		2760uS	**NIST**	366823	2760uS
6. D.O		0%	**NIST**	11171	0%
7. Temp	901	20.9°C	**NIST**	Testomini901	20.9°C

Calibrated by: [redacted]

Calibration date: **5/10/2021**

Next calibration due: **5/04/2022**

Oil / Water Interface Meter

Instrument **Interface Meter (30M)**
Serial No. **349173**

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
		✓	
Tape Check	Cleaned	✓	
	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Calibrated by: [redacted]

Calibration date: **29/09/2021**

Next calibration due: **29/12/2021**

Solinst Model 122 Interface Meter

Instrument **Interface Meter (30M)**
Serial No. **312512**

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
		✓	
Tape Check	Cleaned	✓	
Connectors	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Calibrated by: [redacted]

Calibration date: **29/09/2021**

Next calibration due: **29/12/2021**

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP	Project Number:	60612487
Project Location:	HMAS CAIRNS	Client:	DEFENCE
PM Name:	[redacted]	Fieldwork Staff Name:	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	AECOM
Make and Model:	YSI PRODSS
Serial Number:	18K102334

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	27/10/21 0745				
Parameter	Acidity		Conductivity	ORP	Dissolved Oxygen
Units	pH	pH	µS/cm	mV ~~ppm~~	~~ppm~~ %
Calibration Standard Concentration:	7.0	4.0	2918	252.7	100
Calibration Reading:	7.16	4.25	2608	259.3	101.9
Calibration Temperature:	28.0	27.7	27.6	8.4	20.5

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	28/10/21 0700				
Parameter	Acidity		Conductivity	ORP	Dissolved Oxygen
Units	pH	pH	µS/cm	mV ~~ppm~~	~~ppm~~ %
Calibration Standard Concentration:	7.0	4.01	2918	236.5	100
Bump Test Reading:	7.31	4.20	3221	228.4	96.7
Bump Test Temperature:	28.5	28.7	28.4	20.8	24.4

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☐ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[redacted] — Fieldwork Staff Signature

28/10/21 — Date

Distribution: Project Central File

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP	Project Number:	60612487
Project Location:	HMAS CAIRNS	Client:	DEFENCE
PM Name:	[redacted]	Fieldwork Staff Name:	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldwork.

INSTRUMENT DETAILS

Supplier:	AIRNET
Make and Model:	YSI ProPlus
Serial Number:	18L102023

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	07:50 27/10/21				
Parameter	Acidity		Conductivity	Dissolved Oxygen	ORP
Units	pH	pH	µS/cm	~~ppm~~ %	~~mV~~ mV
Calibration Standard Concentration:	7	4	2918	100	244.9
Calibration Reading:	7.05	4.05	2777	96.3	241.9
Calibration Temperature:	28.0	27.9	27.6	26.1	15.1

ONGOING CHECKS

~~BUMP TEST WITH CALIBRATION SOLUTION~~ Calibration

Date and Time:	07:10 28/10/21				
Parameter	Acidity		Conductivity	Dissolved Oxygen	ORP
Units	pH	pH	µS/cm	~~ppm~~ %	~~mV~~ mV
Calibration Standard Concentration:	7	4	2918	100	236.2
Bump Test Reading:	6.93	4.08	2854	96.2	233.2
Bump Test Temperature:	27.9	27.9	27.6	24.9	21.0

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☑ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[redacted] — Fieldwork Staff Signature

27/10/21 — Date

Distribution: Project Central File

[redacted]

28/10/21

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 15K101083

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.00		372012	pH 7.01
2. pH 4.00		pH 4.00		368314	pH 4.01
3. ORP		234.3mV		375760/367457	232.0mV
4. EC		2760uS		369734	2634uS
5. D.O		100.00%		11171	99.7% - 758.9mmHg
6. Temp		22.7oC		MultiTherm 09000528	22.6oC

Calibrated by: [redacted]

Calibration date: 25-Nov-21

Next calibration due: 25-May-22

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP - HMAS CAIS	**Project Number:**	60612487 - 4.1
Project Location:	HMAS CAIS	**Client:**	DEPT OF DEFENCE
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	AIRMET
Make and Model:	YSI ProPlus.
Serial Number:	15K101083.

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	8/12/21 08:50				
Parameter	Acidity		Conductivity	ORP	Dissolved Oxygen
Units	pH	pH	µS/cm	~~mV~~ ~~ppm~~	~~ppm~~ %
Calibration Standard Concentration:	7	4	2918	220.5	100
Calibration Reading:	~~7.04~~ 7.04	4.01	2919	228.4	110
Calibration Temperature:	27.2	27.2	27.9	27.7	27

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☑ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[redacted]

Fieldwork Staff Signature

8/12/21

Date

Distribution: Project Central File

Prepared for
Department of Defence
ABN: 68 706 814 312

Sampling Event Factual Report - April 2022

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

26-Aug-2022
Doc No. 60612487_RP67_20220826_2

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Delivering a better world

Sampling Event Factual Report - April 2022

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

Client: Department of Defence

ABN: 68 706 814 312

Prepared by

AECOM Australia Pty Ltd
Level 5, 7 Tomlins Street, South Townsville Qld 4810, PO Box 5423, Townsville QLD 4810, Australia
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ABN 20 093 846 925

26-Aug-2022

Job No.: 60612487

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

Quality Information

Document	Sampling Event Factual Report - April 2022
Ref	60612487_RP67_20220826_2
Date	26-Aug-2022
Prepared by	[redacted]
Reviewed by	[redacted]

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
0	13-Jun-2022	Draft for Review	[redacted] Associate Director - Contaminated Land	
1	22-Jul-2022	Draft for Final Review	[redacted] Associate Director Contaminated Land, ANZ NWA	
2	26-Aug-2022	Final Issue	[redacted] Associate Director Contaminated Land, ANZ NWA	[redacted]

Table of Contents

List of Tables (in Text)

List of Figures (in Appendix A)

List of Tables (in Appendix B)

Abbreviations

Term	Description
AECOM	AECOM Australia Pty Ltd
ALS	Australian Laboratory Services
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure, as amended (2013)
DCMM	Defence Contamination Management Manual
DO	Dissolved oxygen
DoH	Department of Health
EC	Electrical conductivity
HEPA	Heads of Environmental Protection Agencies
HMAS	Her Majesty's Australian Ship
LOR	Limit of reporting
mAHD	metres Australian Height Datum
mbtoc	metres below top of casing
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPC	National Environment Protection Council
NHMRC	National Health and Medical Research Council
NMI	National Measurement Institute
NSW	New South Wales
OMP	Ongoing Monitoring Plan
ORP	Oxidation-reduction potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance/Quality Control
QLD	Queensland
RAN	Royal Australian Navy
SAQP	Sampling Analysis Quality Plan
SWL	Standing Water Level
WWII	World War II

Unit	Definition	Unit	Definition
°C	Degrees Celsius	mg	Milligrams
L	Litre	mm	Millimetre
µS	Microsiemens	cm	Centimetre
kg	Kilogram	mV	Millivolts
m	Metre	µg	Micrograms

1.0 Introduction

1.1 General

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) outlined in the *PFAS Management Area Plan (PMAP)* (Department of Defence, 2020) at Her Majesty's Australian Ship (HMAS) Cairns and the Former World War II Royal Australian Navy (WWII RAN) Fuel Installation (the 'Site') located in Cairns, Queensland. For this report, 'on-Base' will refer to locations within the HMAS Cairns Management Area, and 'off-Base' will refer to sampling locations within the Former WWII RAN Fuel Installation Management Area. The HMAS Cairns Management Area comprises HMAS Cairns, the seabed area and the area situated down hydraulic gradient (east) of HMAS Cairns (including Trinity Inlet). The Former WWII RAN Fuel Installation Management Area includes Cairns Botanic Gardens, Centenary Lakes, Saltwater Creek and private residential properties along Greenslopes Street and Collins Avenue, as defined in the PMAP (Department of Defence, 2020).

The location of the Site and the Management Areas are shown in **Figure 1** in **Appendix A**. The OMP for HMAS Cairns and the Former WWII RAN Fuel Installation includes biannual groundwater, surface water and sediment sampling events in October 2020, April 2021, October 2021, April 2022, October 2022 and April 2023.

These sampling events include the following:

- High and low tide groundwater sampling of 15 monitoring wells on-Base at HMAS Cairns.
- Groundwater sampling of three monitoring wells off-Base within the Former WWII RAN Fuel Installation Management Area.
- Sediment sampling at six locations on-Base at HMAS Cairns with co-located surface water sampling when water is present.
- Sediment sampling at three locations off-Base within the Former WWII RAN Fuel Installation Management Area with co-located surface water sampling when water is present.

Following each sampling event, factual reports will be prepared. Annual interpretative reports will be prepared following the completion of each 12-month sampling period. This sampling event factual report has been prepared to report the results of the post-wet season sampling event completed in April 2022, specifically highlighting first time detections and/or new exceedances of human health and ecological screening criteria for perfluorooctane sulfonate (PFOS) + perfluorohexane sulfonic acid (PFHxS) and / or perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the *PFAS OMP Factual Report Guidance,* v0.2, May 2021 (Department of Defence, 2021).

1.2 Objectives

The objectives of the OMP program are to:

- Implement the OMP prepared as part of the PMAP.
- Collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration and transport of PFAS at HMAS Cairns and the Former WWII RAN Fuel Installation.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PMAP.

The objective of this phase of works is to implement the scope of works for the April 2022 sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2022).

2.0 Scope of Work

The sampling event at HMAS Cairns and the Former WWII RAN Fuel Installation was completed in general accordance with the SAQP (AECOM, 2022). In summary, the scope of works for this sampling event included:

- Obtaining permission to work in public spaces where some sampling locations are situated.
- Review of the SAQP prior to monitoring event to ensure compliance with the following:
  - PFAS National Environmental Management Plan (NEMP) (Heads of Environmental Protection Agencies [HEPA], 2020)
  - National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (ASC NEPM, 2013)
  - Defence Routine Environment Water Quality Monitoring Manual (2018)
  - AS/NZ 5667:1998 Water quality – Sampling
  - Australian and New Zealand Guidelines for Fresh and Marine Water Quality; and
  - Relevant State regulatory guidelines.
- Repair of monitoring well headworks at MW016.
- Gauging of groundwater level in monitoring wells prior to collection of samples (refer to **Table 1** below, and **Figure 2A** and **Figure 2B** in **Appendix A** for specific locations).
- Collection of groundwater samples from 18 locations including 15 locations at HMAS Cairns at both high and low tides, and three locations at the Former WWII RAN Fuel Installation (refer to **Table 1** below, and **Figure 2A** and **Figure 2B** in **Appendix A**). It is noted that two groundwater monitoring wells (MW011 and MW018) were sampled on the low tide but a laboratory error resulted in no analytical data being reported.
- Collection of co-located surface water and sediment samples at nine locations including six locations at HMAS Cairns and three locations at the Former WWII RAN Fuel Installation (refer to **Table 2** and **Table 3** below, and **Figure 2A** and **Figure 2B** in **Appendix A**).
- Collecting intra- and inter-laboratory duplicate samples at a rate of one in 10 primary samples, one rinsate sample per fieldwork day, and one trip blank per sample batch.
- Analysis of all samples for a suite of 28 PFAS analytes at the standard limit of reporting (LOR).
- Data management of all OMP field and laboratory data in the Defence ESdat database.
- Preparation of this Sampling Event Factual Report.

Table 1 Groundwater Sampling Locations

Locations	Monitoring Well ID
HMAS Cairns Management Area	MW001, MW002, MW003, MW004, MW005, MW007, MW009, MW011, MW013, MW014, MW015, MW016, MW017, MW018, MW019
Former WWII RAN Fuel Installation Management Area	MW031, MW035, MW036

Table 2 Surface Water Sampling Locations

Locations	Location ID
HMAS Cairns Management Area	SW030, SW031, SW032, SW033, SW034, SW035
Former WWII RAN Fuel Installation Management Area	SW036, SW100, SW101

Table 3 Sediment Sampling Locations

Locations	Location ID
HMAS Cairns Management Area	SD030, SD031, SD032, SD033, SD034, SD035
Former WWII RAN Fuel Installation Management Area	SD036, SD100, SD101

3.0 Methodology

The methodology used for the April 2022 sampling event was in accordance with the SAQP (AECOM, 2022) as summarised below.

3.1 Groundwater Sampling Methodology

Table 4 Groundwater Sampling Methodology

Item	Details
Groundwater gauging	The depth to groundwater was measured in each monitoring well prior to the installation of HydraSleeves™ and immediately prior to collection of groundwater samples using an interface probe (IP).
Water quality parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and water quality observations were recorded for all groundwater samples. Equipment calibration certificates are provided in **Appendix F**.
Sampling methodology	Groundwater samples were collected from monitoring wells using no-purge methodology HydraSleeves™, which were installed within the screened interval of each well (based on a review of the well construction log) the week prior to the sampling round (as stated in **Table T1**, **Appendix B**). Once the first tidal sampling round was completed at HMAS Cairns, new HydraSleeves™ were deployed at the screened interval depth in preparation for the second tidal sampling round. New HydraSleeves™ were not deployed following the second tidal sampling round at HMAS Cairns or following the single sampling round at the Former WWII RAN Fuel Installation to avoid conflict with other monitoring programs. The groundwater sample from MW036 was collected using a decontaminated steel bailer from the screened interval due to insufficient volume of water collected from the HydraSleeve™.

3.2 Surface Water Sampling Methodology

Table 5 Surface Water Sampling Methodology

Item	Details
Water quality parameters	Temperature, EC, DO, ORP, pH and observations of water quality were recorded for all surface water samples at the time of sampling.
Sampling methodology	Samples were collected from immediately below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a decontaminated, stainless steel sampling cup was lowered into the water and collected surface water was poured into a new, laboratory-supplied container with the cap immediately applied once the container was full.

3.3 Sediment Sampling Methodology

Table 6 Sediment Sampling Methodology

Item	Details
Sampling Collection Methodology	Samples representative of potentially deposited sediments were collected from within the water body (if possible) using a decontaminated steel trowel or a gloved hand. At each location, a new, laboratory supplied container was used for each sample with the cap immediately applied once the container was full.
Logging	Sediment characteristics were recorded for each sample.

3.4 Quality Assurance/ Quality Control and Analysis

The Quality Assurance/Quality Control (QA/QC) requirements and analysis completed for the OMP sampling event are summarised in **Table 7**, below.

Table 7 QAQC and Analysis for OMP

Item	Details
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits), trip blanks, and rinsate samples. Refer to **Appendix C** for assessment of QA/QC sample data.
Sample Analysis	All primary samples were submitted for analysis for the PFAS suite using the standard levels of detection. Australian Laboratory Services (ALS) Environmental Brisbane, Queensland (QLD) was used as the primary laboratory. The National Measurement Institute (NMI) of Sydney, New South Wales (NSW) was used as the secondary laboratory. ALS and NMI methods for groundwater analyses are certified by the National Association of Testing Authorities (NATA). Chain of Custody Forms are presented in **Appendix D**. Laboratory certificates are presented in **Appendix E**.

3.5 Adopted Screening Criteria

Adopted screening criteria references national guidance in the form of the PFAS NEMP, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset include the following:

- PFAS NEMP, (HEPA, 2020).
- Department of Health (DoH), 2019. *Health Based Guidance Values for PFAS for use in site investigations in Australia.* April 2017 [updated September 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 1999, Schedule B1*, as amended in 2013 (ASC NEPM, 2013).

The adopted PFAS screening criteria to assess the data generated as part of the ongoing monitoring program are presented in **Table 8** below.

Table 8 Summary of Adopted Screening Criteria

Pathway	Compound	Criteria	Comment / Reference
Human Health Receptors			
Recreational use – surface water	PFOS + PFHxS	2 µg/L	The values are from NHMRC (2019). *All surface water results will be compared to these criteria.*
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater and marine (95% species protection values)	PFOS	0.13 µg/L	The values are from the PFAS NEMP (HEPA, 2020). *All surface water and groundwater results will be compared to these criteria.*
	PFOA	220 µg/L	

There are no human health or ecological guideline values available for sediment.

3.6 Data Quality Objectives and Data Validation

The data quality objectives and data quality indicators adopted for these works are presented in the SAQP (AECOM, 2022).

Data validation assessment is provided in **Appendix C**.

Data validation procedures employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) (Defence, 2018 as amended 2021) Annex L requirements.

3.7 Deviations from the SAQP

Table 9 lists the deviations from the SAQP (AECOM, 2022) during this sampling event.

Table 9 Deviations from the SAQP during sampling event for April 2022

SAQP	April 2022 Sampling Event	Impact of Deviation
Sampling location MW011 and MW018	Groundwater was sampled at these locations, however, an error by the laboratory resulted in no analytical data being available for these sample locations.	Results for the high tide sampling event were reported and therefore the impact of the laboratory error has been limited to two samples in the low tide sampling event.
Laboratory analysis to be completed at standard limit of reporting.	LOR values were adjusted due to sample matrix interference or high analyte concentrations for the following samples: MW002_HT MW002_LT MW004_HT MW005_HT MW007_HT MW007_LT MW014_HT	No impact to this sampling event as all samples reported a result and were able to be compared to nominated guidelines.

4.0 Well Network Maintenance

The flush mounted gatic cover was replaced at MW016 within the HMAS Cairns PFAS OMP network on 25 March 2022, by AECOM. Prior to the works a service locator was engaged to ensure avoidance of services for safety and property protection purposes during digging around the headworks of the well. A photograph of the completed gatic cover is provided below.

Plate 1 Replacement gatic cover at MW016

5.0 Field Observations and Results

The April 2022 sampling event was completed between 25 March 2022 and 5 April 2022, commencing with groundwater gauging and deployment of HydraSleeves™ for low tide sampling. The results are summarised in following sections.

Construction activities associated with building refurbishment were noted to be occurring on the Estate at the time of sampling. These works did not affect the sampling locations or environmental conditions associated with the sampling.

5.1 Groundwater

5.1.1 Observations and Field Measurements

Table 10 Groundwater Observations and Field Measurements

Feature	Details
Access	All monitoring wells were accessible, and samples were collected from all locations.
Monitoring Well Network	One monitoring well (MW015) gatic cover was noted to be damaged during the fieldwork. The damage included a broken bolt and lug. The damage did not impact sampling or the seal of the well cap. One monitoring well (MW017) had water ingress within the gatic which extended over the height of the well casing. The water was removed prior to HydraSleeve™ deployment. At monitoring well MW036, insufficient water was present for HydraSleeve™ deployment. Therefore, a decontaminated steel bailer was used to collect the sample.
Tidal Summary	Tidal samples were collected on 4 April 2022 (low tide) and 5 April 2022 (high tide). The Bureau of Meteorology (BOM, 2022) tidal summary for Cairns, located at (16°56'S, 145°47'E) was: • Low tide at 16:39, 4 April 2022 with a height of 1.11 m • High tide at 10:06, 5 April 2022 with a height of 2.11 m.
Depth to Groundwater	Main Sampling Round Depth to groundwater at low tide was between 0.671 (MW001) and 3.862 (MW015) metres below top of casing (mbtoc) and groundwater elevations were between -1.347 (MW015) and 1.915 (MW016) metres Australian Height Datum (mAHD). Depth to groundwater at HMAS Cairns at high tide was between 0.664 (MW009) and 2.208 (MW015) mbtoc and groundwater elevations were between 0.307 (MW015) and 1.995 (MW009) mAHD. At the Former WWII RAN Fuel Installation depth to groundwater was between 0.968 (MW035) and 3.259 (MW031) mbtoc and groundwater elevations were between 1.346 (MW036) and 3.801 (MW031) mAHD. Groundwater gauging data are presented in **Table T1** in **Appendix B**.

Feature	Details
Field Observations	Groundwater from nine monitoring well locations at HMAS Cairns at low tide (MW002, MW003, MW004, MW005, MW011, MW013, MW014, MW016 and MW019) had a sulphurous odour. Groundwater from five monitoring well locations at HMAS Cairns at high tide (MW004, MW005, MW007, MW013 and MW019) had a sulphurous odour. Groundwater colour ranged from clear, to yellow, brown and grey. No other visible or olfactory indications of contamination were observed during the sampling of the monitoring wells. Field observations are presented **Table T1** in **Appendix B**.
Groundwater Flow Direction	Groundwater contours and inferred groundwater flow directions at HMAS Cairns at both high and low tide, and the Former WWII RAN Fuel Installation in April 2022 are shown on **Figure 3A** and **Figure 3B** in **Appendix A**. Groundwater is inferred to flow predominantly in an easterly direction at HMAS Cairns towards Trinity Inlet at both high and low tides. The inferred groundwater flow direction at the Former WWII RAN Fuel Installation is to the south-east towards Saltwater Creek.
Water quality parameters	Groundwater quality parameters were measured prior to collecting groundwater samples. The readings are presented in **Table T1** in **Appendix B** and are summarised below. At HMAS Cairns: • DO results ranged between 0.24 mg/L (MW019) and 5.43 mg/L (MW015) at low tide, and between 0.29 mg/L (MW019) and 5.36 mg/L (MW017) at high tide indicating low to well oxygenated conditions. • EC ranged from 1,006 µS/cm (MW011) to 86,854 µS/cm (MW016) at low tide, and from 3,317 µS/cm (MW011) to 69,422 µS/cm (MW016) at high tide indicating saline conditions in groundwater. • pH ranged from 6.52 (MW019) to 7.86 (MW011) at low tide, and from 6.51 (MW019) to 7.68 (MW018) at high tide indicating slightly acidic to slightly alkaline conditions. • ORP ranged from -320.1 mV (MW019) to-99.6 mV (MW017) at low tide, and from -306.1 mV (MW019) to -15.5 mV (MW017) at high tide, indicating mildly oxidising to mildly reducing conditions. • Temperature ranged from 29.2 °C (MW009) to 34.3 °C (MW001) at low tide, and from 29.0 °C (MW015) to 33.5 °C (MW001) at high tide. At the Former WWII RAN Fuel Installation: • DO results ranged between 2.68 mg/L (MW031) and 4.54 mg/L (MW036) indicating moderate oxygenated conditions. • EC ranged from 555 µS/cm (MW031) to 1,177 µS/cm (MW035) indicating fresh to brackish groundwater conditions. • pH ranged from 5.96 (MW035) to 6.61 (MW031) indicating slightly acidic conditions. • ORP ranged from -22.8 mV (MW031) to 37.6 mV (MW035) indicating slightly reducing to oxidising conditions. • Temperature ranged from 25.9°C (MW036) to 27.5°C (MW031).
Weather Conditions	Weather was hot and cloudy during the sampling event.

5.1.2 Analytical Results

28 of the 29 groundwater samples analysed during this event reported concentrations of PFAS compounds above the laboratory LOR. The groundwater analytical results from this sampling event are presented in **Table T2** in **Appendix B**. A total of 22 samples from HMAS Cairns and all three samples from the Former WWII RAN Fuel Installation exceeded the adopted ecological guideline values for PFOS.

Overall, PFAS concentrations between high and low tide sampling were generally within the same order of magnitude.

There were no first-time detections or new exceedances of guideline values detected in groundwater during this sampling event. Historical groundwater results are presented in **Table T7**, **Appendix B**.

5.2 Surface Water

5.2.1 Observations and Field Measurements

Table 11 Surface Water Observations and Field Measurements

Feature	Details
Access	All surface water sampling locations were accessible, and samples were collected from all locations.
Field Observations	Surface water colour ranged from clear to pale yellow and brown. No visual or olfactory indications of contamination were observed during the sampling of the surface water sampling locations. Field observations are presented in **Table T3** in **Appendix B**.
Water quality parameters	Surface water quality parameters were measured prior to collecting surface water samples. The readings are presented in **Table T3** in **Appendix B** and are summarised below. At HMAS Cairns: • DO ranged from 5.9 mg/L (SW035) to 6.51 mg/L (SW034) indicating well oxygenated conditions. • EC ranged from 52,349 µS/cm (SW035) to 54,642 µS/cm (SW033) indicating saline conditions. • pH ranged from 7.2 (SW031) to 7.64 (SW032) indicating near neutral to slightly alkaline conditions. • ORP ranged from 75 mV (SW031) to 111.1 mV (SW033) indicating mildly reducing conditions. • Temperature ranged from 30.2°C (SW032) and 34.8°C (SW035). At the Former WWII RAN Fuel Installation: • DO ranged from 1.72 mg/L (SW101) to 6.67 mg/L (SW100) indicating moderate to well oxygenated conditions. • EC ranged from 1,026 µS/cm (SW101) to 21,326 µS/cm (SW100) indicating brackish to saline conditions. • pH ranged from 6.73 (SW036) to 7.27 (SW101) indicating near neutral conditions. • ORP ranged from -25 mV (SW101) to 233.5 mV (SW036) indicating mildly oxidising to mildly reducing conditions. • Temperature ranged from 25.2°C (SW101) and 27.5°C (SW101).
Weather Conditions	Weather was hot and cloudy during the sampling event.

5.2.2 Analytical Results

Of the nine surface water samples collected during this event, three samples adjacent to HMAS Cairns reported concentrations of PFAS compounds at, or above, the laboratory LOR. The surface water analytical results from this sampling event are presented in **Table T4** in **Appendix B**. There were no exceedances of guideline values in surface water at HMAS Cairns or the Former WWII RAN Fuel Installation.

There were no first-time detections or new exceedances of guideline values detected in surface water during this sampling event. PFAS concentrations were within the historical range for surface water locations on and off-Base. Historical surface water results presented in **Table T8**, **Appendix B**.

5.3 Sediment

5.3.1 Observations and Field Measurements

Table 12 Sediment Observations and Field Measurements

Feature	Details
Access	All sediment sampling locations were accessible, and samples were collected from all locations.
Field Observations	No visible or olfactory indications of contamination were observed during the sampling of the sediment locations. Sediment logging data are presented in **Table T5** in **Appendix B**.

5.3.2 Analytical Results

Of the nine sediment samples collected, eight samples reported concentrations of PFOS, PFOA or PFOS+PFHxS compounds above the laboratory LOR. The sediment analytical results from this sampling event are presented in **Table T6** in **Appendix B**.

Concentrations of PFOA (SD034, 0.0002 mg/kg; SD100, 0.0002 mg/kg) were detected for the first time during this monitoring round. New historical maximum concentrations of PFOS, PFOA and/or PFOS+PFHxS were detected in SD031 (PFOS 0.0243 mg/kg; PFOS+PFHxS 0.247 mg/kg), SD033 (PFOS 0.0006 mg/kg; PFOS+PFHxS 0.0006 mg/kg), SD035 (PFOS 0.0016 mg/kg; PFOS+PFHxS 0.0016 mg/kg), SD036 (PFOS 0.0008 mg/kg and PFOA 0.0003 mg/kg; PFOS+PFHxS 0.0008 mg/kg), shown on **Figure 4A** in **Appendix A**. Historical sediment results are presented in **Table T9**, **Appendix B**.

Table 13 First-time detection of PFOS or PFOA in sediment

First time detection	Sediment sampling location	PFOS concentration (µg/L)		PFOA concentration (µg/L)	
		April 2022	Historical maximum	April 2022	Historical maximum
First time detections of PFOS or PFOA in sediment	SD034	0.002	0.001	0.0002	<0.0002
	SD100	0.0007	0.006	0.0002	<0.0002

Note: Blue shading indicates a sample with a first-time detection of PFOA (refer to **Table 8**).

6.0 Summary and Next Sampling Event

6.1 Summary of Monitoring Event

A groundwater, surface water and sediment monitoring event was completed at HMAS Cairns and the Former WWII RAN Fuel Installation between 25 March and 5 April 2022.

The program included sampling of 18 groundwater monitoring wells including 15 wells at HMAS Cairns at both high and low tides and three wells at the Former WWII RAN Fuel Installation, and collection of co-located surface water and sediment samples at nine locations including six locations at HMAS Cairns and three locations at the Former WWII RAN Fuel Installation.

Table 14 summarises the findings of the April 2022 sampling event and the recommended actions.

Table 14 Summary of Sampling Event

Item	Comment	Recommended Actions
Groundwater: Access to sampling locations and monitoring well network condition.	All of the 18 monitoring well locations were accessible. All wells were sampled, however a laboratory error resulted in no analytical data being reported for samples collected at MW011_LT and MW018_LT.	Ongoing monitoring in accordance with the OMP.
	No issues were identified at 17 monitoring wells visited. One monitoring well (MW015) was observed to have damage to the gatic cover. The damage included a broken bolt and lug.	Repair the gatic cover at MW015.
Sediment/Surface Water: Access to sampling locations.	All nine co-located surface water and sediment sample locations were accessible.	Ongoing monitoring in accordance with the OMP.
Analytical Results	PFAS compounds were detected above laboratory LOR in all but one of the 28 groundwater samples. PFAS compounds were detected above laboratory LOR in three of the nine surface water samples. PFAS compounds were detected above laboratory LOR in eight of the nine sediment samples.	Ongoing monitoring in accordance with the OMP.
First-time detections of PFOA or PFOS+PFHxS	PFOA was detected for the first time in sediment collected from SD034 and SD100. No first-time detections of PFOS, PFOA or PFHxS above the laboratory limit of reporting were recorded in any of the groundwater or surface water samples collected.	Ongoing monitoring in accordance with the OMP.
New exceedances of screening criteria for PFOS, PFOA or PFOS+PFHxS	There were no new exceedances of the NHMRC (2019) recreational use guidelines or the 95% species protection ecological guidelines (HEPA, 2020) for surface water or groundwater.	Ongoing monitoring in accordance with the OMP.

6.2 Upcoming Sampling Events

The next biannual sampling event is scheduled for October 2022.

6.3 Upcoming Annual Interpretive Report

The next annual interpretative report is scheduled for January 2023.

7.0 References

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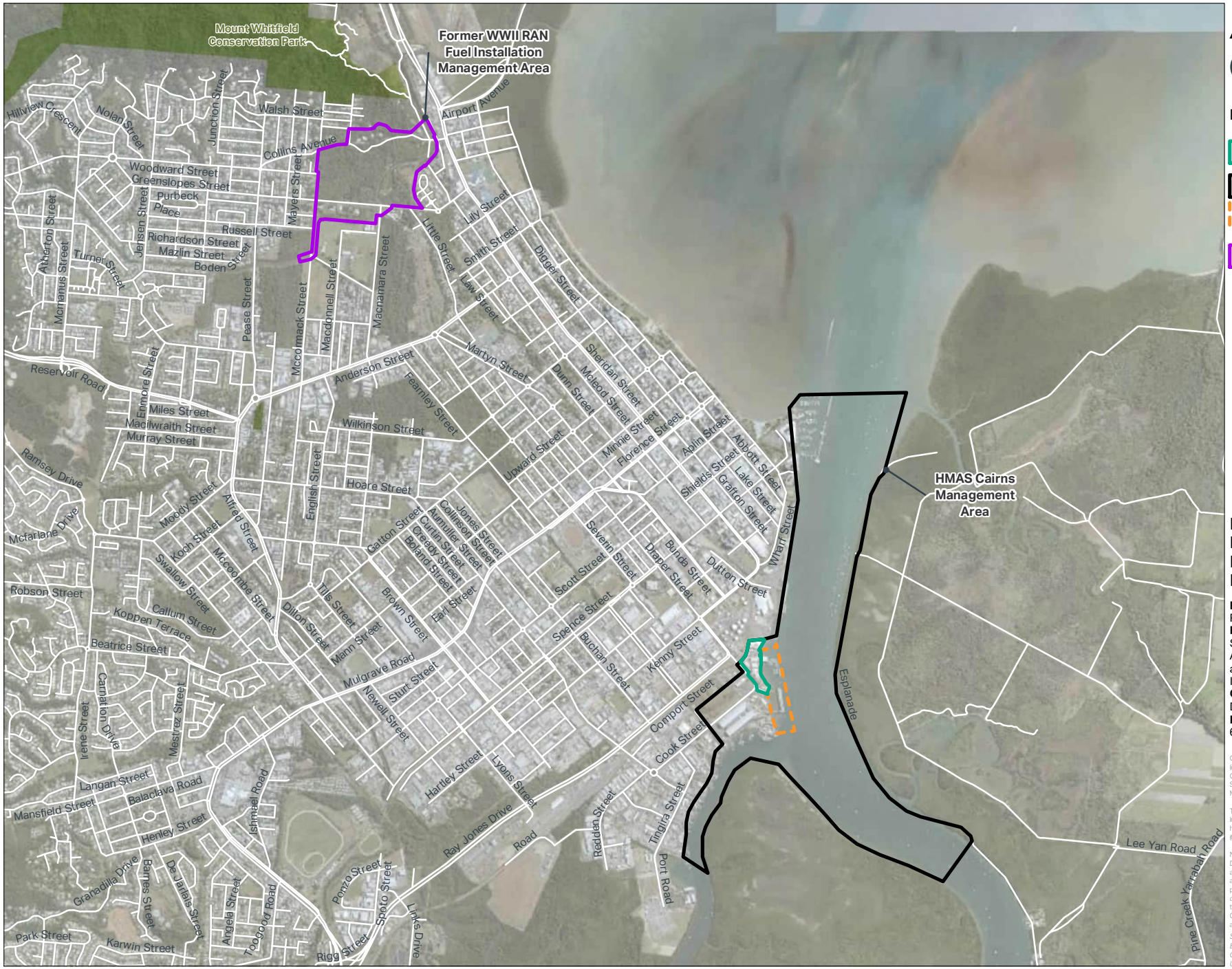
Appendix A

Figures

Appendix A Figures



AECOM

N

0 500 1,000 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area
- Former WWII RAN Fuel Installation Management Area

FIGURE 1:
HMAS CAIRNS AND FORMER WWII RAN FUEL INSTALLATION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2022 - PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

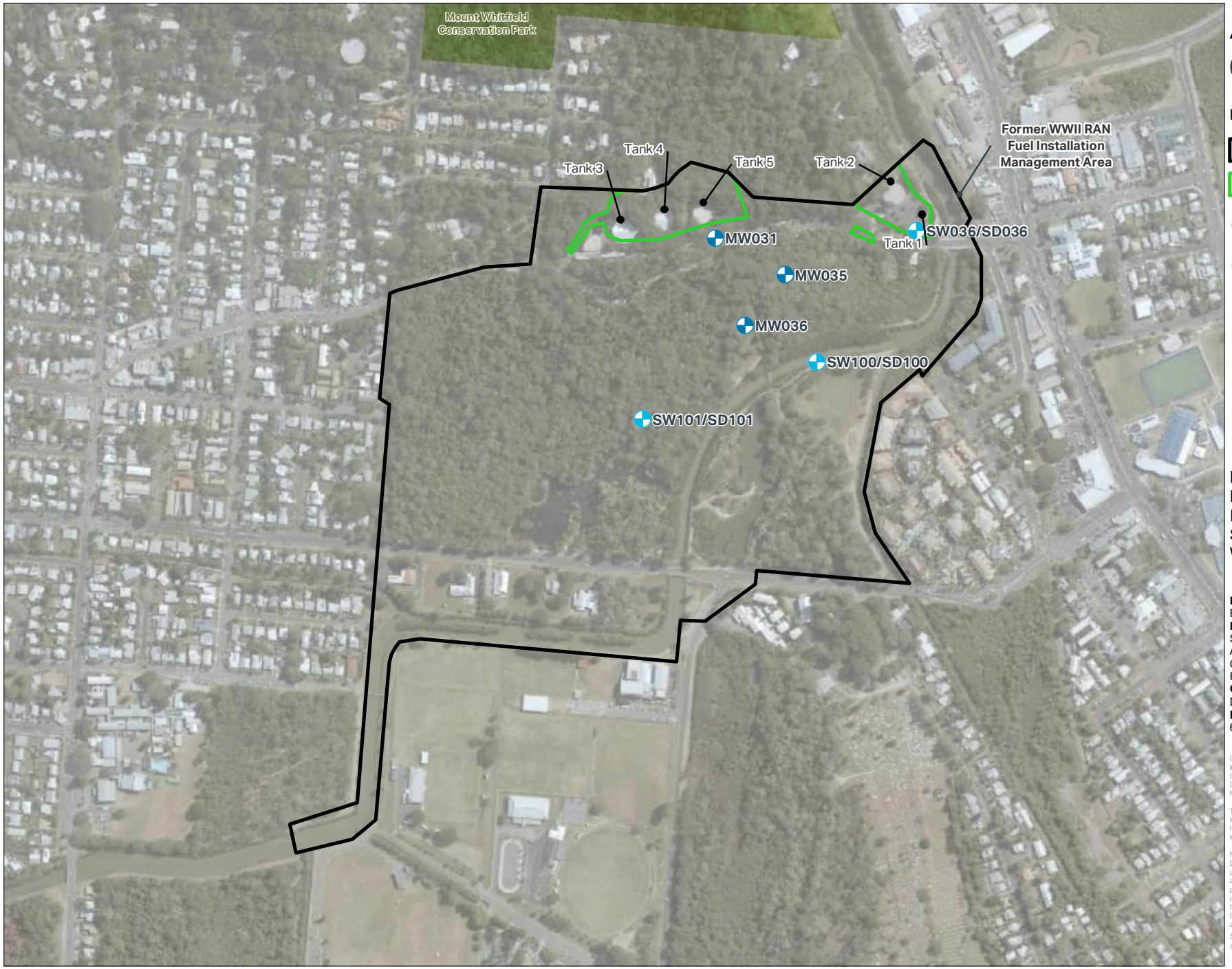
Legend

- HMAS Cairns
- Management Area
- Seabed Area
- Groundwater Monitoring Location
- Combined Surface and Sediment Location

FIGURE 2A: HMAS CAIRNS - SAMPLE LOCATIONS WET SEASON

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2022 – OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

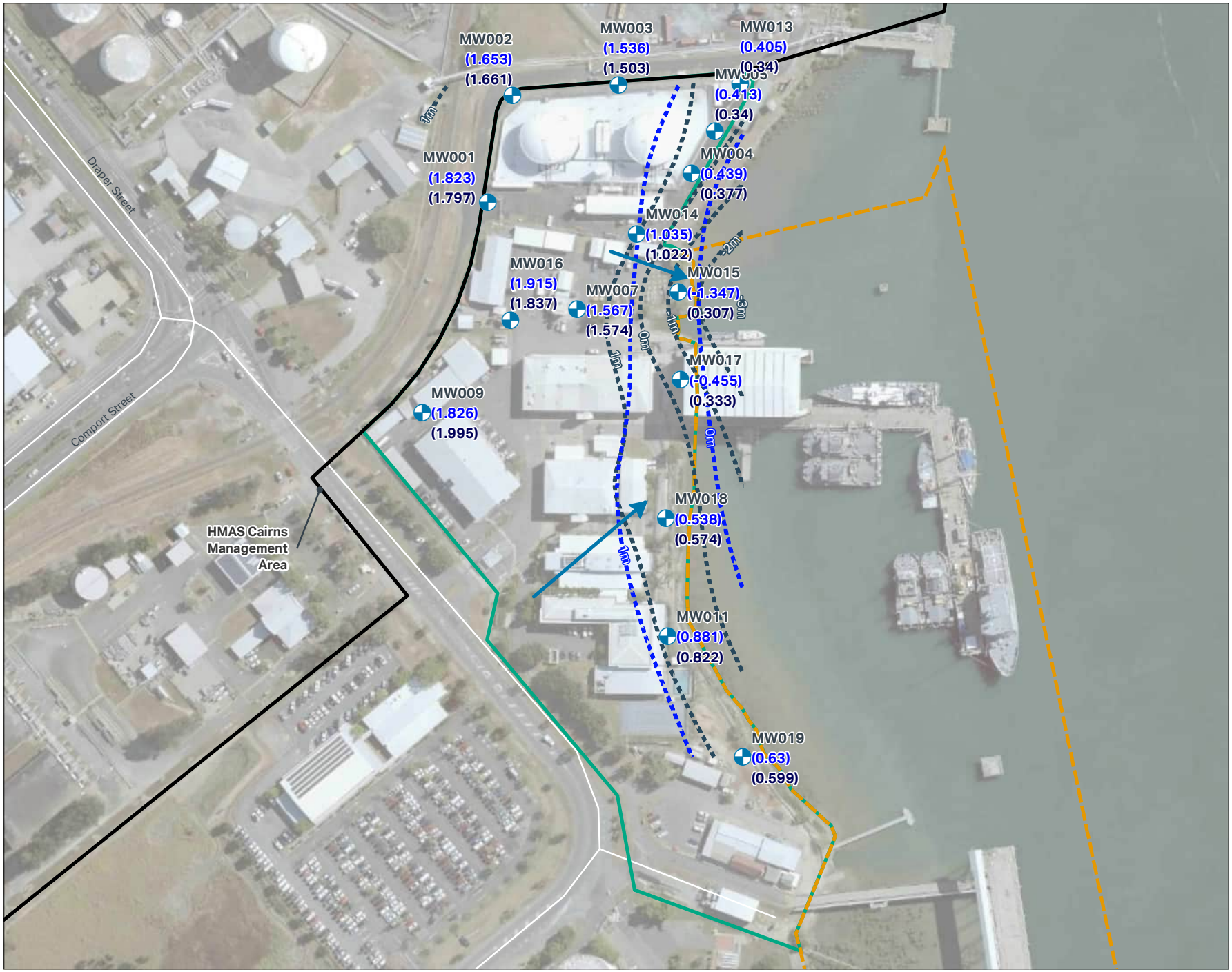
Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Surface Water and Sediment Location

FIGURE 2B:
FORMER WWII RAN FUEL INSTALLATION – SAMPLE LOCATIONS WET SEASON

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2022 – PFAS OMP - HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Service Layer Credits:
spatial-img.information.qld.gov.au/arcgis/rest/services



AECOM

N

0 30 60 m

Legend

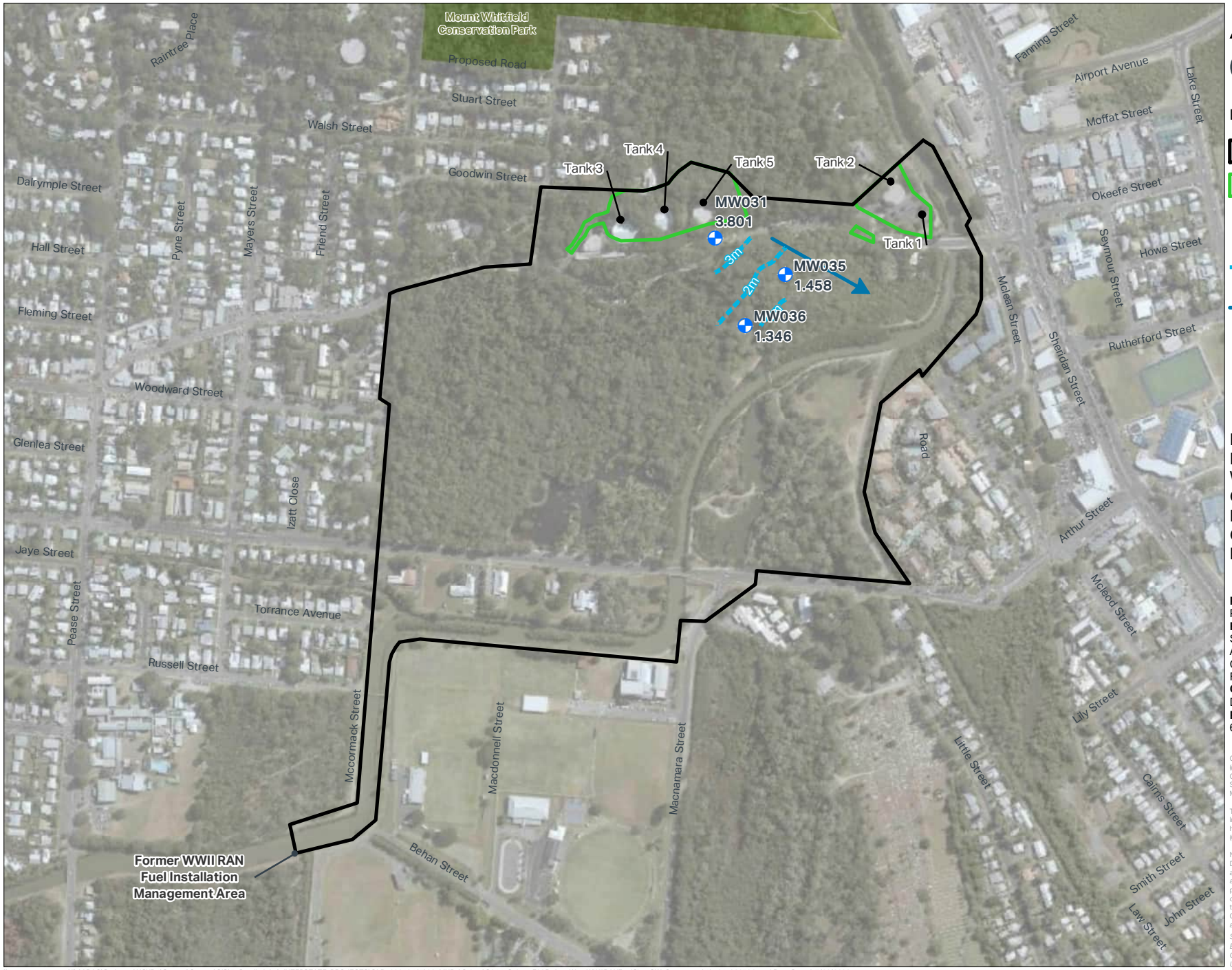
- HMAS Cairns
- Management Area
- Seabed Area
- Groundwater Contours at High Tide (mAHD)
- Groundwater Contours at Low Tide (mAHD)
- Inferred Groundwater Flow Direction
- Groundwater Monitoring Location

1.102 Low Tide Groundwater Elevation (mAHD)
0.247 High tide Groundwater Elevation (mAHD)

FIGURE 3A: HMAS CAIRNS - WET SEASON - GROUNDWATER ELEVATION AND INFERRED GROUNDWATER FLOW DIRECTION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2022 – OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Groundwater Contours (mAHD)
- Inferred Groundwater Flow Direction

FIGURE 3B: FORMER WWII RAN FUEL - WET SEASON - GROUNDWATER ELEVATION AND INFERRED GROUNDWATER FLOW DIRECTION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2022 – PFAS OMP - HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

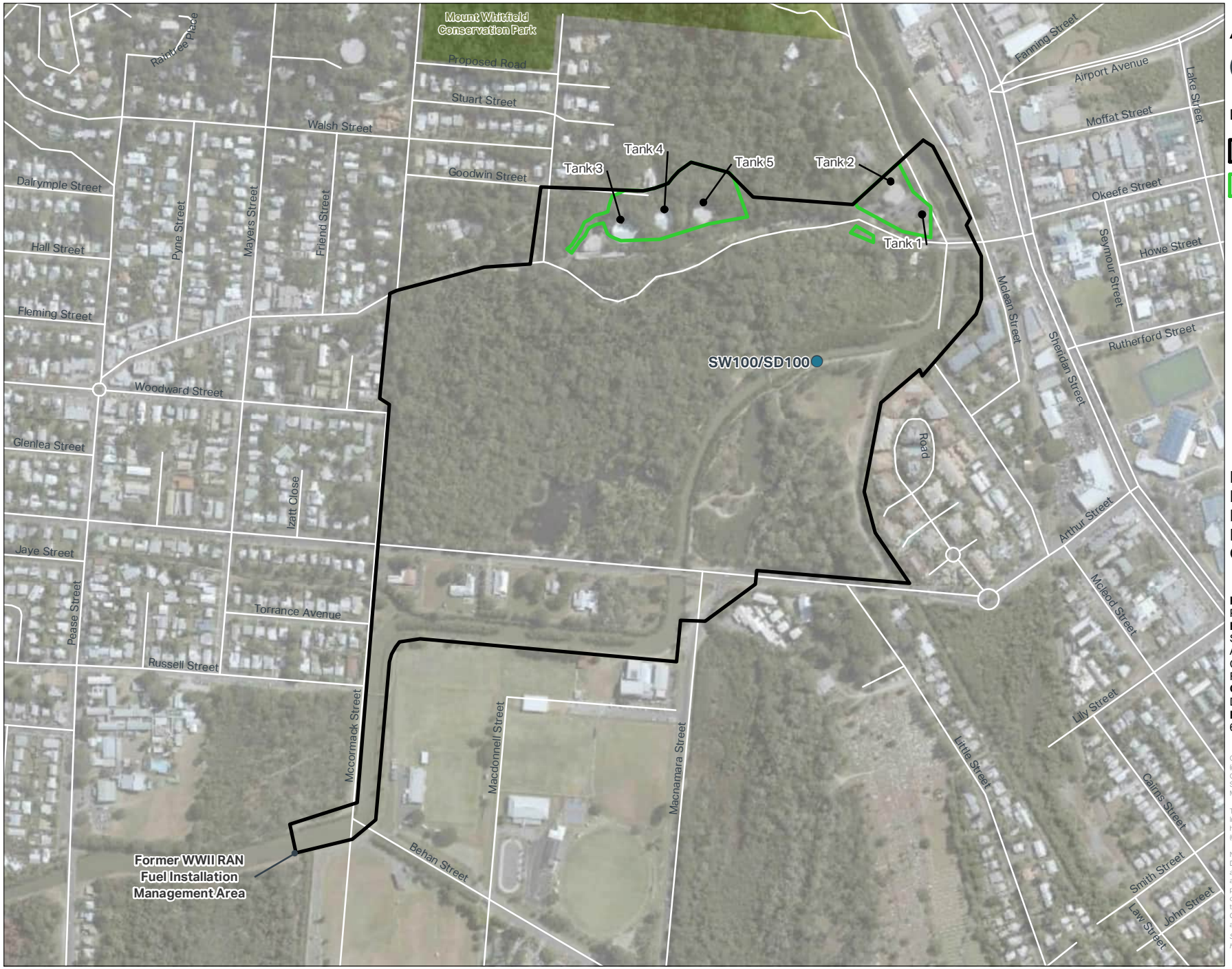
Legend

- Management Area
- Seabed Area
- HMAS Cairns Property Boundary
- First-time detection of PFOA

FIGURE F4A:
HMAS CAIRNS- WET SEASON - FIRST TIME DETECTION OF PFOA

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2022 – PFAS OMP - HMAS Cairns and
Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- First-time detection of PFOA

FIGURE 4B: FORMER WWII RAN FUEL - WET SEASON - FIRST-TIME DETECTION OF PFOA

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2022 – PFAS OMP - HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Appendix B

Tables

Appendix B Tables

Table T1: Groundwater Gauging and Water Quality Parameter Results

Property ID	Location ID	HydraSleeve Deployment Date	HydraSleeve Deployment Time	Screen Interval (mbgl)	Hydrasleeve Deployment Collar Depth* (mbgl)	Sample Date	Sample Time	Well Depth (mbtoc)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Condition of Gatic	DO (mg/L)	EC (µS/cm)	pH	Eh/ Redox (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method	Comment
HMAS Cairns Low Tide																							
0009	MW001	25/03/2022	12:51	2.5 – 5.5	4.05	04/04/2022	14:30	5.35	0.671	2.494	1.823	Good	1.53	19446	7.14	-211.2	34.3	Low	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW002	25/03/2022	12:45	1.5 – 4.5	2.94	04/04/2022	14:21	4.24	0.911	2.564	1.653	Good	2.66	7937	6.97	-118.4	32.9	Low	Light Yellow	Weak sulfurous odour	No sheen	HydraSleeve	
0009	MW003	25/03/2022	12:39	2.5 – 5.5	3.64	04/04/2022	14:12	4.94	1.006	2.542	1.536	Good	2.93	32521	7.03	-119.2	32.7	Low	Light Yellow	Weak sulfurous odour	No sheen	HydraSleeve	
0009	MW004	25/03/2022	12:25	2.0 – 4.0	2.6	04/04/2022	13:34	3.9	2.104	2.543	0.439	Good	0.32	40411	7.12	-295	31.9	Clear	Clear	Very strong sulfurous odour	No sheen	HydraSleeve	
0009	MW005	25/03/2022	12:28	2.0 – 4.0	2.32	04/04/2022	13:47	3.62	2.135	2.548	0.413	Good	1.65	25535	7.25	-228.3	31.3	Low	Yellow / Brown	Distinct sulfurous odour	No sheen	HydraSleeve	
0009	MW007	25/03/2022	10:38	1.5 – 4.0	2.32	04/04/2022	15:46	3.62	1.035	2.602	1.567	Good	2.22	6740	7.33	-128.4	33.7	Low	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW009	25/03/2022	10:09	1.5 – 4.5	3.13	04/04/2022	16:48	4.43	0.833	2.659	1.826	Good	2.13	8167	7.41	-166.1	29.2	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW011	25/03/2022	10:02	2.0 – 3.0	1.65	04/04/2022	16:29	2.95	1.495	2.376	0.881	Good	2.55	1006	7.86	-186.2	29.6	Low	Yellow	Distinct sulfurous odour	No sheen	HydraSleeve	
0009	MW013	25/03/2022	12:35	2.0 – 5.0	3.7	04/04/2022	13:57	5.00	2.032	2.437	0.405	Good	1.45	31088	7.1	-285.8	31.7	Low	Light Grey	Strong sulfurous odour	No sheen	HydraSleeve	
0009	MW014	25/03/2022	10:43	2.0 – 5.0	3.72	04/04/2022	14:56	5.02	1.36	2.395	1.035	Good	0.71	52968	6.84	-305.9	30	Clear	Clear	Strong sulfurous odour	No sheen	HydraSleeve	
0009	MW015	25/03/2022	10:55	2.0 – 5.0	3.75	04/04/2022	15:08	5.05	3.862	2.515	-1.347	Damaged	5.43	49825	7.6	-106.5	29.7	Clear	Clear	No odour	No sheen	HydraSleeve	Lugs broken. Gatic collar needs to be repaired.
0009	MW016	25/03/2022	11:07	2.0 – 5.0	3.75	04/04/2022	15:30	5.05	0.787	2.702	1.915	Good	1.8	86854	6.7	-108.9	32.8	Clear	Clear	Distinct sulfurous odour	No sheen	HydraSleeve	
0009	MW017	25/03/2022	10:30	2.0 – 5.0	3.66	04/04/2022	15:58	4.96	2.953	2.498	-0.455	Good	4.17	44721	7.1	-99.6	30.7	Low	Light Yellow	No odour	No sheen	HydraSleeve	Flooded above top of casing. Water removed prior to opening well.
0009	MW018	25/03/2022	10:17	2.0 – 5.0	3.66	04/04/2022	16:09	4.96	2.13	2.668	0.538	Good	2.14	12178	7.56	-226.4	30.6	Low	Light Grey	No odour	No sheen	HydraSleeve	
0009	MW019	25/03/2022	9:55	2.0 – 5.0	3.74	04/04/2022	16:31	5.04	1.283	1.913	0.63	Good	0.24	49490	6.52	-320.1	30	Low	Yellow	Very strong sulfurous odour	No sheen	HydraSleeve	
HMAS Cairns High Tide																							
0009	MW001	04/04/2022	14:30	2.5 – 5.5	4.05	05/04/2022	8:34	5.35	0.697	2.494	1.797	Good	2.04	46687	6.83	-238.3	33.5	Low	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW002	04/04/2022	14:21	1.5 – 4.5	2.94	05/04/2022	8:25	4.24	0.903	2.564	1.661	Good	1.7	8910	6.69	-109.4	31	Low	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW003	04/04/2022	14:12	2.5 – 5.5	3.64	05/04/2022	8:17	4.94	1.039	2.542	1.503	Good	2.25	33486	6.73	-124.1	31.7	Low	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW004	04/04/2022	13:34	2.0 – 4.0	2.6	05/04/2022	7:56	3.90	2.166	2.543	0.377	Good	1.79	31372	6.84	-264.7	29.5	Low	Light Yellow	Distinct sulfurous odour	No sheen	HydraSleeve	
0009	MW005	04/04/2022	13:47	2.0 – 4.0	2.32	05/04/2022	8:03	3.62	2.208	2.548	0.34	Good	2.15	24720	7.08	-191.2	30.3	Low	Light Yellow	Distinct sulfurous odour	No sheen	HydraSleeve	
0009	MW007	04/04/2022	15:46	1.5 – 4.0	2.32	05/04/2022	9:34	3.62	1.028	2.602	1.574	Good	2.18	10265	7.14	-124.9	33.5	Low	Light Yellow	Distinct sulfurous odour	No sheen	HydraSleeve	
0009	MW009	04/04/2022	16:48	1.5 – 4.5	3.13	05/04/2022	10:20	4.43	0.664	2.659	1.995	Good	1.94	8611	7.02	-181.6	30	Low	Yellow / Brown	No odour	No sheen	HydraSleeve	
0009	MW011	04/04/2022	16:29	2.0 – 3.0	1.65	05/04/2022	10:07	2.95	1.554	2.376	0.822	Good	2.34	3317	7.02	-178.9	30.7	Low	Yellow / Brown	No odour	No sheen	HydraSleeve	
0009	MW013	04/04/2022	13:57	2.0 – 5.0	3.7	05/04/2022	8:10	5.00	2.097	2.437	0.34	Good	3.74	12624	7.17	-220.6	30.9	Low	Light Yellow	Weak sulfurous odour	No sheen	HydraSleeve	
0009	MW014	04/04/2022	14:56	2.0 – 5.0	3.72	05/04/2022	9:03	5.02	1.373	2.395	1.022	Good	0.82	33983	7.01	-281.5	29.9	Low	Light Grey	No odour	No sheen	HydraSleeve	
0009	MW015	04/04/2022	15:08	2.0 – 5.0	3.75	05/04/2022	9:06	5.05	2.208	2.515	0.307	Damaged	5.28	50858	7.37	-77.5	29	Low	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW016	04/04/2022	15:30	2.0 – 5.0	3.75	05/04/2022	9:21	5.05	0.865	2.702	1.837	Good	2.32	69422	6.69	-128.6	32.5	Low	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW017	04/04/2022	15:58	2.0 – 5.0	3.66	05/04/2022	9:42	4.96	2.165	2.498	0.333	Good	5.36	41577	7.25	-15.5	31	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW018	04/04/2022	16:09	2.0 – 5.0	3.66	05/04/2022	9:50	4.96	2.094	2.668	0.574	Good	3.66	11037	7.68	-127.3	30.4	Low	Light Brown	No odour	No sheen	HydraSleeve	
0009	MW019	04/04/2022	16:31	2.0 – 5.0	3.74	05/04/2022	10:08	5.04	1.314	1.913	0.599	Good	0.29	42829	6.51	-306.1	30.2	Low	Yellow	Very strong sulfurous odour	No sheen	HydraSleeve	
Former WWII RAN Fuel Installation																							
0009	MW031	04/04/2022	8:40	2.5 – 4.5	4.09	05/04/2022	10:48	5.39	3.259	7.06	3.801	Good	2.68	555	6.61	-22.8	27.5	Medium	Yellow / Brown	No odour	No sheen	HydraSleeve	
0009	MW035	04/04/2022	8:23	1.0 – 2.0	1.44	05/04/2022	11:02	2.74	0.968	2.426	1.458	Good	3.96	1177	5.96	37.6	26.7	Medium	Light Brown	No odour	No sheen	HydraSleeve	
0009	MW036	-	-	0.7 – 1.7	-	04/04/2022	8:25	2.05	1.532	2.878	1.346	Good	4.54	981	6.06	-10.1	25.9	Low	Light Yellow	Distinct sulfurous odour	No sheen	Steel bailer	

*HydraSleeves were installed with bottom weight touching the bottom of the well, HydraSleeve installation depth was claculated based on HydraSleeve length of 1.3 m full length and 0.3 m if installed with a top weight.

mbtoc	metres below top of casing
mAHD	metres above Australian Height Datum
DO	Dissolved Oxygen
EC	Electrical Conductivity
ORP	Oxidation Reduction Potential
Temp	Temperature
mg/L	milligrams per litre
µS/cm	microsiemens per centimetre
mV	millivolt
°C	degrees Celcius
-	no data collected

Table T2: Groundwater Analytical Results

Location ID	Sample ID	Sample Date	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													**0.13**	**220**		
HMAS Cairns																																
MW001	0009_MW001_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	0.23	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	<0.06	<0.02	0.23	0.37
	0009_MW001_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.09	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.12	<0.01	0.21	0.26
MW002	0009_MW002_HT_220405	5/04/2022	<0.48	<0.48	<0.48	<0.48	<1.19	<0.48	<1.19	<0.48	<1.19	<0.48	<1.19	2.57	<2.4	<0.48	<0.48	<0.48	1.28	2.62	8.05	29.3	1.62	2.48	<1.19	<0.48	<0.48	<0.48	**68.1**	3.14	97.4	119
	0009_MW002_LT_220404	4/04/2022	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.5	<0.2	<0.5	<0.2	<0.5	2.04	<1	<0.2	<0.2	<0.2	1.3	2.56	8.66	25.9	1.6	2.04	<0.5	<0.2	<0.2	<0.2	**83.6**	2.96	110	131
MW003	0009_MW003_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	1.14	0.2	<0.05	<0.05	<0.05	0.39	0.43	2.97	9.29	0.64	1.25	<0.12	<0.05	<0.05	<0.05	**3.89**	0.78	13.2	21
	0009_MW003_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.02	0.3	<0.02	<0.02	<0.02	0.38	0.49	3.15	8.43	0.6	1.01	<0.05	<0.02	<0.02	<0.02	**4.65**	0.81	13.1	20.8
MW004	0009_MW004_HT_220405	5/04/2022	<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	0.44	<1.2	<0.25	<0.25	<0.25	<0.25	0.27	1.06	4.06	0.4	0.35	<0.62	<0.25	<0.25	<0.25	**20.1**	0.54	24.2	27.2
	0009_MW004_LT_220404	4/04/2022	<0.05	0.06	<0.05	<0.05	<0.06	<0.02	<0.06	0.12	<0.06	<0.02	<0.06	0.4	0.1	<0.02	<0.02	<0.02	0.31	0.38	0.92	3.93	0.44	0.36	<0.06	<0.02	<0.02	<0.02	**22.8**	0.62	26.7	30.4
MW005	0009_MW005_HT_220405	5/04/2022	<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	0.4	<1.2	<0.25	<0.25	<0.25	<0.25	0.4	1.26	5.48	0.49	0.34	<0.62	<0.25	<0.25	<0.25	**32.7**	0.69	38.2	41.8
	0009_MW005_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.47	<0.2	<0.05	<0.05	<0.05	0.33	0.62	1.26	6.45	0.66	0.46	<0.12	<0.05	<0.05	<0.05	**39.9**	0.85	46.4	51
MW007	0009_MW007_HT_220405	5/04/2022	<0.46	<0.46	<0.46	<0.46	<1.16	<0.46	<1.16	<0.46	<1.16	<0.46	<1.16	<0.46	<2.3	<0.46	<0.46	<0.46	<0.46	<0.46	0.98	4.74	<0.46	0.46	<1.16	<0.46	<0.46	<0.46	**68.2**	<0.46	72.9	74.4
	0009_MW007_LT_220404	4/04/2022	<0.1	<0.1	<0.1	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	0.43	<0.5	<0.1	<0.1	<0.1	0.2	0.53	1.2	5.09	0.33	0.52	<0.24	<0.1	<0.1	<0.1	**86.4**	0.63	91.5	95.3
MW009	0009_MW009_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.22	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.12	0.01	0.34	0.4
	0009_MW009_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.2	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.1	0.01	0.3	0.38
MW011	0009_MW011_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.04	0.01	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**0.21**	0.15	0.22	0.48
MW013	0009_MW013_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.05	0.05	0.2	0.88	0.08	0.07	<0.05	<0.02	<0.02	0.15	**2.33**	0.09	3.21	3.97
	0009_MW013_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.04	0.05	0.16	0.79	0.07	0.06	<0.05	<0.02	<0.02	0.13	**2.68**	0.07	3.47	4.11
MW014	0009_MW014_HT_220405	5/04/2022	<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	0.47	<1.2	<0.25	<0.25	<0.25	<0.25	0.35	2.23	8.09	0.32	0.37	<0.62	<0.25	<0.25	<0.25	**30.7**	0.42	38.8	43
	0009_MW014_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.03	<0.05	<0.02	<0.05	0.72	0.3	<0.02	<0.02	<0.02	0.26	0.26	2.2	8.11	0.43	0.51	<0.05	<0.02	<0.02	<0.02	**11.2**	0.38	19.3	24.4
MW015	0009_MW015_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.28	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	**3.04**	0.03	3.32	3.47
	0009_MW015_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.24	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**1.79**	0.02	2.03	2.14
MW016	0009_MW016_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.23	1.1	0.05	0.16	<0.05	<0.02	<0.02	<0.02	**0.15**	<0.01	1.25	1.83
	0009_MW016_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.25	1.19	0.06	0.19	<0.05	<0.02	<0.02	<0.02	**0.18**	<0.01	1.37	2.03
MW017	0009_MW017_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.38	0.03	0.03	<0.05	<0.02	<0.02	<0.02	**1.44**	0.03	1.82	2.01
	0009_MW017_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.03	0.03
MW018	0009_MW018_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
MW019	0009_MW019_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	0.07	0.16	0.18	0.58	0.1	0.04	<0.05	<0.02	<0.02	<0.02	**4.4**	0.15	4.98	5.73
	0009_MW019_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.15	<0.1	<0.02	<0.02	<0.02	0.07	0.18	0.19	0.62	0.1	0.05	<0.05	<0.02	<0.02	<0.02	**6.64**	0.19	7.26	8.19
Former WWII RAN Fuel Installation																																
MW031	0009_MW031_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.33**	<0.01	0.42	0.42
MW035	0009_MW035_220405	5/04/2022	<0.05	0.15	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.13	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.42	<0.02	0.1	<0.05	<0.02	<0.02	<0.02	**0.2**	<0.01	0.62	1
MW036	0009_MW036_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.17	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	**0.22**	<0.01	0.39	0.51

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than
NEMP is National Environmental Management Plan
Denotes first time detection above LOR of PFOS + PFHxS or PFOA
Denotes new exceedance of ecological or human health guideline values

Table T3: Surface Water Quality Parameters

Property ID	Sample ID	Sample Date	Sample Time	DO (mg/L)	EC (uS/cm)	pH	Redox (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method
HMAS Cairns													
0009	SW030	04/04/2022	10:58	5.99	53503	7.48	94.2	29.9	Clear	Pale yellow	No odour	No sheen	Grab
0009	SW031	04/04/2022	10:57	6.04	53776	7.2	75	30.7	Clear	Pale yellow	No odour	No sheen	Grab
0009	SW032	04/04/2022	12:39	6.02	53091	7.64	108.8	30.2	Clear	Pale yellow	No odour	No sheen	Grab
0009	SW033	04/04/2022	12:52	6.46	54642	7.63	111.1	32	Low	Pale yellow	No odour	No sheen	Grab
0009	SW034	04/04/2022	12:24	6.51	54129	7.6	107.3	32.2	Clear	Pale yellow	No odour	No sheen	Grab
0009	SW035	04/04/2022	12:08	5.9	52349	7.48	102	34.8	Clear	Clear	No odour	No sheen	Grab
Former WWII RAN Fuel Installation													
0009	SW036	04/04/2022	7:48	5.23	21326	6.73	233.5	26.9	Low	Pale yellow	No odour	No sheen	Grab
0009	SW100	04/04/2022	9:20	6.67	15910	6.81	57.6	27.5	Low	Pale yellow	No odour	No sheen	Grab
0009	SW101	04/04/2022	9:23	1.72	1026	7.27	-25	25.2	Low	Yellow to brown	No odour	No sheen	Grab

DO	Dissolved Oxygen
EC	Electrical Conductivity
Redox	Redox Oxidation Potential
Temp	Temperature
mg/L	milligrams per litre
µs/cm	microsiemens per centimetre
mV	millivolt
°C	degrees Celcius

Table T4: Surface Water Analytical Results

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
NHMRC (2019) PFAS Recreational Water																														**10**	**2**	
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													***0.13***	***220***		
Location ID	**Sample ID**	**Sample Date**																															
HMAS Cairns																																	
SW030	0009_SW030_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
SW031	0009_SW031_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW032	0009_SW032_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW033	0009_SW033_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW034	0009_SW034_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
SW035	0009_SW035_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.07	<0.01	0.11	0.11
Former WWII RAN Fuel Installation																																	
SW036	0009_SW036_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW100	0009_SW100_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
SW101	0009_SW101_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than
NEMP is National Environmental Management Plan
NHMRC is National Health Medical Research Council

Denotes first time detection above LOR of PFOS + PFHxS, PFOS or PFOA
Denotes new exceedance of ecological or human health guideline values

Table T5: Sediment Observation Results

Property ID	Location ID	Sample Date	Sample Time	Sample Description	Odour	Sheen	Sample Method
HMAS Cairns							
0009	SD030	04/04/2022	10:58	Sandy GRAVEL, loose, poorly graded fine angular gravels and medium to course sands, saturated, yellow to light brown, high shell content.	No odour	No sheen	Grab
0009	SD031	04/04/2022	10:57	Sandy GRAVEL, loose, poorly graded fine angular gravels and medium to course sands, saturated, yellow to light brown, high shell content.	No odour	No sheen	Grab
0009	SD032	04/04/2022	12:39	Gravelly Silty CLAY, low to medium plasticty, dark brown, firm, saturated, with some fine angular gravels.	No odour	No sheen	Grab
0009	SD033	04/04/2022	12:52	Gravelly Silty CLAY, low to medium plasticty, dark brown, firm, saturated, with some fine angular gravels.	No odour	No sheen	Grab
0009	SD034	04/04/2022	12:24	Gravelly Silty CLAY, low to medium plasticty, dark brown, firm, saturated, with some fine angular gravels.	No odour	No sheen	Grab
0009	SD035	04/04/2022	12:08	Gravelly Silty CLAY, low to medium plasticty, dark brown, firm, saturated, with some fine angular gravels.	No odour	No sheen	Grab
Former WWII RAN Fuel Installation							
0009	SD036	04/04/2022	7:48	Silty CLAY, high plasticity, dark brown, soft, wet, with some organics (rootlets)	No odour	No sheen	Grab
0009	SD100	04/04/2022	9:20	Silty CLAY, high plasticity, dark grey to brown, firm, wet, with some organics (rootlets and leaves)	No odour	No sheen	Grab
0009	SD101	04/04/2022	9:23	Sandy GRAVEL, loose, poorly graded fine angular gravel, dark brown, medium to course sands, saturated, with a trace of organics (roots and leaves).	No odour	No sheen	Grab

Table T6: Sediment Analytical Results

Location ID	Sample ID	Date	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
Units			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			0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HMAS Cairns																																	
SD030	0009_SD030_220404	4/04/2022	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.001	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0076	<0.0002	0.0076	0.0094
SD031	0009_SD031_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0243	<0.0002	0.0247	0.025
SD032	0009_SD032_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.001	<0.0002	0.001	0.001
SD033	0009_SD033_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
SD034	0009_SD034_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.002	0.0002	0.002	0.0022
SD035	0009_SD035_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0016	<0.0002	0.0016	0.0018
Former WWII RAN Fuel Installation																																	
SD036	0009_SD036_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0008	0.0003	0.0008	0.0011
SD100	0009_SD100_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0009
SD101	0009_SD101_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

LOR is limit of reporting
mg/kg is milligrams per kilogram
"<" denotes concentration less than

Denotes first time detection above LOR of PFOS + PFHxS or PFOA
Concentrations reported at the LOR have not been highlighted.

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Table T7: Historical Ground Water Results

Project Name: PFAS HMAS Cairns
Sampling Event Factual Report, April 2022

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																														
HMAS Cairns																																
MW001	MW01_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	<0.05	<0.01	<0.01	<0.01	0.042	0.031	0.29	0.71	0.038	0.11	<0.01	<0.01	<0.01	<0.01	0.025	0.067	0.735	1.529
	MW01_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.066	0.027	<0.001	<0.001	<0.001	0.023	0.039	0.16	0.37	0.027	0.054	<0.001	<0.001	<0.001	<0.001	0.022	0.035	0.392	0.873
	MW01_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.045	0.011	<0.001	<0.001	<0.001	0.013	0.025	0.058	0.25	0.014	0.032	<0.001	<0.001	<0.001	<0.001	0.038	0.019	0.288	0.555
	MW01_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.049	0.02	<0.001	<0.001	<0.001	0.016	0.006	0.1	0.33	0.021	0.046	<0.001	<0.001	<0.001	<0.001	0.1	0.016	0.43	0.734
	0009_MW001_HT_200930	30/09/2020	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	0.04	0.02	0.24	0.73	0.04	0.09	<0.05	<0.02	<0.02	<0.02	**0.16**	0.05	0.89	1.56
	0009_MW001_LT_200930	30/09/2020	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.53	0.1	<0.02	<0.02	<0.02	0.11	0.08	0.76	2.02	0.15	0.42	<0.05	<0.02	<0.02	<0.02	**0.26**	0.17	2.28	4.66
	0009_MW001_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.13	0.32	0.03	0.05	<0.05	<0.02	<0.02	<0.02	**0.23**	0.03	0.55	0.88
	0009_MW001_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.11	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.22	0.54	0.04	0.10	<0.05	<0.02	<0.02	<0.02	0.09	0.04	0.63	1.17
	0009_MW001_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.13	0.32	0.02	0.04	<0.05	<0.02	<0.02	<0.02	0.08	0.02	0.4	0.67
	0009_MW001_LT_211028	28/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.17	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.36**	0.02	0.53	0.67
	0009_MW001_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	0.23	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	<0.06	<0.02	0.23	0.37
	0009_MW001_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.09	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.12**	<0.01	0.21	0.26
MW002	MW02_HIGH_190522	22/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	3.2	1.4	<0.1	<0.1	<0.1	1.9	2.2	14	36	2.4	3	<0.1	<0.1	<0.1	<0.1	**46**	4.1	82	-
	MW02_LOW_190523	23/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	3.2	1.4	<0.1	<0.1	<0.1	1.6	1.4	12	32	2	2.7	<0.1	<0.1	<0.1	<0.1	**41**	3.8	73	-
	MW02_LOW_20190618	18/06/2019	<0.001	0.046	0.02	<0.001	<0.005	<0.005	<0.005	0.052	<0.005	<0.005	<0.005	3.2	1.4	0.013	0.009	<0.001	1.8	2.4	11	31	2.4	3.3	<0.001	<0.001	<0.001	0.067	**49**	3.8	80	112.407
	MW02_HIGH_20190619	19/06/2019	<0.001	0.064	0.024	<0.001	<0.005	<0.005	<0.005	0.056	<0.005	<0.005	<0.005	3.6	1.4	0.013	0.006	<0.001	1.9	1.9	11	26	1.1	2.4	<0.001	<0.001	<0.001	0.062	**53**	3.8	79	108.825
	0009_MW002_HT_200930	30/09/2020	<0.32	<0.32	<0.32	<0.32	<0.81	<0.32	<0.81	<0.32	<0.81	<0.32	<0.81	3.73	<1.6	<0.32	<0.32	<0.32	1.49	2.95	10.6	32.2	2.24	3.18	<0.81	<0.32	<0.32	<0.32	**77.5**	3.63	110	138
	0009_MW002_LT_200930	30/09/2020	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	2.6	<2.5	<0.50	<0.50	<0.50	1.5	2.35	9.35	29.2	1.65	2.5	<1.25	<0.50	<0.50	<0.50	**66**	3.35	95.2	118
	0009_MW002_LT_210408	8/04/2021	<0.37	<0.37	<0.37	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	1.59	<1.8	<0.37	<0.37	<0.37	1.07	2.11	6.55	18.10	1.37	1.59	<0.92	<0.37	<0.37	<0.37	**85.1**	2.40	103.00	120.00
	0009_MW002_HT_210409	9/04/2021	<0.38	<0.38	<0.38	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	1.34	<1.9	<0.38	<0.38	<0.38	1.03	1.80	6.04	14.10	1.38	1.45	<0.96	<0.38	<0.38	<0.38	**78.6**	2.25	92.70	108.00
	0009_MW002_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.07	<0.05	<0.02	<0.05	2.48	1.1	<0.02	<0.02	<0.02	1.52	4.54	10.2	34	1.82	3.36	<0.05	<0.02	<0.02	0.06	**70**	3.57	104	133
	0009_MW002_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.13	<0.05	<0.02	<0.05	2.44	1	<0.02	0.12	<0.02	1.66	4.8	9.94	29.7	1.98	2.45	<0.05	<0.02	<0.02	0.06	**84.6**	3.38	114	142
	0009_MW002_HT_220405	5/04/2022	<0.48	<0.48	<0.48	<0.48	<1.19	<0.48	<1.19	<0.48	<1.19	<0.48	<1.19	2.57	<2.4	<0.48	<0.48	<0.48	1.28	2.62	8.05	29.3	1.62	2.48	<1.19	<0.48	<0.48	<0.48	**68.1**	3.14	97.4	119
	0009_MW002_LT_220404	4/04/2022	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.5	<0.2	<0.5	<0.2	<0.5	2.04	<1	<0.2	<0.2	<0.2	1.3	2.56	8.66	25.9	1.6	2.04	<0.5	<0.2	<0.2	<0.2	**83.6**	2.96	110	131
MW003	MW03_HIGH_190522	22/05/2019	<0.001	<0.005	0.002	<0.001	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	<0.005	0.21	0.09	0.008	<0.001	<0.001	0.11	0.24	0.54	2.4	0.18	0.42	<0.001	<0.001	0.001	0.021	**7.8**	0.23	10.2	12.453
	MW03_LOW_190523	23/05/2019	<0.001	0.007	0.002	<0.001	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.16	0.083	0.008	<0.001	<0.001	0.1	0.35	0.59	2.1	0.13	0.4	<0.001	<0.001	0.001	0.019	**5.4**	0.24	7.5	9.8
	MW03_LOW_20190618	18/06/2019	<0.001	0.011	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.9	0.27	0.003	<0.001	<0.001	0.3	0.57	2.5	8.8	0.42	1	<0.001	<0.001	<0.001	0.012	**2**	0.61	10.8	17.906
	MW03_HIGH_20190619	19/06/2019	<0.001	0.012	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1.1	0.28	0.003	<0.001	<0.001	0.33	0.6	3	9.4	0.81	1	<0.001	<0.001	<0.001	0.014	**1.9**	0.62	11.3	19.629
	0009_MW003_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.33	<0.2	<0.03	<0.03	<0.03	0.11	0.15	0.75	3.16	0.21	0.31	<0.08	<0.03	<0.03	<0.03	**5.58**	0.24	8.74	10.8
	0009_MW003_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.36	<0.2	<0.03	<0.03	<0.03	0.12	0.18	0.85	3.59	0.22	0.35	<0.08	<0.03	<0.03	<0.03	**6.62**	0.29	10.2	12.6
	0009_MW003_LT_210408	8/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.69	0.20	<0.02	<0.02	<0.02	0.25	0.24	1.79	5.43	0.41	0.60	<0.05	<0.02	<0.02	0.02	**4.45**	0.46	9.88	14.60
	0009_MW003_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.94	0.30	<0.02	0.02	<0.02	0.33	0.32	2.58	6.59	0.53	0.86	<0.05	<0.02	<0.02	<0.02	**4.84**	0.64	11.40	18.00
	0009_MW003_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.03	0.4	<0.02	<0.02	<0.02	0.39	0.57	3.6	9.05	0.61	1.18	<0.05	<0.02	<0.02	<0.02	**3.34**	0.76	12.4	20.9
	0009_MW003_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.11	0.4	<0.02	<0.02	<0.02	0.45	0.64	3.89	9.65	0.68	1.3	<0.05	<0.02	<0.02	<0.02	**3.34**	0.78	13	22.2
	0009_MW003_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	1.14	0.2	<0.05	<0.05	<0.05	0.39	0.43	2.97	9.29	0.64	1.25	<0.12	<0.05	<0.05	<0.05	**3.89**	0.78	13.2	21
	0009_MW003_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.02	0.3	<0.02	<0.02	<0.02	0.38	0.49	3.15	8.43	0.6	1.01	<0.05	<0.02	<0.02	<0.02	**4.65**	0.81	13.1	20.8
MW004	MW04_HIGH_190522	22/05/2019	<0.001	0.006	0.015	<0.001	<0.005	<0.005	<0.005	0.034	<0.005	<0.005	<0.005	0.4	0.22	0.01	<0.001	<0.001	0.28	0.44	1	3.5	0.54	0.81	<0.001	<0.001	<0.001	0.018	**9.5**	0.47	13	17.483
	MW04_LOW_190523	23/05/2019	<0.001	0.005	0.012	<0.001	<0.005	<0.005	<0.005	0.045	<0.005	<0.005	<0.005	0.41	0.25	0.008	<0.001	<0.001	0.34	0.93	1.2	3.7	0.5	0.89	<0.001	<0.001	<0.001	0.022	**8.5**	0.65	12.2	17.782
	MW04_LOW_20190618	18/06/2019	<0.001	0.008	0.011	<0.001	<0.005	<0.005	<0.005	0.05	<0.005	<0.005	<0.005	0.41	0.23	0.01	<0.001	<0.001	0.32	0.41	1.2	4.9	0.44	0.57	<0.001	<0.001	0.001	0.017	**11**	0.56	15.9	20.497
	MW04_HIGH_20190619	19/06/2019	<0.001	0.006	0.007	<0.001	<0.005	<0.005	<0.005	0.046	<0.005	<0.005	<0.005	0.44	0.26	0.007	<0.001	<0.001	0.35	0.45	1.4	5	0.53	0.66	<0.001	<0.001	<0.001	0.015	**7.7**	0.56	12.7	17.721
	0009_MW004_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.58	0.3	<0.03	<0.03	<0.03	0.37	0.37	1.35	5.22	0.66	0.52	<0.08	<0.03	<0.03	<0.03	**10.6**	0.72	15.8	20.7
	0009_MW004_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.48	0.2	<0.03	<0.03	<0.03	0.29	0.3	1.09	4.2	0.56	0.43	<0.08	<0.03	<0.03	<0.03	**8.24**	0.56	12.4	16.4
	0009_MW004_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	0.66	<0.9	<0.18	<0.18	<0.18	0.53	0.59	1.67	7.01	0.81	0.52	<0.46	<0.18	<0.18	<0.18	**27**	1.16	34.00	40.00
	0009_MW004_HT_210409	9/04/2021	<0.19	<0.19	<0.19	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	0.90	<0.9	<0.19	<0.19	<0.19	0.73	0.92	2.56	7.93	1.27	0.73	<0.47	<0.19	<0.19	<0.19	**31.5**	1.51	39.40	48.00
	0009_MW004_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.08	<0.05	<0.02	<0.05	0.43	0.3	0.02	<0.02	<0.02	0.36	0.29	1.31	3.8	0.52	0.41	<0.05	<0.02	<0.02	<0.02	**8.62**	0.41	12.4	16.6
	0009_MW004_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.08	<0.05	<0.02	<0.05	0.44	0.3	0.02	0.04	<0.02	0.37	0.37	1.32	4.25	0.51	0.36	<0.05	<0.02	<0.02	<0.02	**11**	0.56	15.2	19.6
	0009_MW004_HT_220405	5/04/2022	<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	0.44	<1.2	<0.25	<0.25	<0.25	<0.25	0.27	1.06	4.06	0.4	0.35	<0.62	<0.25	<0.25	<0.25	**20.1**	0.54	24.2	27.2
	0009_MW004_LT_220404	4/04/2022	<0.05	0.06	<0.05	<0.05	<0.06	<0.02	<0.06	0.12	<0.06	<0.02	<0.06	0.4	0.1	<0.02	<0.02	<0.02	0.31	0.38	0.92	3.93	0.44	0.36	<0.06	<0.02	<0.02	<0.02	**22.8**	0.62	26.7	30.4
MW005	MW05_HIGH_190522	22/05/2019	<0.001	0.011	0.011	<0.001	<0.005	<0.005	<0.005	0.027	<0.005	<0.005	<0.005	0.32	0.22	0.012	0.004	<0.001	0.26	0.8	1.1	3.8	0.61	0.78	<0.001	<0.001	0.003	0.05	**23**	0.62	26.8	31.888
	MW05_LOW_190523	23/05/2019	<0.001	0.011	0.022	<0.001	<0.005	<0.005	<0.005	0.043	<0.005	<0.005	<0.005	0.31	0.19	0.026	0.005	<0.001	0.3	0.59	1.2	3.8	0.5	0.72	<0.001	<0.001	0.006	0.056	**31**	0.67	34.8	-
	MW05_LOW_20190618	18/06/2019	<0.001	0.009	0.007	<0.001	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	0.25	0.15	0.009	0.003	<0.001	0.21	0.58	0.97	4.1	0.42	0.4	<0.001	<0.001	0.002	0.035	**18**	0.48	22.1	25.983
	MW05_HIGH_20190619	19/06/2019	<0.001	0.009	0.005	<0.001	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	0.26	0.14	0.008	0.002	<0.001	0.19	0.56	0.92	3.6	0.4	0.41	<0.001	<0.001	0.002	0.033	**14**	0.43	17.6	21.317
	0009_MW005_HT_200930	30/09/2020	<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	0.42	<0.3	<0.06	<0.06	<0.06	0.24	0.45	1.03	5.1	0.79	0.4	<0.16	<0.06	<0.06	0.06	**24.4**	0.58	29.5	33.5
	0009_MW005_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.39	0.2	<0.03	<0.03	<0.03	0.22	0.35	0.87	4.3	0.62	0.36	<0.08	<0.03	<0.03	0.06	**20.7**	0.52	25	28.6
	0009_MW005_LT_210408	8/04/2021	<0.08	<0.08	<0.08	<0.08	<0.19	<0.08	<0.19	<0.08	<0.19	<0.08	<0.19	0.49	0.40	<0.08	<0.08	<0.08	0.40	0.65	1.48	6.70	0.84	0.50	<0.19	<0.08	<0.08	0.13	**40.6**	0.89	47.30	53.10
	0009_MW005_HT_210409	9/04/2021	<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	0.65	<1	<0.19	<0.19	<0.19	0.49	0.80	1.96	6.94	1.04	0.55	<0.48	<0.19	<0.19	<0.19	**47.3**	1.08	54.20	60.80
	0009_MW005_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.05	<0.05	<0.02	<0.05	0.4	0.2	<0.02	0.04	<0.02	0.21	0.34	1.04	4.05	0.51	0.39	<0.05	<0.02	<0.02	0.04	**19.5**	0.43	23.6	27.2
	0009_MW005_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.05	<0.05	<0.02	<0.05	0.32	0.2	<0.02	0.03	<0.02	0.24	0.36	1	4.01	0.5	0.32	<0.05	<0.02	<0.02	0.03	**18.2**	0.44	22.2	25.7
	0009_MW005_HT_220405	5/04/2022	<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	0.4	<1.2	<0.25	<0.25	<0.25	<0.25	0.4	1.26	5.48	0.49	0.34	<0.62	<0.25	<0.25	<0.25	**32.7**	0.69	38.2	41.8
	0009_MW005_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.47	<0.2	<0.05	<0.05	<0.05	0.33	0.62	1.26	6.45	0.66	0.46	<0.12	<0.05	<0.05	<0.05	**39.9**	0.85	46.4	51

Table T7: Historical Ground Water Results

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																														
MW007	MW07_HIGH_190522	22/05/2019	<0.001	0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.19	0.079	<0.001	<0.001	<0.001	0.079	0.28	0.53	2	0.14	0.42	<0.001	<0.001	<0.001	0.003	**30**	0.24	32	34.092
	MW07_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	0.23	0.1	0.003	0.003	<0.001	0.1	0.65	0.7	2.3	0.14	0.58	<0.001	<0.001	<0.001	0.004	**36**	0.34	38.3	41.818
	MW07_LOW_20190618	18/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.86	0.31	<0.1	<0.1	<0.1	0.35	0.84	2.2	9.9	0.48	1.1	0.21	<0.1	<0.1	<0.1	**110**	0.99	119.9	127.49
	MW07_HIGH_20190619	19/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.65	0.24	<0.1	<0.1	<0.1	0.3	0.74	2	7.8	0.36	0.93	<0.1	<0.1	<0.1	<0.1	**88**	0.95	95.8	102.16
	0009_MW007_HT_200930	30/09/2020	<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	0.28	<0.3	<0.06	<0.06	<0.06	0.11	0.28	0.76	3.28	0.24	0.35	<0.16	<0.06	<0.06	<0.06	**42.2**	0.33	45.5	47.8
	0009_MW007_LT_200930	30/09/2020	<0.16	<0.16	<0.16	<0.16	<0.41	<0.16	<0.41	<0.16	<0.41	<0.16	<0.41	0.39	<0.8	<0.16	<0.16	<0.16	<0.16	0.32	1.02	4.14	0.29	0.44	<0.41	<0.16	<0.16	<0.16	**51.1**	0.37	55.2	58.1
	0009_MW007_LT_210408	8/04/2021	<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	0.19	<1	<0.19	<0.19	<0.19	<0.19	0.34	0.71	2.58	0.23	0.29	<0.48	<0.19	<0.19	<0.19	**35**	0.38	37.60	39.70
	0009_MW007_HT_210409	9/04/2021	<0.24	<0.24	<0.24	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	0.39	<1.2	<0.24	<0.24	<0.24	<0.32	0.36	1.29	4.27	0.34	0.66	<0.61	<0.24	<0.24	<0.24	**45.5**	0.58	49.80	53.40
	0009_MW007_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.03	<0.05	<0.02	<0.05	0.62	0.3	<0.02	<0.02	<0.02	0.27	0.82	1.87	6.7	0.41	0.77	<0.05	<0.02	<0.02	<0.02	**94.6**	0.85	101	107
	0009_MW007_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.04	<0.05	<0.02	<0.05	0.66	0.3	<0.02	0.03	<0.02	0.31	0.99	1.98	7.66	0.44	0.7	<0.05	<0.02	<0.02	<0.02	**92.7**	0.92	100	107
	0009_MW007_HT_220405	5/04/2022	<0.46	<0.46	<0.46	<0.46	<1.16	<0.46	<1.16	<0.46	<1.16	<0.46	<1.16	<0.46	<2.3	<0.46	<0.46	<0.46	<0.46	<0.46	0.98	4.74	<0.46	0.46	<1.16	<0.46	<0.46	<0.46	**68.2**	<0.46	72.9	74.4
	0009_MW007_LT_220404	4/04/2022	<0.1	<0.1	<0.1	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	0.43	<0.5	<0.1	<0.1	<0.1	0.2	0.53	1.2	5.09	0.33	0.52	<0.24	<0.1	<0.1	<0.1	**86.4**	0.63	91.5	95.3
MW009	MW09_LOW_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.2	0.064	<0.01	<0.01	<0.01	0.15	0.023	0.98	1.8	0.08	0.33	<0.01	<0.01	<0.01	<0.01	**0.19**	0.1	1.99	3.968
	MW09_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	0.065	<0.01	<0.01	<0.01	0.16	0.031	0.93	2	0.091	0.34	<0.01	<0.01	<0.01	<0.01	**0.32**	0.12	2.32	4.319
	MW09_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	<0.001	0.003	0.002	0.021	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	0.071	0.002	0.092	0.104
	MW09_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.005	<0.001	<0.001	<0.001	0.001	0.003	0.005	0.056	0.002	0.003	<0.001	<0.001	<0.001	<0.001	0.093	0.002	0.149	0.168
	0009_MW009_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.12	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.27**	<0.01	0.39	0.39
	0009_MW009_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.16	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.25**	<0.01	0.41	0.43
	0009_MW009_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.10	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.10	<0.01	0.20	0.20
	0009_MW009_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.18**	<0.01	0.26	0.26
	0009_MW009_HT_211027	27/10/2021	<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.1	0.62	<0.02	0.04	<0.05	<0.02	<0.02	<0.02	**0.23**	0.04	0.85	1.17
	0009_MW009_LT_211028	28/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.09	0.43	0.02	0.04	<0.05	<0.02	<0.02	<0.02	**0.21**	0.03	0.64	0.94
	0009_MW009_211208	8/12/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.03	0.04	0.13	0.86	<0.04	0.07	<0.05	<0.02	<0.02	<0.02	**0.28**	0.05	1.14	1.53
	0009_MW009_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.22	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.12**	0.01	0.34	0.4
	0009_MW009_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.2	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.1**	0.01	0.3	0.38
MW011	MW11_HIGH_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.019	<0.01	0.021	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	0.12	0.078	0.27
	MW11_LOW_190524	24/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	0.003	<0.001	<0.001	0.015	0.004	0.026	0.005	0.008	<0.001	<0.001	<0.001	<0.001	0.005	0.048	0.13	0.053	0.244
	MW11_LOW_20190619	19/06/2019	<0.001	0.006	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	0.006	0.004	<0.001	<0.001	0.042	0.007	0.025	0.022	0.017	0.003	<0.001	<0.001	<0.001	0.019	0.12	0.32	0.142	0.593
	MW11_HIGH_20190620	20/06/2019	<0.001	0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	0.007	0.006	<0.001	<0.001	0.048	0.009	0.03	0.036	0.013	0.004	<0.001	<0.001	<0.001	0.021	**0.17**	0.3	0.206	0.652
	0009_MW011_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.07	<0.02	0.06	0.05	0.04	<0.02	<0.05	<0.02	<0.02	0.03	**0.35**	0.36	0.4	0.96
	0009_MW011_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.07	<0.02	0.06	0.07	0.04	<0.02	<0.05	<0.02	<0.02	0.03	**0.34**	0.38	0.41	0.99
	0009_MW011_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	0.07	0.14	0.27
	0009_MW011_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.04	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**0.23**	0.18	0.23	0.52
	0009_MW011_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.03	0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	0.11	0.04	0.21
	0009_MW011_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.03	0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	0.11	0.05	0.21
	0009_MW011_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.04	0.01	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**0.21**	0.15	0.22	0.48
MW013	MW13_HIGH_190522	22/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.047	0.033	0.003	<0.001	<0.001	0.041	0.059	0.14	0.87	0.083	0.086	<0.001	<0.001	0.002	0.13	**4.1**	0.084	4.97	5.708
	MW13_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.042	0.032	0.003	<0.001	<0.001	0.034	0.072	0.14	0.79	0.061	0.072	<0.001	<0.001	0.001	0.11	**2.3**	0.071	3.09	3.778
	MW13_LOW_20190618	18/06/2019	<0.001	0.006	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.064	0.038	0.002	<0.001	<0.001	0.055	0.065	0.17	1.1	0.086	0.098	<0.001	<0.001	<0.001	0.11	**1.7**	0.085	2.8	3.619
	MW13_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.059	0.039	0.002	<0.001	<0.001	0.058	0.085	0.18	1.6	0.083	0.1	<0.001	<0.001	<0.001	0.15	**2.4**	0.089	4	4.885
	0009_MW013_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.11	<0.2	<0.05	<0.05	<0.05	0.05	<0.05	0.27	1.1	0.08	0.09	<0.12	<0.05	<0.05	0.09	**2.27**	0.09	3.37	4.15
	0009_MW013_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.09	<0.2	<0.05	<0.05	<0.05	0.05	0.06	0.25	1.21	0.1	0.09	<0.12	<0.05	<0.05	0.11	**3.06**	0.11	4.27	5.13
	0009_MW013_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.05	0.06	0.17	0.97	0.10	0.08	<0.05	<0.02	<0.02	0.24	**3.58**	0.09	4.55	5.40
	0009_MW013_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.05	0.05	0.15	0.55	0.07	0.05	<0.05	<0.02	<0.02	0.08	**2.49**	0.08	3.04	3.63
	0009_MW013_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.16	<0.1	<0.02	<0.02	<0.02	0.12	0.14	0.51	2	0.21	0.18	<0.05	<0.02	<0.02	0.1	**4.16**	0.21	6.16	7.79
	0009_MW013_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.13	<0.1	<0.02	<0.02	<0.02	0.09	0.1	0.38	1.55	0.16	0.12	<0.05	<0.02	<0.02	0.1	**4.19**	0.16	5.74	6.98
	0009_MW013_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.05	0.05	0.2	0.88	0.08	0.07	<0.05	<0.02	<0.02	0.15	**2.33**	0.09	3.21	3.97
	0009_MW013_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.04	0.05	0.16	0.79	0.07	0.06	<0.05	<0.02	<0.02	0.13	**2.68**	0.07	3.47	4.11
MW014	MW14_HIGH_190522	22/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.16	<0.1	<0.1	<0.1	0.45	0.51	<0.1	<0.1	<0.1	0.61	0.59	4.3	11	1.1	0.53	<0.1	<0.1	<0.1	<0.1	**77**	1.3	88	-
	MW14_LOW_190523	23/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	0.24	<0.1	0.11	<0.1	<0.1	<0.1	0.38	0.54	<0.1	<0.1	<0.1	0.34	0.66	3.6	8.9	0.6	0.44	<0.1	<0.1	<0.1	<0.1	**65**	1.1	73.9	-
	MW14_LOW_20190618	18/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.4	0.25	<0.1	<0.1	<0.1	0.35	0.61	2.6	9.7	0.32	0.38	0.018	<0.1	<0.1	<0.1	**86**	0.76	95.7	101.768
	MW14_HIGH_20190619	19/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.27	<0.1	<0.1	<0.1	0.34	0.22	<0.1	<0.1	<0.1	0.33	0.6	2.7	8.8	0.42	0.38	0.016	<0.1	<0.1	<0.1	**84**	0.69	92.8	98.916
	0009_MW014_HT_200930	30/09/2020	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	7.9	<0.50	<0.50	<1.25	<0.50	<0.50	<0.50	**120**	0.85	128	132
	0009_MW014_LT_200930	30/09/2020	<0.25	<0.25	<0.25	<0.25	<0.63	<0.25	<0.63	0.35	<0.63	<0.25	<0.63	0.3	<1.2	<0.25	<0.25	<0.25	0.35	0.43	3.92	7.31	0.48	0.33	<0.63	<0.25	<0.25	<0.25	**101**	0.93	108	115
	0009_MW014_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	0.69	<0.9	<0.18	<0.18	<0.18	0.46	0.69	3.03	11.50	0.64	0.51	<0.46	<0.18	<0.18	<0.18	**48.5**	0.91	60.00	66.90
	0009_MW014_HT_210409	9/04/2021	<0.18	<0.18	<0.18	<0.18	<0.45	<0.18	<0.45	<0.18	<0.45	<0.18	<0.45	0.58	<0.9	<0.18	<0.18	<0.18	0.36	0.54	2.89	7.99	0.65	0.49	<0.45	<0.18	<0.18	<0.18	**42**	0.73	50.00	56.20
	0009_MW014_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.22	<0.05	<0.02	<0.05	0.5	0.3	<0.02	<0.02	<0.02	0.44	0.86	3.91	10.7	0.63	0.6	<0.05	<0.02	<0.02	0.02	**54.6**	0.85	65.3	73.6
	0009_MW014_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.12	<0.05	<0.02	<0.05	0.54	0.3	<0.02	0.07	<0.02	0.33	0.67	3.14	8.5	0.5	0.46	<0.05	<0.02	<0.02	<0.02	**41.9**	0.65	50.4	57.2
	0009_MW014_HT_220405	5/04/2022	<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	0.47	<1.2	<0.25	<0.25	<0.25	<0.25	0.35	2.23	8.09	0.32	0.37	<0.62	<0.25	<0.25	<0.25	**30.7**	0.42	38.8	43
	0009_MW014_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.03	<0.05	<0.02	<0.05	0.72	0.3	<0.02	<0.02	<0.02	0.26	0.26	2.2	8.11	0.43	0.51	<0.05	<0.02	<0.02	<0.02	**11.2**	0.38	19.3	24.4

Table T7: Historical Ground Water Results

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																														
MW015	MW15_HIGH_190522	22/05/2019	<0.001	0.009	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.012	<0.001	<0.001	<0.001	0.012	0.014	0.069	0.22	0.028	0.016	<0.001	<0.001	<0.001	0.002	**2.1**	0.022	2.32	2.515
	MW15_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.016	0.016	<0.001	<0.001	<0.001	0.018	0.029	0.095	0.33	0.036	0.029	<0.001	<0.001	<0.001	0.003	**3**	0.034	3.33	-
	MW15_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.012	0.014	<0.001	<0.001	<0.001	0.013	0.016	0.096	0.25	0.034	0.016	<0.001	<0.001	<0.001	0.001	**1**	0.021	1.25	1.473
	MW15_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.014	0.015	<0.001	<0.001	<0.001	0.017	0.02	0.097	0.28	0.035	0.019	<0.001	<0.001	<0.001	0.002	**1.7**	0.024	1.98	2.249
	0009_MW015_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	0.35	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	**1.74**	<0.05	2.09	2.25
	0009_MW015_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.21	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	**1.17**	<0.02	1.38	1.46
	0009_MW015_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.21	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**1.44**	0.02	1.65	1.78
	0009_MW015_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.10	0.27	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	**2.52**	0.03	2.79	2.98
	0009_MW015_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.18	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**1.43**	0.01	1.61	1.66
	0009_MW015_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.23	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.97**	0.01	1.2	1.25
	0009_MW015_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.28	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	**3.04**	0.03	3.32	3.47
	0009_MW015_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.24	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**1.79**	0.02	2.03	2.14
MW016	MW16_LOW_190521	21/05/2019	<0.001	0.058	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.17	0.049	<0.001	<0.001	<0.001	0.033	0.11	0.34	1.5	0.098	0.27	<0.001	<0.001	<0.001	0.002	**1.6**	0.075	3.1	4.355
	MW16_HIGH_190522	22/05/2019	<0.001	0.048	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.2	0.054	<0.001	<0.001	<0.001	0.036	0.1	0.41	1.4	0.11	0.36	<0.001	<0.001	<0.001	0.002	**1.6**	0.067	3	4.447
	MW16_LOW_20190618	18/06/2019	<0.001	0.017	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.18	0.047	<0.001	<0.001	<0.001	0.029	0.035	0.4	1.1	0.12	0.23	<0.001	<0.001	<0.001	<0.001	**0.57**	0.027	1.67	2.825
	MW16_HIGH_20190619	19/06/2019	<0.001	0.02	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.19	0.051	<0.001	<0.001	<0.001	0.033	0.042	0.42	1.3	0.089	0.23	<0.001	<0.001	<0.001	<0.001	**0.53**	0.024	1.83	3.009
	0009_MW016_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.35	<0.2	<0.05	<0.05	<0.05	0.07	<0.05	0.69	3.2	0.11	0.45	<0.12	<0.05	<0.05	<0.05	0.07	<0.05	3.27	4.94
	0009_MW016_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.36	<0.2	<0.05	<0.05	<0.05	0.07	<0.05	0.67	3.08	<0.05	0.44	<0.12	<0.05	<0.05	<0.05	0.1	<0.05	3.18	4.72
	0009_MW016_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.31	<0.1	<0.02	<0.02	<0.02	0.08	<0.02	0.58	2.59	0.16	0.38	<0.05	<0.02	<0.02	<0.02	**0.15**	0.02	2.74	4.27
	0009_MW016_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.20	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.42	1.72	0.09	0.34	<0.05	<0.02	<0.02	<0.02	**0.22**	0.01	1.94	3.05
	0009_MW016_HT_211027	27/10/2021	<0.05	0.18	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.15	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.32	1.08	0.08	0.18	<0.05	<0.02	<0.02	<0.02	**0.27**	<0.01	1.35	2.29
	0009_MW016_LT_211028	28/10/2021	<0.05	0.24	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.29	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.48	2.03	0.1	0.23	<0.05	<0.02	<0.02	<0.02	**0.16**	0.01	2.19	3.59
	0009_MW016_211208	8/12/2021	<0.05	0.12	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.27	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.46	1.75	0.09	0.33	<0.05	<0.02	<0.02	<0.02	**0.15**	<0.02	1.9	3.23
	0009_MW016_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.23	1.1	0.05	0.16	<0.05	<0.02	<0.02	<0.02	**0.15**	<0.01	1.25	1.83
	0009_MW016_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.25	1.19	0.06	0.19	<0.05	<0.02	<0.02	<0.02	**0.18**	<0.01	1.37	2.03
MW017	MW17_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.014	<0.05	<0.01	<0.01	<0.01	0.014	0.013	0.056	0.22	0.026	0.026	<0.01	<0.01	<0.01	<0.01	**1.1**	0.033	1.32	1.516
	MW17_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.019	0.014	<0.001	<0.001	<0.001	0.016	0.026	0.064	0.31	0.025	0.035	<0.001	<0.001	<0.001	0.001	**1**	0.03	1.31	1.54
	MW17_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.008	<0.001	<0.001	<0.001	0.008	0.007	0.037	0.16	0.018	0.017	<0.001	<0.001	<0.001	<0.001	**0.38**	0.013	0.54	0.659
	MW17_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.034	0.019	<0.001	<0.001	<0.001	0.021	0.03	0.094	0.5	0.034	0.051	<0.001	<0.001	<0.001	0.002	**1.3**	0.041	1.8	2.126
	0009_MW017_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.31	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	**1.13**	0.03	1.44	1.58
	0009_MW017_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.21	<0.02	0.02	<0.05	<0.02	<0.02	<0.02	**0.87**	0.02	1.08	1.17
	0009_MW017_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.34	0.03	0.04	<0.05	<0.02	<0.02	<0.02	**1.67**	0.03	2.01	2.22
	0009_MW017_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.23	0.02	0.02	<0.05	<0.02	<0.02	<0.02	**0.97**	0.02	1.20	1.31
	0009_MW017_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.02	0.04	0.12	0.64	0.04	0.07	<0.05	<0.02	<0.02	<0.02	**2.08**	0.06	2.72	3.11
	0009_MW017_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	0.03	0.08	0.45	0.02	0.03	<0.05	<0.02	<0.02	<0.02	**2.25**	0.04	2.7	2.93
	0009_MW017_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.38	0.03	0.03	<0.05	<0.02	<0.02	<0.02	**1.44**	0.03	1.82	2.01
	0009_MW017_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.03	0.03
MW018	MW18_LOW_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.013	0.016	0.025	0.059
	MW18_HIGH_190522	22/05/2019	<0.001	<0.005	0.001	zxxxxxxxx	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	0.003	0.001	0.004	0.014	0.003	0.001	<0.001	<0.001	<0.001	<0.001	0.068	0.012	0.082	0.107
	MW18_LOW_20190619	19/06/2019	<0.001	0.007	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	0.002	<0.001	0.003	0.005	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.013	0.011	0.018	0.046
	MW18_HIGH_20190620	20/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	0.002	<0.001	0.003	0.005	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.012	0.009	0.017	0.036
	0009_MW018_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.08	<0.01	0.08	0.08
	0009_MW018_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_MW018_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_MW018_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_MW018_HT_211027	27/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.09
	0009_MW018_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_MW018_211208	8/12/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.06	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.03	<0.01	<0.01	<0.01
	0009_MW018_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
MW019	MW19_HIGH_190521	21/05/2019	<0.001	0.078	0.002	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.081	0.055	<0.001	<0.001	<0.001	0.18	0.34	0.41	1.1	0.29	0.16	<0.001	<0.001	<0.001	0.017	**5.4**	0.38	6.5	8.513
	MW19_LOW_190524	24/05/2019	<0.001	0.11	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.076	0.053	<0.001	<0.001	<0.001	0.17	0.36	0.39	1.2	0.28	0.14	<0.001	<0.001	<0.001	0.021	**8.3**	0.38	9.5	11.503
	MW19_LOW_20190619	19/06/2019	<0.001	0.047	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.034	0.03	<0.001	<0.001	<0.001	0.071	0.1	0.18	0.55	0.12	0.046	<0.001	<0.001	<0.001	0.006	**1.7**	0.11	2.25	3.004
	MW19_HIGH_20190620	20/06/2019	<0.001	0.036	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.035	0.03	<0.001	<0.001	<0.001	0.065	0.093	0.18	0.54	0.13	0.052	<0.001	<0.001	<0.001	0.006	**1.2**	0.1	1.74	2.477
	0009_MW019_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.06	<0.2	<0.05	<0.05	<0.05	<0.05	0.09	0.2	0.55	0.07	<0.05	<0.12	<0.05	<0.05	<0.05	**3.16**	0.12	3.71	4.25
	0009_MW019_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.07	<0.2	<0.05	<0.05	<0.05	0.06	0.14	0.24	0.63	0.06	<0.05	<0.12	<0.05	<0.05	<0.05	**4.82**	0.18	5.45	6.2
	0009_MW019_LT_210408	8/04/2021	<0.1	0.31	<0.1	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.5	<0.1	<0.1	<0.1	0.11	0.24	0.26	0.86	0.15	<0.1	<0.24	<0.1	<0.1	<0.1	**11.7**	0.26	12.60	13.90
	0009_MW019_HT_210409	9/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.07	0.13	0.16	0.47	0.10	0.05	<0.05	<0.02	<0.02	<0.02	**4.21**	0.14	4.68	5.43
	0009_MW019_HT_211027	27/10/2021	<0.05	0.63	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	0.03	0.06	0.1	0.23	0.06	0.02	<0.05	<0.02	<0.02	<0.02	**2.11**	0.06	2.34	3.32
	0009_MW019_LT_211028	28/10/2021	<0.05	0.38	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	0.04	0.07	0.13	0.28	0.08	0.03	<0.05	<0.02	<0.02	<0.02	**2.4**	0.07	2.68	3.5
	0009_MW019_211208	8/12/2021	<0.05	0.12	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.09	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.05	0.08	0.16	0.32	0.08	0.04	<0.05	<0.02	<0.02	<0.02	**2.16**	0.08	2.48	3.13
	0009_MW019_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	0.07	0.16	0.18	0.58	0.1	0.04	<0.05	<0.02	<0.02	<0.02	**4.4**	0.15	4.98	5.73
	0009_MW019_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.15	<0.1	<0.02	<0.02	<0.02	0.07	0.18	0.19	0.62	0.1	0.05	<0.05	<0.02	<0.02	<0.02	**6.64**	0.19	7.26	8.19

Table T7: Historical Ground Water Results

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																														
Former WWII RAN Fuel Installation																																
MW031	MW31_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.005	0.001	<0.001	<0.001	<0.001	0.001	0.011	0.035	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	**0.31**	0.002	0.345	0.366
	MW31_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	<0.001	0.002	0.006	0.026	0.003	0.003	<0.001	<0.001	<0.001	<0.001	**0.32**	0.001	0.346	0.363
	0009_MW031_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.26**	<0.01	0.31	0.31
	0009_MW031_210408	8/04/2021	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.24**	<0.01	0.30	0.37
	0009_MW031_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.12	<0.01	0.14	0.14
	0009_MW031_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.33**	<0.01	0.42	0.42
MW035	CRC_MW01_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.2	0.035	<0.001	<0.001	<0.001	0.004	0.027	0.054	0.8	0.02	0.32	<0.001	<0.001	<0.001	<0.001	0.097	0.009	0.897	1.626
	CRC_MW01_190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.19	0.046	<0.001	<0.001	<0.001	0.003	0.025	0.078	0.67	0.017	0.2	<0.001	<0.001	<0.001	<0.001	**0.34**	0.01	1.01	1.679
	0009_MW035_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.1	0.1
	0009_MW035_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.50	<0.02	0.16	<0.05	<0.02	<0.02	<0.02	0.13	<0.01	0.63	0.96
	0009_MW035_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_MW035_220405	5/04/2022	<0.05	0.15	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.13	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.42	<0.02	0.1	<0.05	<0.02	<0.02	<0.02	**0.2**	<0.01	0.62	1
MW036	CRC_MW02_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.017	<0.001	<0.001	<0.001	0.004	0.008	0.044	0.21	0.018	0.036	<0.001	<0.001	<0.001	<0.001	**0.16**	0.01	0.37	0.557
	CRC_MW02_190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.027	0.01	<0.001	<0.001	<0.001	0.002	0.008	0.044	0.17	0.011	0.031	<0.001	<0.001	<0.001	<0.001	**0.28**	0.008	0.45	0.601
	0009_MW036_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.11	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.29**	<0.01	0.4	0.4
	0009_MW036_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.25	<0.02	0.06	<0.05	<0.02	<0.02	<0.02	**0.29**	0.01	0.54	0.71
	0009_MW036_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.17	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	**0.22**	<0.01	0.39	0.51

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than

Table T8: Historical Surface Water Results

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
NHMRC (2019) PFAS Recreational Water																														**10**	**2**	
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													***0.13***	***220***		
Location ID	Sample ID	Sample Date																														
HMAS Cairns																																
SW030	HCSW2	4/03/2016	-	<0.1	<0.1	-	<0.05	-	<0.5	<0.02	<0.5	-	<0.5	<0.02	-	<0.02	<0.02	<0.05	<0.02	-	0.04	0.04	-	-	<0.5	<0.05	<0.05	<0.02	*0.2*	0.01	-	-
	0009_SW022_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.06	0.3	0.02	0.03	<0.05	<0.02	<0.02	<0.02	*1.24*	0.04	1.54	1.74
	0009_SW030_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	*0.15*	<0.01	0.20	0.20
	0009_SW030_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_SW030_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
SW031	0009_SW003_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.12	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	*1.03*	0.03	1.15	1.22
	0009_SW023_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_SW003_210105	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.06	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	<0.02	0.11	0.25	1.24	2.08	0.21	0.17	<0.05	<0.02	<0.02	<0.02	*6.87*	0.2	8.95	11.3
	0009_SW031_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW031_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_SW031_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW032	HCSW1	4/03/2016	-	<0.1	<0.1	-	<0.05	-	<0.5	<0.02	<0.5	-	<0.5	<0.02	-	<0.02	<0.02	<0.05	<0.02	-	0.06	0.27	-	-	<0.5	<0.05	<0.05	<0.02	*0.24*	0.01	-	-
	HCSW01_190404	4/04/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.004	0.007	<0.001	<0.001	<0.001	<0.001	0.006	0.006	0.018	0.084	0.008	0.008	<0.001	<0.001	<0.001	<0.001	*0.38*	0.014	0.464	0.535
	0009_SW001_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.1	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	*0.6*	0.01	0.7	0.71
	0009_SW021_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW001_210105	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.28	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	*0.42*	0.03	0.7	0.83
	0009_SW032_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_SW032_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW032_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW033	HCSW4	4/03/2016	-	<0.1	<0.1	-	<0.05	-	<0.5	<0.02	<0.5	-	<0.5	<0.02	-	<0.02	<0.02	<0.05	<0.02	-	<0.02	<0.02	-	-	<0.5	<0.05	<0.05	<0.02	0.06	0.03	-	-
	HCSW04_190404	4/04/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	0.003	<0.001	<0.001	0.003	<0.001	0.004	0.006	0.004	<0.001	<0.001	<0.001	<0.001	0.001	0.025	0.007	0.031	0.053
	HCSW05_190404	4/04/2019	<0.001	0.005	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.004	0.007	<0.001	<0.001	<0.001	0.008	0.003	0.023	0.084	0.018	0.006	<0.001	<0.001	0.002	0.005	*0.25*	0.009	0.334	0.427
	0009_SW004_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	*0.22*	<0.01	0.22	0.22
	0009_SW024_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW004_210105	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.06	0.01	0.06	0.07
	0009_SW033_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.03	0.03
	0009_SW033_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW033_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW034	HCSW06_190404	4/04/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	0.003	0.001	0.01	0.033	0.01	0.002	<0.001	<0.001	<0.001	0.002	0.094	0.004	0.127	0.162
	HCSW5_190617	17/06/2019	<0.001	0.007	0.002	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	0.012	<0.001	<0.001	<0.001	0.012	0.005	0.038	0.064	<0.05	0.006	0.016	<0.001	<0.001	0.003	*0.28*	0.012	0.344	0.462
	0009_SW005_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.06	<0.01	0.08	0.08
	0009_SW025_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_SW005_210105	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW034_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.09	<0.01	0.12	0.12
	0009_SW034_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW034_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
SW035	HCSW6_190617	17/06/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	0.008	<0.001	<0.001	<0.001	0.009	0.001	0.031	0.053	<0.05	0.004	<0.001	<0.001	<0.001	0.003	*0.16*	0.008	0.213	0.281
	HCSW6_190617_TOPA	17/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.01	<0.01	0.08	0.06	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	*0.2*	0.01	0.26	0.39
	0009_SW006_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_SW026_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
	0009_SW006_210105	5/01/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW035_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
	0009_SW035_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW035_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.07	<0.01	0.11	0.11
Former WWII RAN Fuel Installation																																
SW036	SW08_190513	13/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<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	0.003	0.001	0.004	0.006
	SW08_190618	18/06/2019	<0.001	<0.005	0.013	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0057	0.001	0.0077	0.0257
	0009_SW008_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW036_210408	8/04/2021	<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	0.08
	0009_SW036_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW036_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW100	SW20_190912	12/09/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0037	<0.001	0.0057	0.0057
	0009_SW020_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW100_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW100_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_SW100_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
SW101	SW17_190912	12/09/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0034	0.001	0.0054	0.0064
	0009_SW017_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW101_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW101_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_SW101_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than

Table T9: Historical Sediment Results

Location ID	Sample ID	Date	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	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	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HMAS Cairns																																	
SD030	HCSW2_SD	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	HCSW2_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.02	<0.005	0.02	<0.05
	0009_SD020_200930	30/09/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0026	<0.0002	0.003	0.003
	0009_SD030_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0115	<0.0002	0.0121	0.0129
	0009_SD030_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0047	<0.0002	0.0047	0.005
	0009_SD030_220404	4/04/2022	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.001	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0076	<0.0002	0.0076	0.0094
SD031	HCSW3_SD	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW3_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD021_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.001	<0.0002	0.001	0.001
	0009_SD031_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0024	<0.0002	0.0024	0.0027
	0009_SD031_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.002	<0.0002	0.002	0.002
	0009_SD031_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0243	<0.0002	0.0247	0.025
SD032	HCSW01_190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW1_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD019_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD032_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0024	<0.0002	0.0024	0.0024
	0009_SD032_211028	28/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003
	0009_SD032_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.001	<0.0002	0.001	0.001
SD033	HCSW05_190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW4_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD022_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	0009_SD033_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	0009_SD033_211028	28/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	0009_SD033_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
SD034	HCSW06_190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW5_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD023_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD034_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.001	<0.0002	0.0012	0.0012
	0009_SD034_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD034_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.002	0.0002	0.002	0.0022
SD035	HCSW06_20190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW6_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD024_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	0.0007	0.0007
	0009_SD035_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0009	<0.0002	0.0009	0.0009
	0009_SD035_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	0.0007	0.0007
	0009_SD035_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0016	<0.0002	0.0016	0.0018
Former WWII RAN Fuel Installation																																	
SD036	SD08_190513	13/05/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	SW08_SD_0-0.1	18/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD008_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD036_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD036_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	0.0002	0.0006	0.0008
	0009_SD036_211208	8/12/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0009
	0009_SD036_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0008	0.0003	0.0008	0.0011
SD100	SW20_190912_SD	12/09/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD100_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD100_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	0.0003	0.0003
	0009_SD100_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD100_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0009
SD101	SW17_190912_SD	12/09/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD101_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD101_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD101_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD101_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

LOR is limit of reporting
mg/kg is milligrams per kilogram
"<" denotes concentration less than

Appendix C

Analytical Data Validation

DATA VALIDATION REPORT

Project No.:	60612487	**Validation by:**	[redacted]	**Date:**	12/05/2022
Client:	Department of Defence				
Site:	HMAS Cairns (0009)				
Matrix type:	Groundwater, surface water, sediment	**Data verified by:**	[redacted]	**Date:**	12/05/2022
No. of primary samples:	15 groundwater (sample replicated on both high and low tide), 3 groundwater (no tidal replication), 9 surface water, 9 sediment				
Laboratory:	ALS (Brisbane), NMI (Sydney)	**Project Manager:**	[redacted]		
Lab reference:	ET2201972, RN1348851				

Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication on data interpretation and therefore decision-making on the project. The data are considered appropriate for use to meet the project objectives.

Field QA/QC

Sampling personnel	Sampling was conducted by AECOM personnel from 4 to 5 April 2022.
Sampling Methodology	Groundwater samples were collected using appropriate methods as identified within the main body of the report. Hydrasleeves were installed in the well for a minimum of 24 hours prior to collection.
Chain of Custody (COC)	COC documents completed as per AECOM procedures.
Rinsate Blank	Rinsate blank samples were collected at a frequency of one per field staff per day of sampling (two in total). Concentrations of all analytes tested were reported below the LOR for rinsate samples.
Trip Blanks	Trip blank samples were submitted to the laboratory at a rate of one per batch of primary samples delivered to the laboratory (one in total). Concentrations were reported below the LOR for all analytes tested in the trip blank. Trip blanks were not submitted for batches where samples on private properties were collected.
Eskies to Laboratory	A total of one esky of samples in one delivery was submitted to ALS across the sampling event. One esky was submitted to NMI.
Frequency of field QC	Field duplicates (inter-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected at a target frequency of one in ten primary samples (four duplicates and triplicates for groundwater, one duplicate and triplicate for surface water and one duplicate and triplicate for sediment). The target frequency of 10% for field duplicates and triplicates was achieved for all matrices.
Handling and preservation	Primary, duplicate and triplicate samples were received preserved and chilled at the laboratory. Sample receipt temperature was reported between 6.1°C and 10.8°C. All samples were received at the laboratory in appropriate sample containers with no sample container / preservation non-compliances noted.
Equipment Calibration	Calibration of the water quality meter was conducted each day before sampling, see **Appendix F**.

Laboratory QA/QC	
Tests requested/reported	Samples were analysed and reported as requested on the COC with the exception of two samples, 0009_MW018_LT_220404 and 0009_MW011_LT_220404. A preparation error by the laboratory resulted in the loss of the parent sample matrix. It was unclear whether the analysis performed was on the relevant parent sample or sourced from a different parent sample. As such, analysis on these samples was not reported by the laboratory.
Holding time compliance	Samples were extracted and analysed within recommended holding times.
Laboratory Accreditation	The laboratory analysis was conducted by ALS Environmental Pty Ltd (Brisbane) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate samples were analysed at the National Measurement Institute (Sydney), also a NATA accredited laboratory.
Frequency of laboratory QC	The laboratory reported sufficient frequency of quality control samples to assess whether the results have been reported to an acceptable accuracy and precision.
Method Blank	No method blank value outliers were reported.
Laboratory duplicate RPDs	Laboratory duplicate Relative Percentage Differences (RPD) were within control limits for all samples with the exception of : • perfluorooctane sulfonic acid (PFOS) had an RPD of 26%, above the acceptance limit of 20% for laboratory duplicates. Laboratory duplicates were not performed for batch RN1345718.
Laboratory control spike (LCS) recovery	All LCS recoveries were reported within acceptable limits. •
Matrix spike recovery	All matrix spike (MS) recoveries were within control limits, except: • PFOS was not determined in soil for sample ET2201972-042 due to background level being greater than or equal to four times the spike level. • MeFOSA recovery (143%) and 10:2 FTS recovery (45.3%) were reported outside of the data quality objective range for ET2201972-017.
Surrogate spike recovery	No surrogate recovery outliers were reported.

QA/QC Data Evaluation	
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted.
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.
Limits of reporting	Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted screening levels. LOR values were adjusted due to sample matrix interference or high analyte concentrations for the following samples: • 0009_MW002_HT_220405/ 0009_MW002_LT_220404. • 0009_MW004_HT_220405 • 0009_MW005_HT_220405 • 0009_MW007_HT_220405/ 0009_MW007_LT_220404 • 0009_MW014_HT_220405

Field duplicate RPDs	Field duplicate RPDs were reported within control limits.
Field triplicate RPDs	Field triplicate RPDs were reported within control limits for all sample sets with the exception of the following (the sample with the higher concentration is in bold): • PFOS in **0009_MW019_LT_220404** and 0009_QC203_220404. • PFBS, PFHpS, PFHpA, PFHxA, PFPeS, PFOA in **0009_MW002_HT_220405** and 0009_QC204_220405. • PFOS in **0009_MW015_HT_220405** and 0009_QC205_220405. Triplicate concentrations were within the same order of magnitude compared to the concentrations in the primary sample and this is not considered to impact interpretation of results. The variability between the primary and triplicate results is inferred to be the result of slight differences in analytical methods employed by the two laboratories. This is demonstrated through the laboratory duplicate results all being within acceptable limits.

Table C1 - Groundwater Field Duplicate and Triplicate Results

		Lab Report Number	ET2201972	ET2201972		ET2201972	ET2201972		ET2201972	ET2201972		ET2201972	ET2201972	
		Field ID	0009_MW013_LT_220404	0009_QC102_220404	**RPD**	0009_MW019_LT_220404	0009_QC103_220404	**RPD**	0009_MW002_HT_220405	0009_QC104_220405	**RPD**	0009_MW015_HT_220405	0009_QC105_220405	**RPD**
		Sampled Date/Time	4/04/2022 14:00	4/04/2022 14:00		4/04/2022 16:38	4/04/2022 16:38		5/04/2022 8:55	5/04/2022 8:55		5/04/2022 9:12	5/04/2022 9:12	
ChemName	**Units**	**EQL**												
Sum of PFAS (WA DER List)	µg/L	0.01	3.87	4.05	5	7.96	6.73	17	114	122	7	3.47	2.82	21
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.48	<0.05	0	<0.05	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.48	<0.05	0	<0.05	<0.05	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	0.05	0	<0.48	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.48	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<1.19	<0.12	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.48	<0.05	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	<1.19	<0.12	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<1.19	<0.12	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.48	<0.05	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	<1.19	<0.12	0	<0.05	<0.05	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.06	0.05	18	0.15	<0.14	7	2.57	2.24	14	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<2.4	0.7	0	<0.1	<0.1	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.48	<0.05	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.48	<0.05	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.48	<0.05	0	<0.02	<0.02	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.05	0.05	0	0.18	0.19	5	2.62	2.64	1	<0.02	<0.02	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.04	0	0.07	0.07	0	1.28	1.3	2	<0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.16	0.16	0	0.19	0.16	17	8.05	7.52	7	0.08	0.08	0
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	0.13	0.13	0	<0.02	<0.02	0	<0.48	<0.05	0	<0.02	<0.02	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.48	0.08	0	<0.02	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.06	0.06	0	0.05	0.05	0	2.48	2.43	2	<0.02	<0.02	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.07	0.07	0	0.1	0.1	0	1.62	1.56	4	0.04	0.04	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<1.19	<0.12	0	<0.05	<0.05	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.48	<0.05	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.48	<0.05	0	<0.02	<0.02	0
Sum of PFAS	µg/L	0.01	4.11	4.29	4	8.19	6.97	16	119	127	7	3.47	2.82	21
Sum of PFHxS and PFOS	µg/L	0.01	3.47	3.66	5	7.26	6.19	16	97.4	105	8	3.32	2.67	22
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	2.68	2.91	8	6.64	5.51	19	68.1	75.7	11	3.04	2.41	23
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.07	0.07	0	0.19	0.16	17	3.14	3.08	2	0.03	0.03	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.79	0.75	5	0.62	0.68	9	29.3	29.4	0	0.28	0.26	7

Table C1 - Groundwater Field Duplicate and Triplicate Results

		Lab Report Number	ET2201972	RN1348809		ET2201972	RN1348809		ET2201972	RN1348809		ET2201972	RN1348809	
		Field ID	0009_MW013_LT_220404	0009_QC202_220404	**RPD**	0009_MW019_LT_220404	0009_QC203_220404	**RPD**	0009_MW002_HT_220405	0009_QC204_220405	**RPD**	0009_MW015_HT_220405	0009_QC205_220405	**RPD**
		Sampled Date/Time	4/04/2022 14:00	4/04/2022 14:00		4/04/2022 16:38	4/04/2022 16:38		5/04/2022 8:55	5/04/2022 8:55		5/04/2022 9:12	5/04/2022 9:12	
ChemName	**Units**	**EQL**												
Sum of PFAS (WA DER List)	µg/L	0.01	3.87			7.96			114			3.47		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.48	<0.01	0	<0.05	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.48	<0.01	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	0.042	0	<0.48	0.025	0	<0.05	0.026	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.48	0.029	0	<0.05	<0.01	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	0	<0.05	<0.02	0	<1.19	<0.02	0	<0.05	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.48	<0.01	0	<0.02	<0.01	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<1.19	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	0	<0.05	<0.02	0	<1.19	<0.02	0	<0.05	<0.02	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.48	<0.01	0	<0.02	<0.01	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<1.19	<0.05	0	<0.05	<0.05	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.06	0.081	30	0.15	0.032	130	**2.57**	**1.7**	**41**	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.05	0	<0.1	<0.05	0	<2.4	0.91	0	<0.1	<0.05	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.48	0.016	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.48	0.013	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.48	<0.01	0	<0.02	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.05	0.043	15	0.18	0.13	32	**2.62**	**1.4**	**61**	<0.02	0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.049	20	0.07	0.06	15	**1.28**	**0.91**	**34**	<0.02	0.016	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.16	0.2	22	0.19	0.14	30	**8.05**	**5.8**	**32**	0.08	0.064	22
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	0.13	0.094	32	<0.02	0.013	0	<0.48	0.056	0	<0.02	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.48	0.072	0	<0.02	<0.01	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.06	0.081	30	0.05	0.043	15	**2.48**	**1.5**	**49**	<0.02	0.015	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.07	0.089	24	0.1	0.1	0	1.62	1.3	22	0.04	0.037	8
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	0	<0.05	<0.02	0	<1.19	<0.02	0	<0.05	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.48	<0.02	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.48	<0.01	0	<0.02	<0.01	0
Sum of PFAS	µg/L	0.01	4.11			8.19			119			3.47		
Sum of PFHxS and PFOS	µg/L	0.01	3.47			7.26			97.4			3.32		
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	2.68	2.2	20	**6.64**	**3.3**	**67**	68.1	51	29	**3.04**	**1.7**	**57**
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.07	0.077	10	0.19	0.13	38	**3.14**	**2.1**	**40**	0.03	0.02	40
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.79	0.86	8	0.62	0.52	18	29.3	23	24	0.28	0.24	15

Table C2 - Sediment Field Duplicates and Triplicate Results

Lab Report Number	ET2201972	ET2201972		ET2201972	RN1348809	
Field ID	0009_SD036_220404	0009_QC101_220404	**RPD**	0009_SD036_220404	0009_QC201_220404	**RPD**
Sampled Date/Time	4/04/2022 7:45	4/04/2022 7:45		4/04/2022 7:45	4/04/2022 7:45	

ChemName	**Units**	**EQL**						
Sum of PFAS (WA DER List)	mg/kg	0.0002	0.0011	0.001	10	0.0011		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.002	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.001	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.001	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.001	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.002	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.002	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.005	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.002	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.002	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.005	0
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorobutanoic acid (PFBA)	mg/kg	0.001	<0.001	<0.001	0	<0.001	<0.002	0
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.002	0
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.001	0
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.002	0
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.002	0
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.002	0
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.002	0
Sum of PFAS	mg/kg	0.0002	0.0011	0.001	10	0.0011		
Sum of PFHxS and PFOS	mg/kg	0.0002	0.0008	0.0007	13	0.0008		
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002 : 0.002 (Interlab)	0.0008	0.0007	13	0.0008	<0.002	0
Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002 : 0.001 (Interlab)	0.0003	0.0003	0	0.0003	<0.001	0
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.001	0
Suite								
Moisture Content_	%	0.1	52	51.9	0	52		

Table C3 - Rinsate and Field Blanks

Lab Report Number	ET2201972	ET2201972	ET2201972
Field ID	0009_QC301_220404	0009_QC302_220405	0009_QC500_220405
Sampled_Date/Time	4/04/2022 16:55	5/04/2022 11:03	4/04/2022 12:00
Sample Type	Rinsate	Rinsate	Trip_B

ChemName	Units	EQL			
Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer Sulfonate (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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05
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
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	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
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide (FOSA)	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
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01

Appendix D

Chain of Custody Forms

ANZ

FQM - Generic Chain of Custody Form

AECOQ6/220407 ✓14/4 mn

AECOM

Q4AN(EV)-007-FM1

CONSULTANT: AECOM Australia Pty Ltd	ADDRESS : Level 5, 7-9 Tomlins Street, South Townsville	SAMPLER: [redacted]	**Destination Laboratory** NMI Laboratories Sydney
PROJECT MANAGER (PM): [redacted]	SITE: QLD_0009	MOBILE: [redacted] PHONE:	
PROJECT NUMBER & TASK CODE: QLD_0009_PFASOMP_20	P.O. NO.: 60612487_4.1	EMAIL REPORT TO: [redacted]	
RESULTS REQUIRED (Date): 5 day turn around time	QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFORMATION Type / Code	Total bottles	Water - PFAS 28 analytes - Standard LOR	Soil - PFAS 28 analytes - Standard LOR	HOLD	
	0009_QC200_220404	W	4/04/22		P	1	X			N22/006283
	0009_QC201_220404	S	4/04/22		P (Plastic Jar)	1		X		N22/006284
	0009_QC202_220404	W	4/04/22		P	1	X			N22/006285
	0009_QC203_220404	W	4/04/22		P	1	X			N22/006286
	0009_QC204_220405	W	5/04/22		P	1	X			N22/006287
	0009_QC205_220405	W	5/04/22		P	1	X			N22/006288
	0009_QC501_220404	W	4/04/22		P	1	X			N22/006289

RECEIVED
07 APR 2022
BY: [redacted]

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: [redacted]	Date: 06/04/2022	Name:	Date:	Name:	Date:	Con' Note No:
Of:	Time: 09:50	Of:	Time:	Of:	Time:	Transport Co:

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.
Soil Container Codes: Jar = Unpreserved glass jar

ALSCompass
SAMPLING *Intelligence*

ALS

Environmental Division
Townsville
Work Order Reference
ET2201972

Telephone : ~ 61 7 4773 0000

Custody Document for Submissions via ALS Compass App

Project: QLD_0009_PFASOMP_20 **Client:** AECOM **Project Manager:** [redacted]
Phone: ( )

ALS Compass COC Reference: 35899 **# Samples:** 61 **Sampler:** [redacted]
Phone: ( )

Turnaround Requirements: Standard / _____ Urgent _____

Special Instructions:

Custody:

Relinquished by:	Rece[redacted]	Relinquished by:	Received by:
[redacted]			[redacted]
Date / Time:	Date / Time: 06/04 5:20	Date / Time:	Date / Time: 8.4.22 8.24

CHAIN OF CUSTODY

COC#: 35899 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0009_SW036_220404		04/04/2022 07:44 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
002	0009_QC100_220404		04/04/2022 07:45 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
003	0009_SD036_220404		04/04/2022 07:45 AM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
004	0009_QC101_220404		04/04/2022 07:46 AM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
005	0009_MW036_220404		04/04/2022 08:27 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
006	0009_SW100_220404		04/04/2022 08:57 AM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		Extra vol lab qc
007	0009_SD100_220404		04/04/2022 09:03 AM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
008	0009_SW101_220404		04/04/2022 09:11 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
009	0009_SD101_220404		04/04/2022 09:13 AM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			

CHAIN OF CUSTODY

COC#: **35899** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0009_QC300_220404		04/04/2022 09:27 AM	Water	ALS: 2 Non ALS: 0	Yes	-				
011	0009_SW031_220404		04/04/2022 10:50 AM	Water	ALS: 2 Non ALS: 0	No	-				
012	0009_SD031_220404		04/04/2022 10:51 AM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
013	0009_SD030_220404		04/04/2022 10:51 AM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
014	0009_SW030_220404		04/04/2022 10:53 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
015	0009_SW035_220404		04/04/2022 12:06 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
016	0009_SD035_220404		04/04/2022 12:07 PM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
017	0009_SW034_220404		04/04/2022 12:20 PM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		Extra vol lab qc
018	0009_SD034_220404		04/04/2022 12:21 PM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			

CHAIN OF CUSTODY

COC#: 35899 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0009_SW032_220404		04/04/2022 12:35 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
020	0009_SD032_220404		04/04/2022 12:38 PM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
021	0009_SW033_220404		04/04/2022 12:54 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
022	0009_SD033_220404		04/04/2022 12:54 PM	Soil	ALS: 1 Non ALS: 0	No		Partial 1/4			
023	0009_MW004_LT_220404		04/04/2022 01:40 PM	Water	ALS: 2 Non ALS: 0	No	-				
024	0009_MW002_LT_220404		04/04/2022 02:20 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
025	0009_MW005_LT_220404		04/04/2022 02:49 PM	Water	ALS: 2 Non ALS: 0	No	-				
026	0009_MW013_LT_220404		04/04/2022 02:00 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
027	0009_MW001_LT_220404		04/04/2022 02:30 PM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		Extra vol lab qc

CHAIN OF CUSTODY

COC#: **35899** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0009_MW003_LT_220404		04/04/2022 02:15 PM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		Extra vol lab qc
029	0009_QC102_220404		04/04/2022 02:52 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
030	0009_MW014_LT_220404		04/04/2022 03:00 PM	Water	ALS: 2 Non ALS: 0	No	-				
031	0009_MW015_LT_220404		04/04/2022 03:11 PM	Water	ALS: 2 Non ALS: 0	No	-				
032	0009_MW016_LT_220404		04/04/2022 03:30 PM	Water	ALS: 4 Non ALS: 0	No	-				Extra vol lab qc
033	0009_MW007_LT_220404		04/04/2022 03:47 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
034	0009_MW017_LT_220404		04/04/2022 03:59 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
035	0009_MW018_LT_220404		04/04/2022 04:12 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
036	0009_MW011_LT_220404		04/04/2022 04:24 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		

CHAIN OF CUSTODY

COC#: **35899** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0009_MW019_LT_220404		04/04/2022 04:38 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
038	0009_MW009_LT_220404		04/04/2022 04:46 PM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		Extra vol lab qc
039	0009_QC103_220404		04/04/2022 04:38 PM	Water	ALS: 2 Non ALS: 0	No	-				
040	0009_QC301_220404		04/04/2022 04:55 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
041	0009_MW003_HT_220405		05/04/2022 08:20 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
042	0009_MW013_HT_220405		05/04/2022 08:15 AM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		Extra vol lab qc
043	0009_MW005_HT_220405		05/04/2022 08:05 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
044	0009_MW002_HT_220405		05/04/2022 08:55 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
045	0009_MW001_HT_220405		05/04/2022 08:40 AM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		Extr vol lab qc

CHAIN OF CUSTODY

COC#: **35899** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0009_MW004_HT_220405		05/04/2022 08:00 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
047	0009_QC104_220405		05/04/2022 08:59 AM	Water	ALS: 2 Non ALS: 0	No	-				
048	0009_MW014_HT_220405		05/04/2022 09:04 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
049	0009_MW015_HT_220405		05/04/2022 09:12 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
050	0009_QC105_220405		05/04/2022 09:13 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
051	0009_MW016_HT_220405		05/04/2022 09:26 AM	Water	ALS: 4 Non ALS: 0	No	-				Extra vol lab qc
052	0009_MW007_HT_220405		05/04/2022 09:38 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
053	0009_MW017_HT_220405		05/04/2022 09:46 AM	Water	ALS: 2 Non ALS: 0	No	-				
054	0009_MW018_HT_220405		05/04/2022 09:54 AM	Water	ALS: 2 Non ALS: 0	No	-				

CHAIN OF CUSTODY

COC#: **35899** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Analysis NOT REQUIRED	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0009_MW011_HT_220405		05/04/2022 10:05 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
056	0009_MW019_HT_220405		05/04/2022 10:13 AM	Water	ALS: 4 Non ALS: 0	No			Partial 1/4		Extra vol lab qc
057	0009_MW009_HT_220405		05/04/2022 10:22 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
058	0009_MW031_220405		05/04/2022 10:47 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
059	0009_MW035_220405		05/04/2022 10:55 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
060	0009_QC302_220405		05/04/2022 11:03 AM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		
061	0009_QC500_220405		04/04/2022 12:00 PM	Water	ALS: 2 Non ALS: 0	No			Partial 1/4		

CHAIN OF CUSTODY

COC#: **35899** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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	PARTIAL ANALYSIS GROUP NAME	MATRIX	SELECTED ANALYSIS NAME
001	0009_SW036_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
002	0009_QC100_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
003	0009_SD036_220404	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
004	0009_QC101_220404	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
005	0009_MW036_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
006	0009_SW100_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
007	0009_SD100_220404	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
008	0009_SW101_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
009	0009_SD101_220404	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
012	0009_SD031_220404	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
013	0009_SD030_220404	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
014	0009_SW030_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
015	0009_SW035_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
016	0009_SD035_220404	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
017	0009_SW034_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

COC#: **35899** *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

018	0009_SD034_220404	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
019	0009_SW032_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
020	0009_SD032_220404	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
021	0009_SW033_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
022	0009_SD033_220404	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
024	0009_MW002_LT_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
026	0009_MW013_LT_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
027	0009_MW001_LT_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
028	0009_MW003_LT_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
029	0009_QC102_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
033	0009_MW007_LT_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
034	0009_MW017_LT_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
035	0009_MW018_LT_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
036	0009_MW011_LT_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
037	0009_MW019_LT_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
038	0009_MW009_LT_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

COC#: 35899 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

040	0009_QC301_220404	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
041	0009_MW003_HT_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
042	0009_MW013_HT_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
043	0009_MW005_HT_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
044	0009_MW002_HT_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
045	0009_MW001_HT_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
046	0009_MW004_HT_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
048	0009_MW014_HT_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
049	0009_MW015_HT_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
050	0009_QC105_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
052	0009_MW007_HT_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
055	0009_MW011_HT_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
056	0009_MW019_HT_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
057	0009_MW009_HT_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
058	0009_MW031_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
059	0009_MW035_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

COC#: **35899** *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

060	0009_QC302_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
061	0009_QC500_220405	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

COC#: 35899 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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	0009_SW036_220404	HDPE (no PTFE)	20 mL	00350821027342	Grey	No	
001	0009_SW036_220404	HDPE (no PTFE)	20 mL	00350821027391	Grey	No	
002	0009_QC100_220404	HDPE (no PTFE)	20 mL	00350821027846	Grey	No	
002	0009_QC100_220404	HDPE (no PTFE)	20 mL	00350821027361	Grey	No	
003	0009_SD036_220404	HDPE Soil Jar	200 mL	00620719043946	Grey	No	
004	0009_QC101_220404	HDPE Soil Jar	200 mL	00620719043905	Grey	No	
005	0009_MW036_220404	HDPE (no PTFE)	20 mL	00350821027408	Grey	No	
005	0009_MW036_220404	HDPE (no PTFE)	20 mL	00350821027389	Grey	No	
006	0009_SW100_220404	HDPE (no PTFE)	20 mL	00350821027560	Grey	No	
006	0009_SW100_220404	HDPE (no PTFE)	20 mL	00350821027431	Grey	No	
006	0009_SW100_220404	HDPE (no PTFE)	20 mL	00350821027405	Grey	No	
006	0009_SW100_220404	HDPE (no PTFE)	20 mL	00350821027353	Grey	No	
007	0009_SD100_220404	HDPE Soil Jar	200 mL	00620719026204	Grey	No	
008	0009_SW101_220404	HDPE (no PTFE)	20 mL	00350821027524	Grey	No	
008	0009_SW101_220404	HDPE (no PTFE)	20 mL	00350821027409	Grey	No	
009	0009_SD101_220404	HDPE Soil Jar	200 mL	00620719026149	Grey	No	
010	0009_QC300_220404	HDPE (no PTFE)	20 mL	00350821027445	Grey	No	
010	0009_QC300_220404	HDPE (no PTFE)	20 mL	00350821027529	Grey	No	
011	0009_SW031_220404	HDPE (no PTFE)	20 mL	00350821027525	Grey	No	
011	0009_SW031_220404	HDPE (no PTFE)	20 mL	00350821027335	Grey	No	
012	0009_SD031_220404	HDPE Soil Jar	200 mL	00620719026152	Grey	No	
013	0009_SD030_220404	HDPE Soil Jar	200 mL	00620719043985	Grey	No	
014	0009_SW030_220404	HDPE (no PTFE)	20 mL	00350821027535	Grey	No	
014	0009_SW030_220404	HDPE (no PTFE)	20 mL	00350821027502	Grey	No	
015	0009_SW035_220404	HDPE (no PTFE)	20 mL	00350821027455	Grey	No	
015	0009_SW035_220404	HDPE (no PTFE)	20 mL	00350821027720	Grey	No	

CHAIN OF CUSTODY

COC#: 35899 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

016	0009_SD035_220404	HDPE Soil Jar	200 mL	00620719026189	Grey	No	
017	0009_SW034_220404	HDPE (no PTFE)	20 mL	00350821027336	Grey	No	
017	0009_SW034_220404	HDPE (no PTFE)	20 mL	00350821027332	Grey	No	
017	0009_SW034_220404	HDPE (no PTFE)	20 mL	00350821027334	Grey	No	
017	0009_SW034_220404	HDPE (no PTFE)	20 mL	00350821027586	Grey	No	
018	0009_SD034_220404	HDPE Soil Jar	200 mL	00620719026183	Grey	No	
019	0009_SW032_220404	HDPE (no PTFE)	20 mL	00350821027470	Grey	No	
019	0009_SW032_220404	HDPE (no PTFE)	20 mL	00350821027553	Grey	No	
020	0009_SD032_220404	HDPE Soil Jar	200 mL	00620719043988	Grey	No	
021	0009_SW033_220404	HDPE (no PTFE)	20 mL	00350821027356	Grey	No	
021	0009_SW033_220404	HDPE (no PTFE)	20 mL	00350821027448	Grey	No	
022	0009_SD033_220404	HDPE Soil Jar	200 mL	00620719026308	Grey	No	
023	0009_MW004_LT_220404	HDPE (no PTFE)	20 mL	00350821027461	Grey	No	
023	0009_MW004_LT_220404	HDPE (no PTFE)	20 mL	00350821027458	Grey	No	
024	0009_MW002_LT_220404	HDPE (no PTFE)	20 mL	00350821027354	Grey	No	
024	0009_MW002_LT_220404	HDPE (no PTFE)	20 mL	00350821027177	Grey	No	
025	0009_MW005_LT_220404	HDPE (no PTFE)	20 mL	00350821027451	Grey	No	
025	0009_MW005_LT_220404	HDPE (no PTFE)	20 mL	00350821027666	Grey	No	
026	0009_MW013_LT_220404	HDPE (no PTFE)	20 mL	00350821027550	Grey	No	
026	0009_MW013_LT_220404	HDPE (no PTFE)	20 mL	00350821027444	Grey	No	
027	0009_MW001_LT_220404	HDPE (no PTFE)	20 mL	00350821027485	Grey	No	
027	0009_MW001_LT_220404	HDPE (no PTFE)	20 mL	00350821027497	Grey	No	
027	0009_MW001_LT_220404	HDPE (no PTFE)	20 mL	00350821027411	Grey	No	
027	0009_MW001_LT_220404	HDPE (no PTFE)	20 mL	00350821027384	Grey	No	
028	0009_MW003_LT_220404	HDPE (no PTFE)	20 mL	00350019024876	Grey	No	
028	0009_MW003_LT_220404	HDPE (no PTFE)	20 mL	00350821027539	Grey	No	
028	0009_MW003_LT_220404	HDPE (no PTFE)	20 mL	00350821027426	Grey	No	

CHAIN OF CUSTODY

COC#: **35899** *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

028	0009_MW003_LT_220404	HDPE (no PTFE)	20 mL	00350019045174	Grey	No	
029	0009_QC102_220404	HDPE (no PTFE)	20 mL	00350821027681	Grey	No	
029	0009_QC102_220404	HDPE (no PTFE)	20 mL	00350821027533	Grey	No	
030	0009_MW014_LT_220404	HDPE (no PTFE)	20 mL	00350821027607	Grey	No	
030	0009_MW014_LT_220404	HDPE (no PTFE)	20 mL	00350821027471	Grey	No	
031	0009_MW015_LT_220404	HDPE (no PTFE)	20 mL	00350821027343	Grey	No	
031	0009_MW015_LT_220404	HDPE (no PTFE)	20 mL	00350821027442	Grey	No	
032	0009_MW016_LT_220404	HDPE (no PTFE)	20 mL	00350821027488	Grey	No	
032	0009_MW016_LT_220404	HDPE (no PTFE)	20 mL	00350019024896	Grey	No	
032	0009_MW016_LT_220404	HDPE (no PTFE)	20 mL	00350821027429	Grey	No	
032	0009_MW016_LT_220404	HDPE (no PTFE)	20 mL	00350019024967	Grey	No	
033	0009_MW007_LT_220404	HDPE (no PTFE)	20 mL	00350821027425	Grey	No	
033	0009_MW007_LT_220404	HDPE (no PTFE)	20 mL	00350821027174	Grey	No	
034	0009_MW017_LT_220404	HDPE (no PTFE)	20 mL	00350821027474	Grey	No	
034	0009_MW017_LT_220404	HDPE (no PTFE)	20 mL	00350821027512	Grey	No	
035	0009_MW018_LT_220404	HDPE (no PTFE)	20 mL	00350019024849	Grey	No	
035	0009_MW018_LT_220404	HDPE (no PTFE)	20 mL	00350019045161	Grey	No	
036	0009_MW011_LT_220404	HDPE (no PTFE)	20 mL	00350019024960	Grey	No	
036	0009_MW011_LT_220404	HDPE (no PTFE)	20 mL	00350019045251	Grey	No	
037	0009_MW019_LT_220404	HDPE (no PTFE)	20 mL	00350019045276	Grey	No	
037	0009_MW019_LT_220404	HDPE (no PTFE)	20 mL	00350019045210	Grey	No	
038	0009_MW009_LT_220404	HDPE (no PTFE)	20 mL	00350019045150	Grey	No	
038	0009_MW009_LT_220404	HDPE (no PTFE)	20 mL	00350019024851	Grey	No	
038	0009_MW009_LT_220404	HDPE (no PTFE)	20 mL	00350019045156	Grey	No	
038	0009_MW009_LT_220404	HDPE (no PTFE)	20 mL	00350019045230	Grey	No	
039	0009_QC103_220404	HDPE (no PTFE)	20 mL	00350821027776	Grey	No	
039	0009_QC103_220404	HDPE (no PTFE)	20 mL	00350821027807	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 35899 ALS Laboratory: ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

040	0009_QC301_220404	HDPE (no PTFE)	20 mL	00350019045268	Grey	No	
040	0009_QC301_220404	HDPE (no PTFE)	20 mL	00350019045173	Grey	No	
041	0009_MW003_HT_220405	HDPE (no PTFE)	20 mL	00352101052832	Grey	No	
041	0009_MW003_HT_220405	HDPE (no PTFE)	20 mL	00352101052865	Grey	No	
042	0009_MW013_HT_220405	HDPE (no PTFE)	20 mL	00350821027380	Grey	No	
042	0009_MW013_HT_220405	HDPE (no PTFE)	20 mL	00350821027788	Grey	No	
042	0009_MW013_HT_220405	HDPE (no PTFE)	20 mL	00350821027467	Grey	No	
042	0009_MW013_HT_220405	HDPE (no PTFE)	20 mL	00350821027771	Grey	No	
043	0009_MW005_HT_220405	HDPE (no PTFE)	20 mL	00350821027621	Grey	No	
043	0009_MW005_HT_220405	HDPE (no PTFE)	20 mL	00350821027584	Grey	No	
044	0009_MW002_HT_220405	HDPE (no PTFE)	20 mL	00352101033511	Grey	No	
044	0009_MW002_HT_220405	HDPE (no PTFE)	20 mL	00352101033489	Grey	No	
045	0009_MW001_HT_220405	HDPE (no PTFE)	20 mL	00352101052899	Grey	No	
045	0009_MW001_HT_220405	HDPE (no PTFE)	20 mL	00350621050457	Grey	No	
045	0009_MW001_HT_220405	HDPE (no PTFE)	20 mL	00352101052842	Grey	No	
045	0009_MW001_HT_220405	HDPE (no PTFE)	20 mL	00350621050428	Grey	No	
046	0009_MW004_HT_220405	HDPE (no PTFE)	20 mL	00350821027428	Grey	No	
046	0009_MW004_HT_220405	HDPE (no PTFE)	20 mL	00350821027872	Grey	No	
047	0009_QC104_220405	HDPE (no PTFE)	20 mL	00352101052818	Grey	No	
047	0009_QC104_220405	HDPE (no PTFE)	20 mL	00352101033426	Grey	No	
048	0009_MW014_HT_220405	HDPE (no PTFE)	20 mL	00352101033517	Grey	No	
048	0009_MW014_HT_220405	HDPE (no PTFE)	20 mL	00352101033595	Grey	No	
049	0009_MW015_HT_220405	HDPE (no PTFE)	20 mL	00350821027413	Grey	No	
049	0009_MW015_HT_220405	HDPE (no PTFE)	20 mL	00350821027706	Grey	No	
050	0009_QC105_220405	HDPE (no PTFE)	20 mL	00350621030155	Grey	No	
050	0009_QC105_220405	HDPE (no PTFE)	20 mL	00350621050486	Grey	No	
051	0009_MW016_HT_220405	HDPE (no PTFE)	20 mL	00350821027665	Grey	No	

CHAIN OF CUSTODY

COC#: **35899** *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

051	0009_MW016_HT_220405	HDPE (no PTFE)	20 mL	00350821027817	Grey	No	
051	0009_MW016_HT_220405	HDPE (no PTFE)	20 mL	00350821027799	Grey	No	
051	0009_MW016_HT_220405	HDPE (no PTFE)	20 mL	00350821027718	Grey	No	
052	0009_MW007_HT_220405	HDPE (no PTFE)	20 mL	00350821027434	Grey	No	
052	0009_MW007_HT_220405	HDPE (no PTFE)	20 mL	00350821027441	Grey	No	
053	0009_MW017_HT_220405	HDPE (no PTFE)	20 mL	00350821027385	Grey	No	
053	0009_MW017_HT_220405	HDPE (no PTFE)	20 mL	00350821027827	Grey	No	
054	0009_MW018_HT_220405	HDPE (no PTFE)	20 mL	00350821027619	Grey	No	
054	0009_MW018_HT_220405	HDPE (no PTFE)	20 mL	00350821027837	Grey	No	
055	0009_MW011_HT_220405	HDPE (no PTFE)	20 mL	00350821027375	Grey	No	
055	0009_MW011_HT_220405	HDPE (no PTFE)	20 mL	00350821027420	Grey	No	
056	0009_MW019_HT_220405	HDPE (no PTFE)	20 mL	00350821027538	Grey	No	
056	0009_MW019_HT_220405	HDPE (no PTFE)	20 mL	00350821027401	Grey	No	
056	0009_MW019_HT_220405	HDPE (no PTFE)	20 mL	00350821027430	Grey	No	
056	0009_MW019_HT_220405	HDPE (no PTFE)	20 mL	00350821027397	Grey	No	
057	0009_MW009_HT_220405	HDPE (no PTFE)	20 mL	00350821027337	Grey	No	
057	0009_MW009_HT_220405	HDPE (no PTFE)	20 mL	00350821027646	Grey	No	
058	0009_MW031_220405	HDPE (no PTFE)	20 mL	00350821027612	Grey	No	
058	0009_MW031_220405	HDPE (no PTFE)	20 mL	00350821027573	Grey	No	
059	0009_MW035_220405	HDPE (no PTFE)	20 mL	00350821027727	Grey	No	
059	0009_MW035_220405	HDPE (no PTFE)	20 mL	00350821027484	Grey	No	
060	0009_QC302_220405	HDPE (no PTFE)	20 mL	00350821027686	Grey	No	
060	0009_QC302_220405	HDPE (no PTFE)	20 mL	00350821027394	Grey	No	
061	0009_QC500_220405	HDPE (no PTFE)	20 mL	00350621064444	Grey	No	
061	0009_QC500_220405	HDPE (no PTFE)	20 mL	00350621064405	Grey	No	

Total Bottle Count: ALS: 132, Non ALS: 0

Appendix E

Laboratory Analytical Certificates and QA/QC Reports

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ET2201972**	Page	: 1 of 27
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Contact	: [redacted]
Address	: BRISBANE	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 08-Apr-2022 08:24
Order number	: 60612487_4.1	Date Analysis Commenced	: 11-Apr-2022
C-O-C number	: 35899	Issue Date	: 06-May-2022 09:55
Sampler	: [redacted]		
Site	: QLD_0009		
Quote number	: TV/007/21 v2 - Compass		
No. of samples received	: 61		
No. of samples analysed	: 58		

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]	Assistant Laboratory Manager	Brisbane Inorganics, Stafford, QLD
	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD
	2IC Organic Chemist	Brisbane Inorganics, Stafford, QLD
	2IC Organic Chemist	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 Contact 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 PFAS: The LOR for PFOS has been raised for sample '0009_SW100_220404' due to matrix interference.
- EP231X PFAS: The LOR for PFBS has been raised for sample '0009_MW007_LT_220404' due to matrix interference.
- 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.
- EP231X PFAS: Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.
- EP231X PFAS: Whole bottle extraction was not possible for particular samples. Samples required dilution prior to extraction due to matrix interference (high sediment content). LOR values have been adjusted accordingly.
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- EP231X PFAS: The LOR of PFBS for sample "0009_QC103_220404" has been raised due to matrix interference.
- EP231X PFAS: The high matrix spike recovery for MeFOSA for sample ‘0009_SW034_220404’ (ET2201972-017) is deemed acceptable as associated sample results are less than the limit of reporting.
- EP231X PFAS: Sample ‘0009_SW034_220404’ (ET2201972-017) shows poor matrix spike recovery for 10:2 FTS due to matrix interference. Insufficient sample volume remains to confirm results.
- 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.
- 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: **SEDIMENT** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SD036_220404	0009_QC101_220404	0009_SD100_220404	0009_SD101_220404	0009_SD031_220404
				Sampling date / time	04-Apr-2022 07:45	04-Apr-2022 07:46	04-Apr-2022 09:03	04-Apr-2022 09:13	04-Apr-2022 10:51
					ET2201972-003	ET2201972-004	ET2201972-007	ET2201972-009	ET2201972-012
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**52.0**	**51.9**	**51.2**	**22.9**	**36.8**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0008**	**0.0007**	**0.0007**	<0.0002	**0.0243**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0003**
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		**0.0003**	**0.0003**	**0.0002**	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0009_SD036_220404	0009_QC101_220404	0009_SD100_220404	0009_SD101_220404	0009_SD031_220404
				Sampling date / time	04-Apr-2022 07:45	04-Apr-2022 07:46	04-Apr-2022 09:03	04-Apr-2022 09:13	04-Apr-2022 10:51
Compound	CAS Number	LOR	Unit		ET2201972-003	ET2201972-004	ET2201972-007	ET2201972-009	ET2201972-012
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0011**	**0.0010**	**0.0009**	<0.0002	**0.0250**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0008**	**0.0007**	**0.0007**	<0.0002	**0.0247**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0011**	**0.0010**	**0.0009**	<0.0002	**0.0247**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**104**	**113**	**104**	**100**	**110**
13C8-PFOA	----	0.0002	%		**102**	**99.0**	**98.0**	**102**	**96.5**

Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SD030_220404	0009_SD035_220404	0009_SD034_220404	0009_SD032_220404	0009_SD033_220404
				Sampling date / time	04-Apr-2022 10:51	04-Apr-2022 12:07	04-Apr-2022 12:21	04-Apr-2022 12:38	04-Apr-2022 12:54
					ET2201972-013	ET2201972-016	ET2201972-018	ET2201972-020	ET2201972-022
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**33.2**	**31.5**	**51.5**	**53.9**	**49.0**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0076**	**0.0016**	**0.0020**	**0.0010**	**0.0006**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		**0.0010**	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	**0.0002**	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	**0.0002**	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		**0.0002**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0009_SD030_220404	0009_SD035_220404	0009_SD034_220404	0009_SD032_220404	0009_SD033_220404
				Sampling date / time	04-Apr-2022 10:51	04-Apr-2022 12:07	04-Apr-2022 12:21	04-Apr-2022 12:38	04-Apr-2022 12:54
Compound	CAS Number	LOR	Unit		ET2201972-013	ET2201972-016	ET2201972-018	ET2201972-020	ET2201972-022
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.0006**	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0094**	**0.0018**	**0.0022**	**0.0010**	**0.0006**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0076**	**0.0016**	**0.0020**	**0.0010**	**0.0006**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0082**	**0.0018**	**0.0022**	**0.0010**	**0.0006**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**95.0**	**114**	**99.5**	**99.5**	**99.5**
13C8-PFOA	----	0.0002	%		**100**	**99.0**	**99.5**	**100**	**100**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW036_220404	0009_QC100_220404	0009_MW036_220404	0009_SW100_220404	0009_SW101_220404
				Sampling date / time	04-Apr-2022 07:44	04-Apr-2022 07:45	04-Apr-2022 08:27	04-Apr-2022 08:57	04-Apr-2022 09:11
					ET2201972-001	ET2201972-002	ET2201972-005	ET2201972-006	ET2201972-008
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.06**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.03**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	**0.17**	<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	**0.22**	<0.02	<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	**0.03**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW036_220404	0009_QC100_220404	0009_MW036_220404	0009_SW100_220404	0009_SW101_220404
				Sampling date / time	04-Apr-2022 07:44	04-Apr-2022 07:45	04-Apr-2022 08:27	04-Apr-2022 08:57	04-Apr-2022 09:11
Compound	CAS Number	LOR	Unit		ET2201972-001	ET2201972-002	ET2201972-005	ET2201972-006	ET2201972-008
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.51**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.39**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**0.48**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**92.0**	**91.0**	**84.5**	**89.9**	**83.8**
13C8-PFOA	----	0.02	%		**91.6**	**91.2**	**96.8**	**92.8**	**92.9**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW031_220404	0009_SW030_220404	0009_SW035_220404	0009_SW034_220404	0009_SW032_220404
				Sampling date / time	04-Apr-2022 10:50	04-Apr-2022 10:53	04-Apr-2022 12:06	04-Apr-2022 12:20	04-Apr-2022 12:35
					ET2201972-011	ET2201972-014	ET2201972-015	ET2201972-017	ET2201972-019
					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	**0.04**	<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	**0.01**	**0.07**	**0.02**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW031_220404	0009_SW030_220404	0009_SW035_220404	0009_SW034_220404	0009_SW032_220404
				Sampling date / time	04-Apr-2022 10:50	04-Apr-2022 10:53	04-Apr-2022 12:06	04-Apr-2022 12:20	04-Apr-2022 12:35
Compound	CAS Number	LOR	Unit		ET2201972-011	ET2201972-014	ET2201972-015	ET2201972-017	ET2201972-019
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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**	**0.11**	**0.02**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.01**	**0.11**	**0.02**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.01**	**0.11**	**0.02**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**103**	**94.2**	**92.4**	**92.9**	**95.0**
13C8-PFOA	----	0.02	%		**105**	**92.7**	**94.6**	**88.3**	**92.9**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW033_220404	0009_MW004_LT_220404	0009_MW002_LT_220404	0009_MW005_LT_220404	0009_MW013_LT_220404
				Sampling date / time	04-Apr-2022 12:54	04-Apr-2022 13:40	04-Apr-2022 14:20	04-Apr-2022 14:49	04-Apr-2022 14:00
					ET2201972-021	ET2201972-023	ET2201972-024	ET2201972-025	ET2201972-026
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.40**	**2.04**	**0.47**	**0.06**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.36**	**2.04**	**0.46**	**0.06**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**3.93**	**25.9**	**6.45**	**0.79**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	**0.38**	**2.56**	**0.62**	**0.05**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	**22.8**	**83.6**	**39.9**	**2.68**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.20	<0.05	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	**0.1**	<1.0	<0.2	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	**0.44**	**1.60**	**0.66**	**0.07**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.92**	**8.66**	**1.26**	**0.16**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**0.31**	**1.30**	**0.33**	**0.04**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.62**	**2.96**	**0.85**	**0.07**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.20	<0.05	**0.13**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.20	<0.05	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.20	<0.05	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.20	<0.05	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.20	<0.05	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.06	<0.50	<0.12	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	**0.12**	<0.20	<0.05	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.06	<0.50	<0.12	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.06	<0.50	<0.12	<0.05

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW033_220404	0009_MW004_LT_220404	0009_MW002_LT_220404	0009_MW005_LT_220404	0009_MW013_LT_220404
				Sampling date / time	04-Apr-2022 12:54	04-Apr-2022 13:40	04-Apr-2022 14:20	04-Apr-2022 14:49	04-Apr-2022 14:00
					ET2201972-021	ET2201972-023	ET2201972-024	ET2201972-025	ET2201972-026
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.06	<0.50	<0.12	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.06	<0.50	<0.12	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.20	<0.05	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.20	<0.05	<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	<0.20	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	**0.06**	<0.20	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.20	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.20	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	**30.4**	**131**	**51.0**	**4.11**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**26.7**	**110**	**46.4**	**3.47**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**29.6**	**126**	**49.9**	**3.87**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**90.1**	**105**	**99.0**	**105**	**91.3**
13C8-PFOA	----	0.02	%		**88.5**	**103**	**94.4**	**103**	**96.7**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW001_LT_220404	0009_MW003_LT_220404	0009_QC102_220404	0009_MW014_LT_220404	0009_MW015_LT_220404
				Sampling date / time	04-Apr-2022 14:30	04-Apr-2022 14:15	04-Apr-2022 14:52	04-Apr-2022 15:00	04-Apr-2022 15:11
					ET2201972-027	ET2201972-028	ET2201972-029	ET2201972-030	ET2201972-031
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.02**	**1.02**	**0.05**	**0.72**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**1.01**	**0.06**	**0.51**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.09**	**8.43**	**0.75**	**8.11**	**0.24**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	**0.49**	**0.05**	**0.26**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.12**	**4.65**	**2.91**	**11.2**	**1.79**
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	**0.3**	<0.1	**0.3**	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	**0.60**	**0.07**	**0.43**	**0.03**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.03**	**3.15**	**0.16**	**2.20**	**0.06**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**0.38**	**0.04**	**0.26**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.81**	**0.07**	**0.38**	**0.02**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	**0.13**	<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	**0.03**	<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

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW001_LT_220404	0009_MW003_LT_220404	0009_QC102_220404	0009_MW014_LT_220404	0009_MW015_LT_220404
				Sampling date / time	04-Apr-2022 14:30	04-Apr-2022 14:15	04-Apr-2022 14:52	04-Apr-2022 15:00	04-Apr-2022 15:11
					ET2201972-027	ET2201972-028	ET2201972-029	ET2201972-030	ET2201972-031
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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**	**20.8**	**4.29**	**24.4**	**2.14**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.21**	**13.1**	**3.66**	**19.3**	**2.03**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.26**	**19.3**	**4.05**	**23.6**	**2.14**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.2**	**97.6**	**85.4**	**106**	**97.8**
13C8-PFOA	----	0.02	%		**100**	**101**	**94.8**	**103**	**103**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW016_LT_220404	0009_MW007_LT_220404	0009_MW017_LT_220404	0009_MW019_LT_220404	0009_MW009_LT_220404
				Sampling date / time	04-Apr-2022 15:30	04-Apr-2022 15:47	04-Apr-2022 15:59	04-Apr-2022 16:38	04-Apr-2022 16:46
					ET2201972-032	ET2201972-033	ET2201972-034	ET2201972-037	ET2201972-038
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.14**	**0.43**	<0.02	**0.15**	**0.03**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.19**	**0.52**	<0.02	**0.05**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**1.19**	**5.09**	<0.01	**0.62**	**0.20**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	**0.53**	<0.02	**0.18**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.18**	**86.4**	**0.03**	**6.64**	**0.10**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.10	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.5	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.06**	**0.33**	<0.02	**0.10**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.25**	**1.20**	<0.02	**0.19**	**0.04**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.02**	**0.20**	<0.02	**0.07**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.63**	<0.01	**0.19**	**0.01**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.10	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.10	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.10	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.10	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.10	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.24	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.10	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.24	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.24	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW016_LT_220404	0009_MW007_LT_220404	0009_MW017_LT_220404	0009_MW019_LT_220404	0009_MW009_LT_220404
				Sampling date / time	04-Apr-2022 15:30	04-Apr-2022 15:47	04-Apr-2022 15:59	04-Apr-2022 16:38	04-Apr-2022 16:46
					ET2201972-032	ET2201972-033	ET2201972-034	ET2201972-037	ET2201972-038
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.24	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.24	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.10	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.10	<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	<0.10	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.10	<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	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.10	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**2.03**	**95.3**	**0.03**	**8.19**	**0.38**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**1.37**	**91.5**	**0.03**	**7.26**	**0.30**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.84**	**94.3**	**0.03**	**7.96**	**0.38**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**102**	**101**	**86.2**	**99.1**	**86.7**
13C8-PFOA	----	0.02	%		**102**	**106**	**93.6**	**98.8**	**92.5**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_QC103_220404	0009_QC301_220404	0009_MW003_HT_220405	0009_MW013_HT_220405	0009_MW005_HT_220405
				Sampling date / time	04-Apr-2022 16:38	04-Apr-2022 16:55	05-Apr-2022 08:20	05-Apr-2022 08:15	05-Apr-2022 08:05
					ET2201972-039	ET2201972-040	ET2201972-041	ET2201972-042	ET2201972-043
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.14	<0.02	**1.14**	**0.07**	**0.40**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.05**	<0.02	**1.25**	**0.07**	**0.34**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.68**	<0.01	**9.29**	**0.88**	**5.48**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.19**	<0.02	**0.43**	**0.05**	**0.40**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**5.51**	<0.01	**3.89**	**2.33**	**32.7**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.25
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	**0.2**	<0.1	<1.2
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.10**	<0.02	**0.64**	**0.08**	**0.49**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.16**	<0.02	**2.97**	**0.20**	**1.26**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.07**	<0.02	**0.39**	**0.05**	<0.25
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.16**	<0.01	**0.78**	**0.09**	**0.69**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.05	**0.15**	<0.25
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.25
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.25
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.25
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.25
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.12	<0.05	<0.62
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.25
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.12	<0.05	<0.62
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.12	<0.05	<0.62

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC103_220404	0009_QC301_220404	0009_MW003_HT_220405	0009_MW013_HT_220405	0009_MW005_HT_220405
				Sampling date / time	04-Apr-2022 16:38	04-Apr-2022 16:55	05-Apr-2022 08:20	05-Apr-2022 08:15	05-Apr-2022 08:05
Compound	CAS Number	LOR	Unit		ET2201972-039	ET2201972-040	ET2201972-041	ET2201972-042	ET2201972-043
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.12	<0.05	<0.62
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.12	<0.05	<0.62
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.25
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.25
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	<0.25
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		**0.05**	<0.05	<0.05	<0.05	<0.25
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.25
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.25
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**6.97**	<0.01	**21.0**	**3.97**	**41.8**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**6.19**	<0.01	**13.2**	**3.21**	**38.2**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**6.73**	<0.01	**19.3**	**3.70**	**41.0**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**110**	**87.4**	**89.0**	**84.2**	**96.0**
13C8-PFOA	----	0.02	%		**103**	**94.1**	**91.0**	**91.8**	**93.0**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW002_HT_220405	0009_MW001_HT_220405	0009_MW004_HT_220405	0009_QC104_220405	0009_MW014_HT_220405
				Sampling date / time	05-Apr-2022 08:55	05-Apr-2022 08:40	05-Apr-2022 08:00	05-Apr-2022 08:59	05-Apr-2022 09:04
					ET2201972-044	ET2201972-045	ET2201972-046	ET2201972-047	ET2201972-048
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**2.57**	**0.05**	**0.44**	**2.24**	**0.47**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**2.48**	<0.02	**0.35**	**2.43**	**0.37**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**29.3**	**0.23**	**4.06**	**29.4**	**8.09**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**2.62**	<0.02	**0.27**	**2.64**	**0.35**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**68.1**	<0.06	**20.1**	**75.7**	**30.7**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.48	<0.02	<0.25	<0.05	<0.25
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<2.4	<0.1	<1.2	**0.7**	<1.2
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**1.62**	<0.02	**0.40**	**1.56**	**0.32**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**8.05**	**0.09**	**1.06**	**7.52**	**2.23**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**1.28**	<0.02	<0.25	**1.30**	<0.25
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**3.14**	<0.02	**0.54**	**3.08**	**0.42**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.48	<0.02	<0.25	<0.05	<0.25
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.48	<0.02	<0.25	<0.05	<0.25
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.48	<0.02	<0.25	<0.05	<0.25
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.48	<0.02	<0.25	<0.05	<0.25
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.48	<0.02	<0.25	<0.05	<0.25
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<1.19	<0.06	<0.62	<0.12	<0.62
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.48	<0.02	<0.25	**0.08**	<0.25
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<1.19	<0.06	<0.62	<0.12	<0.62
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<1.19	<0.06	<0.62	<0.12	<0.62

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW002_HT_220405	0009_MW001_HT_220405	0009_MW004_HT_220405	0009_QC104_220405	0009_MW014_HT_220405
				Sampling date / time	05-Apr-2022 08:55	05-Apr-2022 08:40	05-Apr-2022 08:00	05-Apr-2022 08:59	05-Apr-2022 09:04
Compound	CAS Number	LOR	Unit		ET2201972-044	ET2201972-045	ET2201972-046	ET2201972-047	ET2201972-048
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<1.19	<0.06	<0.62	<0.12	<0.62
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<1.19	<0.06	<0.62	<0.12	<0.62
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.48	<0.02	<0.25	<0.05	<0.25
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.48	<0.02	<0.25	<0.05	<0.25
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.48	<0.05	<0.25	<0.05	<0.25
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.48	<0.05	<0.25	<0.05	<0.25
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.48	<0.05	<0.25	<0.05	<0.25
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.48	<0.05	<0.25	<0.05	<0.25
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**119**	**0.37**	**27.2**	**127**	**43.0**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**97.4**	**0.23**	**24.2**	**105**	**38.8**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**114**	**0.37**	**26.6**	**122**	**42.2**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.0**	**81.6**	**104**	**113**	**101**
13C8-PFOA	----	0.02	%		**97.0**	**91.8**	**98.0**	**103**	**95.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW015_HT_220405	0009_QC105_220405	0009_MW016_HT_220405	0009_MW007_HT_220405	0009_MW017_HT_220405
				Sampling date / time	05-Apr-2022 09:12	05-Apr-2022 09:13	05-Apr-2022 09:26	05-Apr-2022 09:38	05-Apr-2022 09:46
Compound	CAS Number	LOR	Unit		ET2201972-049	ET2201972-050	ET2201972-051	ET2201972-052	ET2201972-053
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.14**	<0.46	**0.03**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.16**	**0.46**	**0.03**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.28**	**0.26**	**1.10**	**4.74**	**0.38**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.46	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**3.04**	**2.41**	**0.15**	**68.2**	**1.44**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.46	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<2.3	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.04**	**0.04**	**0.05**	<0.46	**0.03**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.08**	**0.08**	**0.23**	**0.98**	**0.07**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.46	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.03**	**0.03**	<0.01	<0.46	**0.03**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.46	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.46	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.46	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.46	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.46	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<1.16	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.46	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<1.16	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<1.16	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW015_HT_220405	0009_QC105_220405	0009_MW016_HT_220405	0009_MW007_HT_220405	0009_MW017_HT_220405
				Sampling date / time	05-Apr-2022 09:12	05-Apr-2022 09:13	05-Apr-2022 09:26	05-Apr-2022 09:38	05-Apr-2022 09:46
Compound	CAS Number	LOR	Unit		ET2201972-049	ET2201972-050	ET2201972-051	ET2201972-052	ET2201972-053
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<1.16	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<1.16	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.46	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.46	<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	<0.46	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.46	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.46	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.46	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**3.47**	**2.82**	**1.83**	**74.4**	**2.01**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**3.32**	**2.67**	**1.25**	**72.9**	**1.82**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**3.47**	**2.82**	**1.67**	**73.9**	**1.98**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**108**	**88.6**	**112**	**103**	**102**
13C8-PFOA	----	0.02	%		**88.3**	**91.6**	**103**	**94.0**	**102**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW018_HT_220405	0009_MW011_HT_220405	0009_MW019_HT_220405	0009_MW009_HT_220405	0009_MW031_220405
				Sampling date / time	05-Apr-2022 09:54	05-Apr-2022 10:05	05-Apr-2022 10:13	05-Apr-2022 10:22	05-Apr-2022 10:47
					ET2201972-054	ET2201972-055	ET2201972-056	ET2201972-057	ET2201972-058
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.05**	**0.02**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.04**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.01**	**0.58**	**0.22**	**0.09**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	**0.16**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	**0.21**	**4.40**	**0.12**	**0.33**
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**	**0.10**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.04**	**0.18**	**0.03**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**0.04**	**0.07**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.15**	**0.15**	**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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW018_HT_220405	0009_MW011_HT_220405	0009_MW019_HT_220405	0009_MW009_HT_220405	0009_MW031_220405
				Sampling date / time	05-Apr-2022 09:54	05-Apr-2022 10:05	05-Apr-2022 10:13	05-Apr-2022 10:22	05-Apr-2022 10:47
Compound	CAS Number	LOR	Unit		ET2201972-054	ET2201972-055	ET2201972-056	ET2201972-057	ET2201972-058
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.48**	**5.73**	**0.40**	**0.42**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.22**	**4.98**	**0.34**	**0.42**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.48**	**5.53**	**0.40**	**0.42**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**100**	**97.2**	**86.3**	**90.3**	**98.0**
13C8-PFOA	----	0.02	%		**102**	**91.9**	**90.2**	**91.3**	**88.5**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW035_220405	0009_QC302_220405	0009_QC500_220405	----	----
				Sampling date / time	05-Apr-2022 10:55	05-Apr-2022 11:03	04-Apr-2022 12:00	----	----
Compound	CAS Number	LOR	Unit		ET2201972-059	ET2201972-060	ET2201972-061	--------	--------
					Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.13**	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.10**	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.42**	<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		**0.20**	<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	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW035_220405	0009_QC302_220405	0009_QC500_220405	----	----
				Sampling date / time	05-Apr-2022 10:55	05-Apr-2022 11:03	04-Apr-2022 12:00	----	----
Compound	CAS Number	LOR	Unit		ET2201972-059	ET2201972-060	ET2201972-061	--------	--------
					Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**0.15**	<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		**1.00**	<0.01	<0.01	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.62**	<0.01	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.90**	<0.01	<0.01	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.2**	**90.9**	**91.3**	----	----
13C8-PFOA	----	0.02	%		**89.3**	**93.0**	**90.2**	----	----

Surrogate Control Limits

Sub-Matrix: **SEDIMENT**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(WATER) EP231A: Perfluoroalkyl Sulfonic Acids
(WATER) EP231B: Perfluoroalkyl Carboxylic Acids
(WATER) EP231C: Perfluoroalkyl Sulfonamides
(WATER) EP231D: (n:2) Fluorotelomer Sulfonic Acids
(WATER) EP231P: PFAS Sums
(WATER) EP231S: PFAS Surrogate
(SOIL) EP231B: Perfluoroalkyl Carboxylic Acids
(SOIL) EP231D: (n:2) Fluorotelomer Sulfonic Acids
(SOIL) EP231C: Perfluoroalkyl Sulfonamides
(SOIL) EP231A: Perfluoroalkyl Sulfonic Acids
(SOIL) EP231P: PFAS Sums
(SOIL) EP231S: PFAS Surrogate
(SOIL) EA055: Moisture Content (Dried @ 105-110°C)

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ET2201972**	Page	: 1 of 19
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Contact	: [redacted]
Address	: BRISBANE	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 08-Apr-2022
Order number	: 60612487_4.1	Date Analysis Commenced	: 11-Apr-2022
C-O-C number	: 35899	Issue Date	: 06-May-2022
Sampler	: [redacted]		
Site	: QLD_0009		
Quote number	: TV/007/21 v2 - Compass		
No. of samples received	: 61		
No. of samples analysed	: 58		

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]	Assistant Laboratory Manager	Brisbane Inorganics, Stafford, QLD
	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD
	2IC Organic Chemist	Brisbane Inorganics, Stafford, QLD
	2IC Organic Chemist	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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4280732)									
EB2209946-015	Anonymous	EA055: Moisture Content	----	0.1	%	39.4	39.5	0.0	0% - 20%
ET2201972-022	0009_SD033_220404	EA055: Moisture Content	----	0.1	%	49.0	55.3	12.0	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4280731)									
EB2209946-015	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0006	<0.0004	40.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ET2201972-022	0009_SD033_220404	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0006	0.0007	20.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4280731)									
EB2209946-015	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 4280731) - continued									
EB2209946-015	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ET2201972-022	0009_SD033_220404	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4280731)									
EB2209946-015	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ET2201972-022	0009_SD033_220404	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

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: 4280731)									
EB2209946-015	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ET2201972-022	0009_SD033_220404	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	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 (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4281835)									
ET2201972-006	0009_SW100_220404	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	<0.02	<0.01	66.7	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
ET2201972-027	0009_MW001_LT_220404	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.12	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
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4281848)									
ET2201972-038	0009_MW009_LT_220404	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.20	0.19	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.10	0.12	19.6	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	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
ET2201972-045	0009_MW001_HT_220405	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.23	0.24	5.9	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.06	<0.06	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 (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4281848) - continued									
ET2201972-045	0009_MW001_HT_220405	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.06	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: 4312299)									
ET2201972-032	0009_MW016_LT_220404	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.19	1.15	3.1	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.18	0.14	23.9	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.14	0.15	7.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.19	0.17	6.9	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: 4281835)									
ET2201972-006	0009_SW100_220404	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
ET2201972-027	0009_MW001_LT_220404	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	0.03	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
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4281848)									
ET2201972-038	0009_MW009_LT_220404	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

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: 4281848) - continued									
ET2201972-038	0009_MW009_LT_220404	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
ET2201972-045	0009_MW001_HT_220405	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.02	<0.02	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	0.09	0.09	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	<0.06	<0.06	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: 4312299)									
ET2201972-032	0009_MW016_LT_220404	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	0.06	0.06	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.25	0.25	0.0	0% - 50%
		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: 4281835)									
ET2201972-006	0009_SW100_220404	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

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: 4281835) - continued									
ET2201972-006	0009_SW100_220404	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
ET2201972-027	0009_MW001_LT_220404	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: 4281848)									
ET2201972-038	0009_MW009_LT_220404	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
ET2201972-045	0009_MW001_HT_220405	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	<0.06	<0.06	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.06	<0.06	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: 4281848) - continued									
ET2201972-045	0009_MW001_HT_220405	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.06	<0.06	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.06	<0.06	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4312299)									
ET2201972-032	0009_MW016_LT_220404	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: 4281835)									
ET2201972-006	0009_SW100_220404	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
ET2201972-027	0009_MW001_LT_220404	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: 4281848)									
ET2201972-038	0009_MW009_LT_220404	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: 4281848) - continued									
ET2201972-038	0009_MW009_LT_220404	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
ET2201972-045	0009_MW001_HT_220405	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: 4312299)									
ET2201972-032	0009_MW016_LT_220404	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: 4281835)									
ET2201972-006	0009_SW100_220404	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ET2201972-027	0009_MW001_LT_220404	EP231X: Sum of PFAS	----	0.01	µg/L	0.26	0.26	0.0	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.21	0.20	4.9	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.26	0.26	0.0	0% - 20%
EP231P: PFAS Sums (QC Lot: 4281848)									
ET2201972-038	0009_MW009_LT_220404	EP231X: Sum of PFAS	----	0.01	µg/L	0.38	0.38	0.0	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.30	0.31	3.3	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.38	0.38	0.0	0% - 20%
ET2201972-045	0009_MW001_HT_220405	EP231X: Sum of PFAS	----	0.01	µg/L	0.37	0.39	5.3	0% - 50%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.23	0.24	4.3	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.37	0.39	5.3	0% - 50%
EP231P: PFAS Sums (QC Lot: 4312299)									

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 (%)*
EP231P: PFAS Sums (QC Lot: 4312299) - continued									
ET2201972-032	0009_MW016_LT_220404	EP231X: Sum of PFAS	----	0.01	µg/L	2.03	1.94	4.5	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.37	1.29	6.0	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	1.84	1.77	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: **SOIL**

				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: 4280731)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0011 mg/kg	105	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00117 mg/kg	102	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	99.2	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	98.7	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	95.7	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0012 mg/kg	103	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4280731)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	103	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.2	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.0	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	121	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4280731)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	99.0	59.6	143
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	101	62.8	140
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	92.3	61.5	139
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	99.2	61.9	137
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4280731)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	115	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00118 mg/kg	117	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	113	65.0	137

Sub-Matrix: **SOIL**

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: 4280731) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.0012 mg/kg	112	54.8	124

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: 4281835)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	100	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	95.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	102	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	104	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	102	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4281848)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	119	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	121	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	109	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	128	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	90.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	117	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4312299)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	96.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	89.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	85.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	90.1	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	97.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.6	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4281835)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	112	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	113	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	107	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	112	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	107	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	115	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	111	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	106	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4281848)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4281848) - continued								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	129	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	126	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	128	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	124	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	129	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	123	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	133	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	105	65.0	144
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: 4312299)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	90.2	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	85.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	85.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	83.8	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4281835)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	108	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	132	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	112	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	105	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	62.6	138
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	109	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4281848)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	122	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	104	60.5	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4281848) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	117	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	127	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	115	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4312299)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	85.4	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	84.5	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	95.8	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.6	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	82.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	94.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4281835)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	126	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	107	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	112	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4281848)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	128	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	125	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	133	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	123	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4312299)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	91.3	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	101	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	76.2	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	75.1	64.2	133
EP231P: PFAS Sums (QCLot: 4281835)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----

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
EP231P: PFAS Sums (QCLot: 4281835) - continued								
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4281848)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4312299)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

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: **SOIL**

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: 4280731)							
ET2201972-003	0009_SD036_220404	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0011 mg/kg	108	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00117 mg/kg	105	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00118 mg/kg	95.3	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	116	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	112	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0012 mg/kg	96.7	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4280731)							
ET2201972-003	0009_SD036_220404	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	102	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	89.2	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	95.6	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	90.4	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	107	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	97.2	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	89.6	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.6	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	97.6	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	96.4	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	126	69.0	133

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4280731)							
ET2201972-003	0009_SD036_220404	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	96.8	48.0	128
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	100	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	100	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	90.7	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	102	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	112	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	109	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4280731)							
ET2201972-003	0009_SD036_220404	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	103	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00118 mg/kg	102	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	110	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0012 mg/kg	99.2	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4281835)							
ET2201972-017	0009_SW034_220404	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	114	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	122	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	108	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	132	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	118	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	99.4	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4281848)							
ET2201972-042	0009_MW013_HT_220405	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	119	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	119	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	111	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	122	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	114	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4312299)							
ET2201972-051	0009_MW016_HT_220405	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	97.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	107	71.0	127

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: 4312299) - continued							
ET2201972-051	0009_MW016_HT_220405	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	119	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	106	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	90.5	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	96.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4281835)							
ET2201972-017	0009_SW034_220404	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	124	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	125	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	128	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	121	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	124	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	128	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	126	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	132	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	114	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	118	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4281848)							
ET2201972-042	0009_MW013_HT_220405	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	128	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	118	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	122	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	117	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	113	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	114	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	113	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	124	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	115	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	118	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4312299)							
ET2201972-051	0009_MW016_HT_220405	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	93.8	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	100	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	88.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	99.0	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	96.4	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	87.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	91.2	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: 4312299) - continued							
ET2201972-051	0009_MW016_HT_220405	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	89.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	85.9	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4281835)							
ET2201972-017	0009_SW034_220404	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	117	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	# 143	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	116	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	109	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	123	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	124	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	132	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4281848)							
ET2201972-042	0009_MW013_HT_220405	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	122	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	126	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	122	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	116	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	126	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	121	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4312299)							
ET2201972-051	0009_MW016_HT_220405	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	95.2	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	89.3	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	102	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	89.2	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	95.4	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: 4312299) - continued							
ET2201972-051	0009_MW016_HT_220405	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	94.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4281835)							
ET2201972-017	0009_SW034_220404	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	120	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	127	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	124	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	# 45.3	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4281848)							
ET2201972-042	0009_MW013_HT_220405	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	120	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	119	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	119	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	106	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4312299)							
ET2201972-051	0009_MW016_HT_220405	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	104	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	94.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	95.4	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	86.1	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ET2201972**	Page	: 1 of 10
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 08-Apr-2022
Site	: QLD_0009	Issue Date	: 06-May-2022
Sampler	: [redacted]	No. of samples received	: 61
Order number	: 60612487_4.1	No. of samples analysed	: 58

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, 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: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ET2201972--042	0009_MW013_HT_220405	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231C: Perfluoroalkyl Sulfonamides	ET2201972--017	0009_SW034_220404	**N-Methyl perfluorooctane sulfonamide (MeFOSA)**	31506-32-8	143 %	70.0-130%	**Recovery greater than upper data quality objective**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	ET2201972--017	0009_SW034_220404	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	45.3 %	70.0-130%	**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: **SOIL**

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
EA055: Moisture Content (Dried @ 105-110°C)								
HDPE Soil Jar (EA055)								
0009_SD036_220404,	0009_QC101_220404,	**04-Apr-2022**	**----**	----	----	**11-Apr-2022**	18-Apr-2022	✓
0009_SD100_220404,	0009_SD101_220404,							
0009_SD031_220404,	0009_SD030_220404,							
0009_SD035_220404,	0009_SD034_220404,							
0009_SD032_220404,	0009_SD033_220404							
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0009_SD036_220404,	0009_QC101_220404,	**04-Apr-2022**	**12-Apr-2022**	01-Oct-2022	✓	**13-Apr-2022**	22-May-2022	✓
0009_SD100_220404,	0009_SD101_220404,							
0009_SD031_220404,	0009_SD030_220404,							
0009_SD035_220404,	0009_SD034_220404,							
0009_SD032_220404,	0009_SD033_220404							

Matrix: **SOIL**

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 Soil Jar (EP231X)								
0009_SD036_220404,	0009_QC101_220404,	**04-Apr-2022**	**12-Apr-2022**	01-Oct-2022	✓	**13-Apr-2022**	22-May-2022	✓
0009_SD100_220404,	0009_SD101_220404,							
0009_SD031_220404,	0009_SD030_220404,							
0009_SD035_220404,	0009_SD034_220404,							
0009_SD032_220404,	0009_SD033_220404							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
0009_SD036_220404,	0009_QC101_220404,	**04-Apr-2022**	**12-Apr-2022**	01-Oct-2022	✓	**13-Apr-2022**	22-May-2022	✓
0009_SD100_220404,	0009_SD101_220404,							
0009_SD031_220404,	0009_SD030_220404,							
0009_SD035_220404,	0009_SD034_220404,							
0009_SD032_220404,	0009_SD033_220404							
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0009_SD036_220404,	0009_QC101_220404,	**04-Apr-2022**	**12-Apr-2022**	01-Oct-2022	✓	**13-Apr-2022**	22-May-2022	✓
0009_SD100_220404,	0009_SD101_220404,							
0009_SD031_220404,	0009_SD030_220404,							
0009_SD035_220404,	0009_SD034_220404,							
0009_SD032_220404,	0009_SD033_220404							
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
0009_SD036_220404,	0009_QC101_220404,	**04-Apr-2022**	**12-Apr-2022**	01-Oct-2022	✓	**13-Apr-2022**	22-May-2022	✓
0009_SD100_220404,	0009_SD101_220404,							
0009_SD031_220404,	0009_SD030_220404,							
0009_SD035_220404,	0009_SD034_220404,							
0009_SD032_220404,	0009_SD033_220404							

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

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) 0009_SW031_220404, 0009_MW004_LT_220404, 0009_MW005_LT_220404, 0009_MW014_LT_220404, 0009_MW015_LT_220404, 0009_MW016_LT_220404, 0009_QC103_220404	**04-Apr-2022**	**03-May-2022**	01-Oct-2022	✓	**03-May-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_SW036_220404, 0009_QC100_220404, 0009_MW036_220404, 0009_SW100_220404, 0009_SW101_220404, 0009_SW030_220404, 0009_SW035_220404, 0009_SW034_220404, 0009_SW032_220404, 0009_SW033_220404, 0009_MW002_LT_220404, 0009_MW013_LT_220404, 0009_QC102_220404, 0009_MW001_LT_220404, 0009_MW003_LT_220404, 0009_MW007_LT_220404, 0009_MW017_LT_220404, 0009_MW019_LT_220404	**04-Apr-2022**	**12-Apr-2022**	01-Oct-2022	✓	**22-Apr-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_MW009_LT_220404, 0009_QC301_220404, 0009_QC500_220405	**04-Apr-2022**	**22-Apr-2022**	01-Oct-2022	✓	**22-Apr-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_QC104_220405, 0009_MW016_HT_220405, 0009_MW017_HT_220405, 0009_MW018_HT_220405	**05-Apr-2022**	**03-May-2022**	02-Oct-2022	✓	**03-May-2022**	02-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_MW003_HT_220405, 0009_MW013_HT_220405, 0009_MW005_HT_220405, 0009_MW002_HT_220405, 0009_MW001_HT_220405, 0009_MW004_HT_220405, 0009_MW014_HT_220405, 0009_MW015_HT_220405, 0009_QC105_220405, 0009_MW007_HT_220405, 0009_MW011_HT_220405, 0009_MW019_HT_220405, 0009_MW009_HT_220405, 0009_MW031_220405, 0009_MW035_220405, 0009_QC302_220405	**05-Apr-2022**	**22-Apr-2022**	02-Oct-2022	✓	**22-Apr-2022**	02-Oct-2022	✓

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) 0009_SW031_220404, 0009_MW004_LT_220404, 0009_MW005_LT_220404, 0009_MW014_LT_220404, 0009_MW015_LT_220404, 0009_MW016_LT_220404, 0009_QC103_220404	**04-Apr-2022**	**03-May-2022**	01-Oct-2022	✓	**03-May-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_SW036_220404, 0009_QC100_220404, 0009_MW036_220404, 0009_SW100_220404, 0009_SW101_220404, 0009_SW030_220404, 0009_SW035_220404, 0009_SW034_220404, 0009_SW032_220404, 0009_SW033_220404, 0009_MW002_LT_220404, 0009_MW013_LT_220404, 0009_QC102_220404, 0009_MW001_LT_220404, 0009_MW003_LT_220404, 0009_MW007_LT_220404, 0009_MW017_LT_220404, 0009_MW019_LT_220404	**04-Apr-2022**	**12-Apr-2022**	01-Oct-2022	✓	**22-Apr-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_MW009_LT_220404, 0009_QC301_220404, 0009_QC500_220405	**04-Apr-2022**	**22-Apr-2022**	01-Oct-2022	✓	**22-Apr-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_QC104_220405, 0009_MW016_HT_220405, 0009_MW017_HT_220405, 0009_MW018_HT_220405	**05-Apr-2022**	**03-May-2022**	02-Oct-2022	✓	**03-May-2022**	02-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_MW003_HT_220405, 0009_MW013_HT_220405, 0009_MW005_HT_220405, 0009_MW002_HT_220405, 0009_MW001_HT_220405, 0009_MW004_HT_220405, 0009_MW014_HT_220405, 0009_MW015_HT_220405, 0009_QC105_220405, 0009_MW007_HT_220405, 0009_MW011_HT_220405, 0009_MW019_HT_220405, 0009_MW009_HT_220405, 0009_MW031_220405, 0009_MW035_220405, 0009_QC302_220405	**05-Apr-2022**	**22-Apr-2022**	02-Oct-2022	✓	**22-Apr-2022**	02-Oct-2022	✓

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) 0009_SW031_220404, 0009_MW004_LT_220404, 0009_MW005_LT_220404, 0009_MW014_LT_220404, 0009_MW015_LT_220404, 0009_MW016_LT_220404, 0009_QC103_220404	**04-Apr-2022**	**03-May-2022**	01-Oct-2022	✓	**03-May-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_SW036_220404, 0009_QC100_220404, 0009_MW036_220404, 0009_SW100_220404, 0009_SW101_220404, 0009_SW030_220404, 0009_SW035_220404, 0009_SW034_220404, 0009_SW032_220404, 0009_SW033_220404, 0009_MW002_LT_220404, 0009_MW013_LT_220404, 0009_QC102_220404, 0009_MW001_LT_220404, 0009_MW003_LT_220404, 0009_MW007_LT_220404, 0009_MW017_LT_220404, 0009_MW019_LT_220404	**04-Apr-2022**	**12-Apr-2022**	01-Oct-2022	✓	**22-Apr-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_MW009_LT_220404, 0009_QC301_220404, 0009_QC500_220405	**04-Apr-2022**	**22-Apr-2022**	01-Oct-2022	✓	**22-Apr-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_QC104_220405, 0009_MW016_HT_220405, 0009_MW017_HT_220405, 0009_MW018_HT_220405	**05-Apr-2022**	**03-May-2022**	02-Oct-2022	✓	**03-May-2022**	02-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_MW003_HT_220405, 0009_MW013_HT_220405, 0009_MW005_HT_220405, 0009_MW002_HT_220405, 0009_MW001_HT_220405, 0009_MW004_HT_220405, 0009_MW014_HT_220405, 0009_MW015_HT_220405, 0009_QC105_220405, 0009_MW007_HT_220405, 0009_MW011_HT_220405, 0009_MW019_HT_220405, 0009_MW009_HT_220405, 0009_MW031_220405, 0009_MW035_220405, 0009_QC302_220405	**05-Apr-2022**	**22-Apr-2022**	02-Oct-2022	✓	**22-Apr-2022**	02-Oct-2022	✓

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) 0009_SW031_220404, 0009_MW004_LT_220404, 0009_MW005_LT_220404, 0009_MW014_LT_220404, 0009_MW015_LT_220404, 0009_MW016_LT_220404, 0009_QC103_220404	**04-Apr-2022**	**03-May-2022**	01-Oct-2022	✓	**03-May-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_SW036_220404, 0009_QC100_220404, 0009_MW036_220404, 0009_SW100_220404, 0009_SW101_220404, 0009_SW030_220404, 0009_SW035_220404, 0009_SW034_220404, 0009_SW032_220404, 0009_SW033_220404, 0009_MW002_LT_220404, 0009_MW013_LT_220404, 0009_QC102_220404, 0009_MW001_LT_220404, 0009_MW003_LT_220404, 0009_MW007_LT_220404, 0009_MW017_LT_220404, 0009_MW019_LT_220404	**04-Apr-2022**	**12-Apr-2022**	01-Oct-2022	✓	**22-Apr-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_MW009_LT_220404, 0009_QC301_220404, 0009_QC500_220405	**04-Apr-2022**	**22-Apr-2022**	01-Oct-2022	✓	**22-Apr-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_QC104_220405, 0009_MW016_HT_220405, 0009_MW017_HT_220405, 0009_MW018_HT_220405	**05-Apr-2022**	**03-May-2022**	02-Oct-2022	✓	**03-May-2022**	02-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0009_MW003_HT_220405, 0009_MW013_HT_220405, 0009_MW005_HT_220405, 0009_MW002_HT_220405, 0009_MW001_HT_220405, 0009_MW004_HT_220405, 0009_MW014_HT_220405, 0009_MW015_HT_220405, 0009_QC105_220405, 0009_MW007_HT_220405, 0009_MW011_HT_220405, 0009_MW019_HT_220405, 0009_MW009_HT_220405, 0009_MW031_220405, 0009_MW035_220405, 0009_QC302_220405	**05-Apr-2022**	**22-Apr-2022**	02-Oct-2022	✓	**22-Apr-2022**	02-Oct-2022	✓

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)							
0009_SW031_220404, 0009_MW004_LT_220404, 0009_MW005_LT_220404, 0009_MW014_LT_220404, 0009_MW015_LT_220404, 0009_MW016_LT_220404, 0009_QC103_220404	**04-Apr-2022**	**03-May-2022**	01-Oct-2022	✓	**03-May-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X)							
0009_SW036_220404, 0009_QC100_220404, 0009_MW036_220404, 0009_SW100_220404, 0009_SW101_220404, 0009_SW030_220404, 0009_SW035_220404, 0009_SW034_220404, 0009_SW032_220404, 0009_SW033_220404, 0009_MW002_LT_220404, 0009_MW013_LT_220404, 0009_QC102_220404, 0009_MW001_LT_220404, 0009_MW003_LT_220404, 0009_MW007_LT_220404, 0009_MW017_LT_220404, 0009_MW019_LT_220404	**04-Apr-2022**	**12-Apr-2022**	01-Oct-2022	✓	**22-Apr-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X)							
0009_MW009_LT_220404, 0009_QC301_220404, 0009_QC500_220405	**04-Apr-2022**	**22-Apr-2022**	01-Oct-2022	✓	**22-Apr-2022**	01-Oct-2022	✓
HDPE (no PTFE) (EP231X)							
0009_QC104_220405, 0009_MW016_HT_220405, 0009_MW017_HT_220405, 0009_MW018_HT_220405	**05-Apr-2022**	**03-May-2022**	02-Oct-2022	✓	**03-May-2022**	02-Oct-2022	✓
HDPE (no PTFE) (EP231X)							
0009_MW003_HT_220405, 0009_MW013_HT_220405, 0009_MW005_HT_220405, 0009_MW002_HT_220405, 0009_MW001_HT_220405, 0009_MW004_HT_220405, 0009_MW014_HT_220405, 0009_MW015_HT_220405, 0009_QC105_220405, 0009_MW007_HT_220405, 0009_MW011_HT_220405, 0009_MW019_HT_220405, 0009_MW009_HT_220405, 0009_MW031_220405, 0009_MW035_220405, 0009_QC302_220405	**05-Apr-2022**	**22-Apr-2022**	02-Oct-2022	✓	**22-Apr-2022**	02-Oct-2022	✓

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: **SOIL**

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)							
Moisture Content	EA055	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
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

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	5	48	10.42	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	48	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	48	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	48	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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed 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 soil 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 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 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
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.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ET2201972**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Contact	: [redacted]
Address	: BRISBANE	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: +61 7 3552 8616
Facsimile	: ----	Facsimile	:
Project	: QLD_0009_PFASOMP_20	Page	: 1 of 5
Order number	: 60612487_4.1	Quote number	: ET2021AECOMAU0001 (TV/007/21 v2 - Compass)
C-O-C number	: 35899	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: QLD_0009		
Sampler	: [redacted]		

Dates

Date Samples Received	: 08-Apr-2022 08:24	Issue Date	: 27-Apr-2022
Client Requested Due Date	: 26-Apr-2022	Scheduled Reporting Date	: **26-Apr-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 0.9,1.6°C - Ice present
Receipt Detail	: HARD ESKIES	No. of samples received / analysed	: 61 / 60

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
- **11/4/22: SRN has been resent to acknowledge a update to the reporting date which has been moved forward by 1 day to the 26th April.**
- ***13/4/22*: SRN has been resent to acknowledge the addition of all recipients.**
- ***27/04/2022*: SRN has been resent to acknowledge the addition of analysis to select samples as per email received from [redacted] Please note this extra analysis will ahave an estimated reporting date of 05/05/2022. 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.
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- 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.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ET2201972-023	: 04-Apr-2022 13:40	: 0009_MW004_LT_220404
ET2201972-024	: 04-Apr-2022 14:20	: 0009_MW002_LT_220404
ET2201972-025	: 04-Apr-2022 14:49	: 0009_MW005_LT_220404
ET2201972-026	: 04-Apr-2022 14:00	: 0009_MW013_LT_220404
ET2201972-027	: 04-Apr-2022 14:30	: 0009_MW001_LT_220404
ET2201972-028	: 04-Apr-2022 14:15	: 0009_MW003_LT_220404
ET2201972-030	: 04-Apr-2022 15:00	: 0009_MW014_LT_220404
ET2201972-031	: 04-Apr-2022 15:11	: 0009_MW015_LT_220404
ET2201972-032	: 04-Apr-2022 15:30	: 0009_MW016_LT_220404
ET2201972-033	: 04-Apr-2022 15:47	: 0009_MW007_LT_220404
ET2201972-034	: 04-Apr-2022 15:59	: 0009_MW017_LT_220404
ET2201972-035	: 04-Apr-2022 16:12	: 0009_MW018_LT_220404
ET2201972-036	: 04-Apr-2022 16:24	: 0009_MW011_LT_220404
ET2201972-037	: 04-Apr-2022 16:38	: 0009_MW019_LT_220404
ET2201972-038	: 04-Apr-2022 16:46	: 0009_MW009_LT_220404
ET2201972-041	: 05-Apr-2022 08:20	: 0009_MW003_HT_220405
ET2201972-042	: 05-Apr-2022 08:15	: 0009_MW013_HT_220405
ET2201972-043	: 05-Apr-2022 08:05	: 0009_MW005_HT_220405
ET2201972-044	: 05-Apr-2022 08:55	: 0009_MW002_HT_220405
ET2201972-045	: 05-Apr-2022 08:40	: 0009_MW001_HT_220405
ET2201972-046	: 05-Apr-2022 08:00	: 0009_MW004_HT_220405
ET2201972-048	: 05-Apr-2022 09:04	: 0009_MW014_HT_220405
ET2201972-049	: 05-Apr-2022 09:12	: 0009_MW015_HT_220405
ET2201972-051	: 05-Apr-2022 09:26	: 0009_MW016_HT_220405
ET2201972-052	: 05-Apr-2022 09:38	: 0009_MW007_HT_220405
ET2201972-053	: 05-Apr-2022 09:46	: 0009_MW017_HT_220405
ET2201972-054	: 05-Apr-2022 09:54	: 0009_MW018_HT_220405
ET2201972-055	: 05-Apr-2022 10:05	: 0009_MW011_HT_220405
ET2201972-056	: 05-Apr-2022 10:13	: 0009_MW019_HT_220405
ET2201972-057	: 05-Apr-2022 10:22	: 0009_MW009_HT_220405

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: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ET2201972-003	04-Apr-2022 07:45	0009_SD036_220404	✓	✓
ET2201972-004	04-Apr-2022 07:46	0009_QC101_220404	✓	✓
ET2201972-007	04-Apr-2022 09:03	0009_SD100_220404	✓	✓
ET2201972-009	04-Apr-2022 09:13	0009_SD101_220404	✓	✓
ET2201972-012	04-Apr-2022 10:51	0009_SD031_220404	✓	✓
ET2201972-013	04-Apr-2022 10:51	0009_SD030_220404	✓	✓
ET2201972-016	04-Apr-2022 12:07	0009_SD035_220404	✓	✓
ET2201972-018	04-Apr-2022 12:21	0009_SD034_220404	✓	✓

			SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ET2201972-020	04-Apr-2022 12:38	0009_SD032_220404	✓	✓
ET2201972-022	04-Apr-2022 12:54	0009_SD033_220404	✓	✓

Matrix: **WATER**

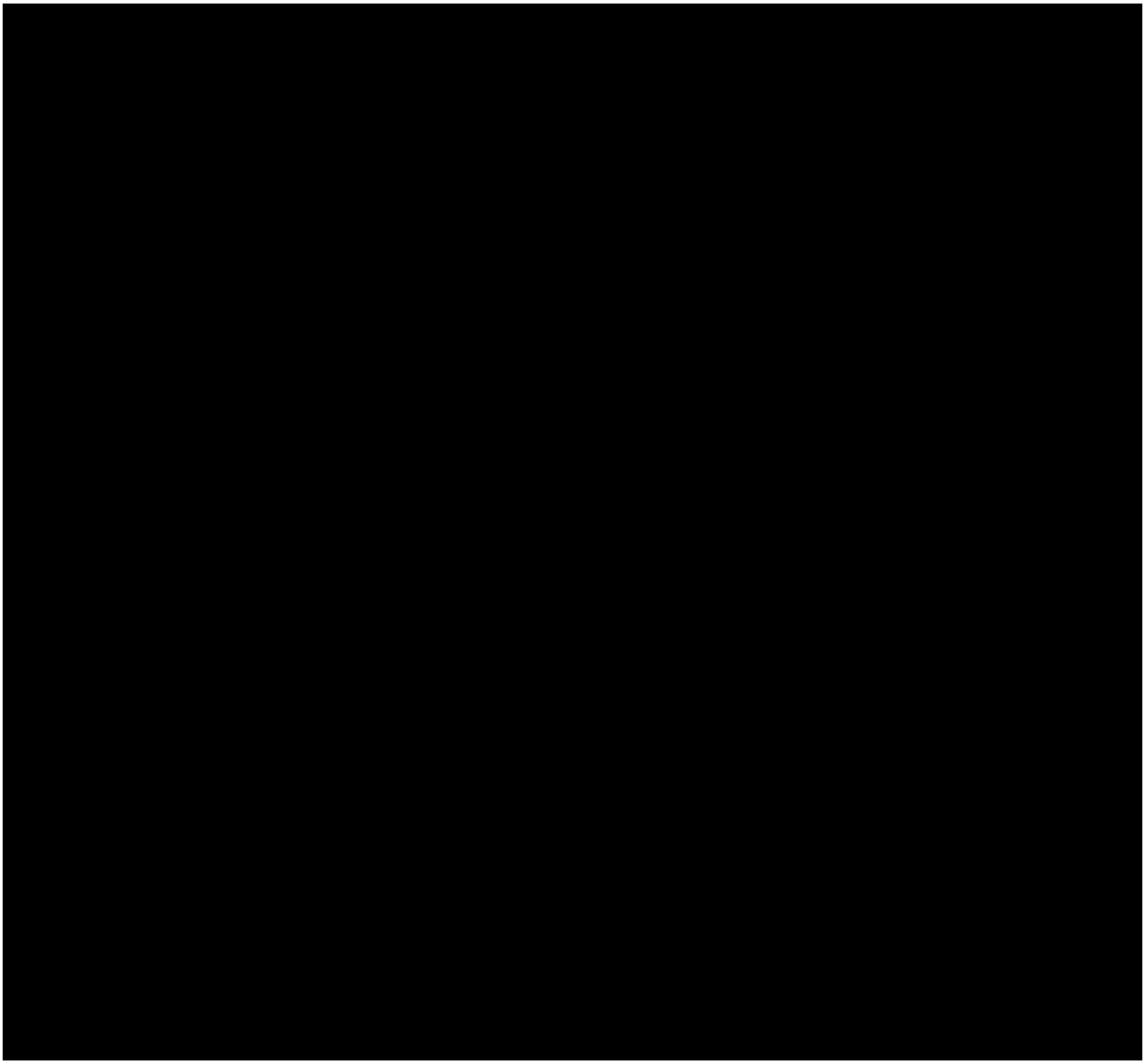
Laboratory sample ID	*Sampling date / time*	*Sample ID*	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (28 analytes)
ET2201972-001	04-Apr-2022 07:44	0009_SW036_220404		✓
ET2201972-002	04-Apr-2022 07:45	0009_QC100_220404		✓
ET2201972-005	04-Apr-2022 08:27	0009_MW036_220404		✓
ET2201972-006	04-Apr-2022 08:57	0009_SW100_220404		✓
ET2201972-008	04-Apr-2022 09:11	0009_SW101_220404		✓
ET2201972-010	04-Apr-2022 09:27	0009_QC300_220404	✓	
ET2201972-011	04-Apr-2022 10:50	0009_SW031_220404		✓
ET2201972-014	04-Apr-2022 10:53	0009_SW030_220404		✓
ET2201972-015	04-Apr-2022 12:06	0009_SW035_220404		✓
ET2201972-017	04-Apr-2022 12:20	0009_SW034_220404		✓
ET2201972-019	04-Apr-2022 12:35	0009_SW032_220404		✓
ET2201972-021	04-Apr-2022 12:54	0009_SW033_220404		✓
ET2201972-023	04-Apr-2022 13:40	0009_MW004_LT_220404		✓
ET2201972-024	04-Apr-2022 14:20	0009_MW002_LT_220404		✓
ET2201972-025	04-Apr-2022 14:49	0009_MW005_LT_220404		✓
ET2201972-026	04-Apr-2022 14:00	0009_MW013_LT_220404		✓
ET2201972-027	04-Apr-2022 14:30	0009_MW001_LT_220404		✓
ET2201972-028	04-Apr-2022 14:15	0009_MW003_LT_220404		✓
ET2201972-029	04-Apr-2022 14:52	0009_QC102_220404		✓
ET2201972-030	04-Apr-2022 15:00	0009_MW014_LT_220404		✓
ET2201972-031	04-Apr-2022 15:11	0009_MW015_LT_220404		✓
ET2201972-032	04-Apr-2022 15:30	0009_MW016_LT_220404		✓
ET2201972-033	04-Apr-2022 15:47	0009_MW007_LT_220404		✓
ET2201972-034	04-Apr-2022 15:59	0009_MW017_LT_220404		✓
ET2201972-035	04-Apr-2022 16:12	0009_MW018_LT_220404		✓
ET2201972-036	04-Apr-2022 16:24	0009_MW011_LT_220404		✓
ET2201972-037	04-Apr-2022 16:38	0009_MW019_LT_220404		✓

			(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (28 analytes)
ET2201972-038	04-Apr-2022 16:46	0009_MW009_LT_220404		✓
ET2201972-039	04-Apr-2022 16:38	0009_QC103_220404		✓
ET2201972-040	04-Apr-2022 16:55	0009_QC301_220404		✓
ET2201972-041	05-Apr-2022 08:20	0009_MW003_HT_220405		✓
ET2201972-042	05-Apr-2022 08:15	0009_MW013_HT_220405		✓
ET2201972-043	05-Apr-2022 08:05	0009_MW005_HT_220405		✓
ET2201972-044	05-Apr-2022 08:55	0009_MW002_HT_220405		✓
ET2201972-045	05-Apr-2022 08:40	0009_MW001_HT_220405		✓
ET2201972-046	05-Apr-2022 08:00	0009_MW004_HT_220405		✓
ET2201972-047	05-Apr-2022 08:59	0009_QC104_220405		✓
ET2201972-048	05-Apr-2022 09:04	0009_MW014_HT_220405		✓
ET2201972-049	05-Apr-2022 09:12	0009_MW015_HT_220405		✓
ET2201972-050	05-Apr-2022 09:13	0009_QC105_220405		✓
ET2201972-051	05-Apr-2022 09:26	0009_MW016_HT_220405		✓
ET2201972-052	05-Apr-2022 09:38	0009_MW007_HT_220405		✓
ET2201972-053	05-Apr-2022 09:46	0009_MW017_HT_220405		✓
ET2201972-054	05-Apr-2022 09:54	0009_MW018_HT_220405		✓
ET2201972-055	05-Apr-2022 10:05	0009_MW011_HT_220405		✓
ET2201972-056	05-Apr-2022 10:13	0009_MW019_HT_220405		✓
ET2201972-057	05-Apr-2022 10:22	0009_MW009_HT_220405		✓
ET2201972-058	05-Apr-2022 10:47	0009_MW031_220405		✓
ET2201972-059	05-Apr-2022 10:55	0009_MW035_220405		✓
ET2201972-060	05-Apr-2022 11:03	0009_QC302_220405		✓
ET2201972-061	04-Apr-2022 12:00	0009_QC500_220405		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables



REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/220407
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 07-APR-2022
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N22/006284	0009_QC201_220404	SOIL 4/04/22

Lab Reg No.		N22/006284				
Date Sampled		04-APR-2022				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	mg/kg	<0.002				NR70
PFPeA (2706-90-3)	mg/kg	<0.002				NR70
PFHxA (307-24-4)	mg/kg	<0.001				NR70
PFHpA (375-85-9)	mg/kg	<0.001				NR70
PFOA (335-67-1)	mg/kg	<0.001				NR70
PFNA (375-95-1)	mg/kg	<0.001				NR70
PFDA (335-76-2)	mg/kg	<0.001				NR70
PFUdA (2058-94-8)	mg/kg	<0.002				NR70
PFDoA (307-55-1)	mg/kg	<0.002				NR70
PFTrDA (72629-94-8)	mg/kg	<0.002				NR70
PFTeDA (376-06-7)	mg/kg	<0.002				NR70
PFHxDA (67905-19-5)	mg/kg	<0.002				NR70
PFODA (16517-11-6)	mg/kg	<0.005				NR70
FOUEA (70887-84-2)	mg/kg	<0.001				NR70
PFBS (375-73-5)	mg/kg	<0.001				NR70
PFPeS (2706-91-4)	mg/kg	<0.001				NR70
PFHxS (355-46-4)	mg/kg	<0.001				NR70
PFHpS (375-92-8)	mg/kg	<0.001				NR70
PFOS (1763-23-1)	mg/kg	<0.002				NR70
PFNS (68259-12-1)	mg/kg	<0.001				NR70
PFDS (335-77-3)	mg/kg	<0.001				NR70
PFOSA (754-91-6)	mg/kg	<0.001				NR70
N-MeFOSA (31506-32-8)	mg/kg	<0.002				NR70
N-EtFOSA (4151-50-2)	mg/kg	<0.002				NR70
N-MeFOSAA (2355-31-9)	mg/kg	<0.002				NR70
N-EtFOSAA(2991-50-6)	mg/kg	<0.002				NR70
N-MeFOSE (24448-09-7)	mg/kg	<0.005				NR70
N-EtFOSE (1691-99-2)	mg/kg	<0.005				NR70
4:2 FTS (757124-72-4)	mg/kg	<0.001				NR70
6:2 FTS (27619-97-2)	mg/kg	<0.001				NR70

REPORT OF ANALYSIS

Lab Reg No.		N22/006284				
Date Sampled		04-APR-2022				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
8:2 FTS (39108-34-4)	mg/kg	<0.001				NR70
10:2 FTS (120226-60-0)	mg/kg	<0.002				NR70
8:2 diPAP (678-41-1)	mg/kg	<0.002				NR70
PFBA (Surrogate Recovery)	%	110				NR70
PFPeA (Surrogate Recovery)	%	108				NR70
PFHxA (Surrogate Recovery)	%	115				NR70
PFHpA (Surrogate Recovery)	%	109				NR70
PFOA (Surrogate Recovery)	%	115				NR70
PFNA (Surrogate Recovery)	%	110				NR70
PFDA (Surrogate Recovery)	%	121				NR70
PFUdA (Surrogate Recovery)	%	123				NR70
PFDoA (Surrogate Recovery)	%	105				NR70
PFTeDA (Surrogate Recovery)	%	111				NR70
PFHxDA (Surrogate Recovery)	%	109				NR70
FOUEA (Surrogate Recovery)	%	107				NR70
PFBS (Surrogate Recovery)	%	100				NR70
PFHxS (Surrogate Recovery)	%	114				NR70
PFOS (Surrogate Recovery)	%	108				NR70
PFOSA (Surrogate Recovery)	%	109				NR70
N-MeFOSA (Surrogate Recovery)	%	107				NR70
N-EtFOSA (Surrogate Recovery)	%	119				NR70
N-MeFOSAA (Surrogate Recovery)	%	109				NR70
N-EtFOSAA (Surrogate Recovery)	%	112				NR70
N-MeFOSE (Surrogate Recovery)	%	99				NR70
N-EtFOSE (Surrogate Recovery)	%	93				NR70
4:2 FTS (Surrogate Recovery)	%	98				NR70
6:2 FTS (Surrogate Recovery)	%	95				NR70
8:2 FTS (Surrogate Recovery)	%	94				NR70
8:2 diPAP (Surrogate Recovery)	%	106				NR70
Dates						
Date extracted		12-APR-2022				
Date analysed		13-APR-2022				

N22/006284
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

Lab Reg No.		N22/006284				
Date Sampled		04-APR-2022				
	Units					Method

[redacted]
Organics - NSW
Accreditation No. 198

14-APR-2022

Lab Reg No.		N22/006284				
Date Sampled		04-APR-2022				
	Units					Method
Trace Elements						
Total Solids	%	48.5				NT2_49
Dates						
Date extracted		12-APR-2022				
Date analysed		14-APR-2022				

[redacted]
Inorganics - NSW
Accreditation No. 198

14-APR-2022

All results are expressed on a dry weight basis.

REPORT OF ANALYSIS

Report No. RN1348851

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/220407
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 07-APR-2022
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N22/006283	0009_QC200_220404	WATER 4/04/22
N22/006285	0009_QC202_220404	WATER 4/04/22
N22/006286	0009_QC203_220404	WATER 4/04/22
N22/006287	0009_QC204_220405	WATER 5/04/22

Lab Reg No.			N22/006283	N22/006285	N22/006286	N22/006287	
Date Sampled			04-APR-2022	04-APR-2022	04-APR-2022	05-APR-2022	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
PFBA (375-22-4)		ug/L	<0.05	<0.05	<0.05	0.91	NR70
PFPeA (2706-90-3)		ug/L	<0.02	0.089	0.100	1.3	NR70
PFHxA (307-24-4)		ug/L	<0.01	0.20	0.14	5.8	NR70
PFHpA (375-85-9)		ug/L	<0.01	0.049	0.060	0.91	NR70
PFOA (335-67-1)		ug/L	<0.01	0.077	0.13	2.1	NR70
PFNA (375-95-1)		ug/L	<0.01	0.094	0.013	0.056	NR70
PFDA (335-76-2)		ug/L	<0.01	<0.01	<0.01	0.013	NR70
PFUdA (2058-94-8)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDoA (307-55-1)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFTrDA (72629-94-8)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFTeDA (376-06-7)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFHxDA (67905-19-5)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFODA (16517-11-6)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70
FOUEA (70887-84-2)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDS (335-77-3)		ug/L	<0.01	<0.01	<0.01	0.016	NR70
PFPeS (2706-91-4)		ug/L	<0.01	0.081	0.043	1.5	NR70
PFHxS (355-46-4)		ug/L	<0.01	0.86	0.52	23	NR70
PFHpS (375-92-8)		ug/L	<0.01	0.043	0.13	1.4	NR70
PFOS (1763-23-1)		ug/L	<0.02	2.2	3.3	51	NR70
PFNS (68259-12-1)		ug/L	<0.01	<0.01	<0.01	0.27	NR70
PFBS (375-73-5)		ug/L	<0.01	0.081	0.032	1.7	NR70
PFOSA (754-91-6)		ug/L	<0.01	<0.01	<0.01	0.072	NR70
N-MeFOSA (31506-32-8)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-EtFOSA (4151-50-2)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-MeFOSAA (2355-31-9)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-EtFOSAA(2991-50-6)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSE (24448-09-7)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70

REPORT OF ANALYSIS

Lab Reg No.			N22/006283	N22/006285	N22/006286	N22/006287	
Date Sampled			04-APR-2022	04-APR-2022	04-APR-2022	05-APR-2022	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
N-EtFOSE (1691-99-2)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70
4:2 FTS (757124-72-4)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
6:2 FTS (27619-97-2)		ug/L	<0.01	<0.01	0.042	0.025	NR70
8:2 FTS (39108-34-4)		ug/L	<0.01	<0.01	<0.01	0.029	NR70
10:2 FTS (120226-60-0)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 diPAP (678-41-1)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFBA (Surrogate Recovery)		%	101	105	109	106	NR70
PFPeA (Surrogate Recovery)		%	128	184	318	108	NR70
PFHxA (Surrogate Recovery)		%	99	91	89	113	NR70
PFHpA (Surrogate Recovery)		%	96	99	94	110	NR70
PFOA (Surrogate Recovery)		%	101	101	105	109	NR70
PFNA (Surrogate Recovery)		%	102	88	90	27	NR70
PFDA (Surrogate Recovery)		%	111	106	107	94	NR70
PFUdA (Surrogate Recovery)		%	102	96	107	101	NR70
PFDoA (Surrogate Recovery)		%	90	85	83	80	NR70
PFTeDA (Surrogate Recovery)		%	95	84	79	80	NR70
PFHxDA (Surrogate Recovery)		%	87	72	71	115	NR70
FOUEA (Surrogate Recovery)		%	77	85	113	138	NR70
PFBS (Surrogate Recovery)		%	87	90	96	124	NR70
PFHxS (Surrogate Recovery)		%	97	91	99	116	NR70
PFOS (Surrogate Recovery)		%	97	102	109	105	NR70
PFOSA (Surrogate Recovery)		%	80	81	82	74	NR70
N-MeFOSA (Surrogate Recovery)		%	41	56	61	95	NR70
N-EtFOSA (Surrogate Recovery)		%	40	53	59	88	NR70
N-MeFOSAA (Surrogate Recovery)		%	83	85	99	84	NR70
N-EtFOSAA (Surrogate Recovery)		%	82	89	107	91	NR70
N-MeFOSE (Surrogate Recovery)		%	60	68	73	103	NR70
N-EtFOSE (Surrogate Recovery)		%	60	64	65	112	NR70
4:2 FTS (Surrogate Recovery)		%	148	218	296	301	NR70
6:2 FTS (Surrogate Recovery)		%	100	121	229	189	NR70
8:2 FTS (Surrogate Recovery)		%	115	105	197	129	NR70
8:2 diPAP (Surrogate Recovery)		%	74	87	78	75	NR70
Dates							
Date extracted			12-APR-2022	12-APR-2022	12-APR-2022	12-APR-2022	
Date analysed			13-APR-2022	13-APR-2022	13-APR-2022	13-APR-2022	

N22/006283
to
N22/006289

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
High PFAS surrogate recoveries accepted - results corrected for recovery.
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.

[redacted]
Organics - NSW
Accreditation No. 198

14-APR-2022

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/220407
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 07-APR-2022
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N22/006288	0009_QC205_220405	WATER 5/04/22
N22/006289	0009_QC501_220404	WATER 4/04/22

Lab Reg No.			N22/006288	N22/006289			
Date Sampled			05-APR-2022	04-APR-2022			
		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	0.037	<0.02			NR70
PFHxA (307-24-4)		ug/L	0.064	<0.01			NR70
PFHpA (375-85-9)		ug/L	0.016	<0.01			NR70
PFOA (335-67-1)		ug/L	0.020	<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	0.015	<0.01			NR70
PFHxS (355-46-4)		ug/L	0.24	<0.01			NR70
PFHpS (375-92-8)		ug/L	0.010	<0.01			NR70
PFOS (1763-23-1)		ug/L	1.7	<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

Lab Reg No.			N22/006288	N22/006289			
Date Sampled			05-APR-2022	04-APR-2022			
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
6:2 FTS (27619-97-2)		ug/L	0.026	<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	104			NR70
PFPeA (Surrogate Recovery)		%	103	103			NR70
PFHxA (Surrogate Recovery)		%	101	104			NR70
PFHpA (Surrogate Recovery)		%	101	104			NR70
PFOA (Surrogate Recovery)		%	101	106			NR70
PFNA (Surrogate Recovery)		%	90	98			NR70
PFDA (Surrogate Recovery)		%	100	102			NR70
PFUdA (Surrogate Recovery)		%	103	98			NR70
PFDoA (Surrogate Recovery)		%	88	87			NR70
PFTeDA (Surrogate Recovery)		%	84	89			NR70
PFHxDA (Surrogate Recovery)		%	89	95			NR70
FOUEA (Surrogate Recovery)		%	80	82			NR70
PFBS (Surrogate Recovery)		%	90	91			NR70
PFHxS (Surrogate Recovery)		%	99	100			NR70
PFOS (Surrogate Recovery)		%	108	105			NR70
PFOSA (Surrogate Recovery)		%	83	83			NR70
N-MeFOSA (Surrogate Recovery)		%	67	75			NR70
N-EtFOSA (Surrogate Recovery)		%	69	72			NR70
N-MeFOSAA (Surrogate Recovery)		%	85	84			NR70
N-EtFOSAA (Surrogate Recovery)		%	84	87			NR70
N-MeFOSE (Surrogate Recovery)		%	96	88			NR70
N-EtFOSE (Surrogate Recovery)		%	84	92			NR70
4:2 FTS (Surrogate Recovery)		%	95	117			NR70
6:2 FTS (Surrogate Recovery)		%	89	100			NR70
8:2 FTS (Surrogate Recovery)		%	87	100			NR70
8:2 diPAP (Surrogate Recovery)		%	95	88			NR70
Dates							
Date extracted			12-APR-2022	12-APR-2022			
Date analysed			13-APR-2022	13-APR-2022			

[redacted]
Organics - NSW
Accreditation No. 198

14-APR-2022

REPORT OF ANALYSIS

This Report supersedes reports: *RN1348798*

Measurement Uncertainty is available upon request.
Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTALIA PTY LTD

NMI QA Report No: AECO06/220407 **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	101	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	100	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	103	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	99	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	104	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	94	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	108	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	112	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	134	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	94	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	96	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	86	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	90	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	118	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	104	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	106	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	104	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	105	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	101	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	101	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	95	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	94	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	104	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	92	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	89	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	104	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	102	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	103	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	90	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: **14/04/2022**

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/220407 **Sample Matrix:** Solid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		mg/kg	mg/kg	mg/kg	mg/kg	%	%	%
PFBA (375-22-4)	NR70	0.002	<0.002	NA	NA	NA	108	NA
PFPeA (2706-90-3)	NR70	0.002	<0.002	NA	NA	NA	111	NA
PFHxA (307-24-4)	NR70	0.001	<0.001	NA	NA	NA	112	NA
PFHpA (375-85-9)	NR70	0.001	<0.001	NA	NA	NA	109	NA
PFOA (335-67-1)	NR70	0.001	<0.001	NA	NA	NA	116	NA
PFNA (375-95-1)	NR70	0.001	<0.001	NA	NA	NA	120	NA
PFDA (335-76-2)	NR70	0.001	<0.001	NA	NA	NA	122	NA
PFUdA (2058-94-8)	NR70	0.002	<0.002	NA	NA	NA	128	NA
PFDoA (307-55-1)	NR70	0.002	<0.002	NA	NA	NA	118	NA
PFTrDA (72629-94-8)	NR70	0.002	<0.002	NA	NA	NA	115	NA
PFTeDA (376-06-7)	NR70	0.002	<0.002	NA	NA	NA	115	NA
PFHxDA (67905-19-5)	NR70	0.002	<0.002	NA	NA	NA	95	NA
PFODA (16517-11-6)	NR70	0.005	<0.005	NA	NA	NA	119	NA
FOUEA (70887-84-2)	NR70	0.001	<0.001	NA	NA	NA	98	NA
PFBS (375-73-5)	NR70	0.001	<0.001	NA	NA	NA	109	NA
PFPeS (2706-91-4)	NR70	0.001	<0.001	NA	NA	NA	118	NA
PFHxS (355-46-4)	NR70	0.001	<0.001	NA	NA	NA	115	NA
PFHpS (375-92-8)	NR70	0.001	<0.001	NA	NA	NA	116	NA
PFOS (1763-23-1)	NR70	0.002	<0.002	NA	NA	NA	127	NA
PFNS (68259-12-1)	NR70	0.001	<0.001	NA	NA	NA	111	NA
PFDS (335-77-3)	NR70	0.001	<0.001	NA	NA	NA	107	NA
PFOSA (754-91-6)	NR70	0.001	<0.001	NA	NA	NA	112	NA
N-MeFOSA (31506-32-8)	NR70	0.002	<0.002	NA	NA	NA	98	NA
N-EtFOSA (4151-50-2)	NR70	0.002	<0.002	NA	NA	NA	98	NA
N-MeFOSAA (2355-31-9)	NR70	0.002	<0.002	NA	NA	NA	110	NA
N-EtFOSAA(2991-50-6)	NR70	0.002	<0.002	NA	NA	NA	116	NA
N-MeFOSE (24448-09-7)	NR70	0.005	<0.005	NA	NA	NA	94	NA
N-EtFOSE (1691-99-2)	NR70	0.005	<0.005	NA	NA	NA	95	NA
4:2 FTS (757124-72-4)	NR70	0.001	<0.001	NA	NA	NA	106	NA
6:2 FTS (27619-97-2)	NR70	0.001	<0.001	NA	NA	NA	109	NA
8:2 FTS (39108-34-4)	NR70	0.001	<0.001	NA	NA	NA	110	NA
10:2 FTS (120226-60-0)	NR70	0.002	<0.002	NA	NA	NA	93	NA
8:2 diPAP (678-41-1)	NR70	0.002	<0.002	NA	NA	NA	100	NA

Results expressed in percentage (%) or mg/kg 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: **14/04/2022**

Australian Government
Department of Industry, Science, Energy and Resources

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [redacted]

Customer: AECOM AUSTRALIA PTY LTD

Address: LEVEL 28
ADELAIDE SA 5000

Email: [redacted]

Telephone:

Fax:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: [redacted]

Address: 105 Delhi Road, North Ryde, NSW
NSW 2113

Email: [redacted]

Telephone: [redacted]

Fax:

SAMPLE DETAILS

NMI Job Name: **AECO06/220407**

Total No. of Samples: **7**

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N22/006283	14-APR-2022	0009_QC200_220404	WATER 4/04/22
N22/006284	14-APR-2022	0009_QC201_220404	SOIL 4/04/22
N22/006285	14-APR-2022	0009_QC202_220404	WATER 4/04/22
N22/006286	14-APR-2022	0009_QC203_220404	WATER 4/04/22
N22/006287	14-APR-2022	0009_QC204_220405	WATER 5/04/22
N22/006288	14-APR-2022	0009_QC205_220405	WATER 5/04/22
N22/006289	14-APR-2022	0009_QC501_220404	WATER 4/04/22

SAMPLE RECEIVED CONDITION

Date samples received:	7-APR-2022
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	60612487_4_1
Temperature of samples:	Chilled
Comments:	ALL OK
Mode of Delivery:	Courier

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.

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

Appendix F

Equipment Calibration Certificates

Oil / Water Interface Meter

Instrument **Interface Meter (60M)**
Serial No. **288052**

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	
	above 7.9V	✓	
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
		✓	
Tape Check	Cleaned	✓	
Connectors	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Tested by: [redacted]

Test date: **17/03/2022**

Next Test due: **17/06/2022**

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP	**Project Number:**	60612487
Project Location:	HMAS CAIRNS	**Client:**	DEFENCE
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	AECOM
Make and Model:	YSI PRODSS
Serial Number:	18K102334

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	4/4/22 0700				
Parameter	Acidity		Conductivity	ORP / Dissolved Oxygen	
Units	pH	pH	mS/cm	mV ~~ppm~~	~~ppm~~
Calibration Standard Concentration:	7.00	4.01	35.7	229.9	100
Calibration Reading:	7.07	4.01	35.559	227.6	100.7
Calibration Temperature:	26.5	26.4	26.0	25.8	24.9

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	5/4/22 0700				
Parameter	Acidity		Conductivity	ORP / Dissolved Oxygen	
Units	pH	pH	mS/cm	mV ~~ppm~~	% ~~ppm~~
Calibration Standard Concentration:	7.00	4.01	36.3	228.4	100
Bump Test Reading:	7.11	4.16	34.732	224.7	99.4
Bump Test Temperature:	26.9	26.8	27.2	27.1	25.7

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☑ Each individual in [redacted] daily and bump tested as required by fieldwork staff.

[redacted] — 5/4/22

Date

Distribution: Project Central File

Prepared for
Department of Defence
ABN: 68 706 814 312

Sampling Event Factual Report - September 2022

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

18-Oct-2023
Doc No. 60612487_RP76_20231018

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Delivering a better world

Sampling Event Factual Report - September 2022

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

Client: Department of Defence

ABN: 68 706 814 312

Prepared by

18-Oct-2023

Job No.: 60612487

Quality Information

Document Sampling Event Factual Report - September 2022

Ref 60612487_RP76_20231018_2

Date 18-Oct-2023

Prepared by [redacted]

Reviewed by [redacted]

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
0	4-Nov-2022	Draft for Review	[redacted]	
1	01-Dec-2022	Final Issue		
2	18-Oct-2023	Final Issue		

Table of Contents

List of Tables (in Text)

List of Figures (in Appendix A)

List of Tables (in Appendix B)

Abbreviations

Term	Description
AECOM	AECOM Australia Pty Ltd
ALS	Australian Laboratory Services
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure, as amended (2013)
DCMM	Defence Contamination Management Manual
DO	Dissolved oxygen
DoH	Department of Health
EC	Electrical conductivity
HEPA	Heads of Environmental Protection Agencies
HMAS	Her Majesty's Australian Ship
LOR	Limit of reporting
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPC	National Environment Protection Council
NHMRC	National Health and Medical Research Council
NMI	National Measurement Institute
NSW	New South Wales
OMP	Ongoing Monitoring Plan
ORP	Oxidation-reduction potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance/Quality Control
QLD	Queensland
RAN	Royal Australian Navy
SAQP	Sampling Analysis Quality Plan
SWL	Standing Water Level
WWII	World War II

Unit	Definition	Unit	Definition
°C	Degrees Celsius	mbtoc	metres below top of casing
L	Litre	mg	Milligrams
µS	Microsiemens	mm	Millimetre
kg	Kilogram	cm	Centimetre
m	Metre	mV	Millivolts
mAHD	metres Australian Height Datum	µg	Micrograms

1.0 Introduction

1.1 General

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) outlined in the *PFAS Management Area Plan (PMAP)* (Department of Defence, 2020) at Her Majesty's Australian Ship (HMAS) Cairns and the Former World War II Royal Australian Navy (WWII RAN) Fuel Installation (the 'Site') located in Cairns, Queensland. For this report, 'on-Base' will refer to locations within the HMAS Cairns Management Area, and 'off-Base' will refer to sampling locations within the Former WWII RAN Fuel Installation Management Area. The HMAS Cairns Management Area comprises HMAS Cairns, the seabed area and the area situated down hydraulic gradient (east) of HMAS Cairns (including Trinity Inlet). The Former WWII RAN Fuel Installation Management Area includes Cairns Botanic Gardens, Centenary Lakes, Saltwater Creek and private residential properties along Greenslopes Street and Collins Avenue, as defined in the PMAP (Department of Defence, 2020).

The location of the Site and the Management Areas are shown in **Figure 1** in **Appendix A**. The OMP for HMAS Cairns and the Former WWII RAN Fuel Installation includes biannual groundwater, surface water and sediment sampling events in October 2020, April 2021, October 2021, April 2022, September 2022 and April 2023.

These sampling events include the following:

- High and low tide groundwater sampling of 15 monitoring wells on-Base at HMAS Cairns.
- Groundwater sampling of three monitoring wells off-Base within the Former WWII RAN Fuel Installation Management Area.
- Sediment sampling at six locations on-Base at HMAS Cairns with co-located surface water sampling when water is present.
- Sediment sampling at three locations off-Base within the Former WWII RAN Fuel Installation Management Area with co-located surface water sampling when water is present.

Following each sampling event, factual reports will be prepared. Annual interpretative reports will be prepared following the completion of each 12-month sampling period. This sampling event factual report has been prepared to report the results of the dry season sampling event completed in September 2022, specifically highlighting first-time detections and/or new exceedances of human health and ecological screening criteria for perfluorooctane sulfonate (PFOS), PFOS + perfluorohexane sulfonic acid (PFHxS) and / or perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the *PFAS OMP Factual Report Guidance,* v0.2, May 2021 (Department of Defence, 2021).

1.2 Objectives

The objectives of the OMP program are to:

- Implement the OMP prepared as part of the PMAP.
- Collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration and transport of PFAS at HMAS Cairns and the Former WWII RAN Fuel Installation.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PMAP.

The objective of this phase of works is to implement the scope of works for the September 2022 sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2022).

2.0 Scope of Work

The sampling event at HMAS Cairns and the Former WWII RAN Fuel Installation was completed in general accordance with the SAQP (AECOM, 2022). In summary, the scope of works for this sampling event included:

- Obtaining permission to work in public spaces where some sampling locations are situated
- Review of the SAQP prior to monitoring event to ensure compliance with the following:
  - PFAS National Environmental Management Plan (NEMP) (Heads of Environmental Protection Agencies [HEPA], 2020).
  - National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (ASC NEPM, 2013).
  - Defence Routine Environment Water Quality Monitoring Manual (2018).
  - AS/NZ 5667:1998 Water quality – Sampling.
  - Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
  - Relevant State regulatory guidelines.
- Gauging of groundwater level in monitoring wells prior to collection of samples (refer to **Table 1** below, and **Figure 2A** and **Figure 2B** in **Appendix A** for specific locations).
- Collection of groundwater samples from 18 locations including 15 locations at HMAS Cairns at both high and low tides, and three locations at the Former WWII RAN Fuel Installation (refer to **Table 1** below, and **Figure 2A** and **Figure 2B** in **Appendix A** for specific locations).
- Collection of co-located surface water and sediment samples at nine locations including six locations at HMAS Cairns and three locations at the Former WWII RAN Fuel Installation (refer to **Table 2** and **Table 3** below, and **Figure 2A** and **Figure 2B** in **Appendix A** for specific locations).
- Collecting intra- and inter-laboratory duplicate samples at a rate of one in 10 primary samples, one rinsate sample per fieldwork day, and one trip blank per sample batch.
- Analysis of all samples for a suite of 28 PFAS analytes at the standard limit of reporting (LOR).
- Data management of all OMP field and laboratory data in the Defence ESdat database.
- Preparation of this Sampling Event Factual Report.

Table 1 Groundwater Sampling Locations

Locations	Monitoring Well ID
HMAS Cairns Management Area	MW001, MW002, MW003, MW004, MW005, MW007, MW009, MW011, MW013, MW014, MW015, MW016, MW017, MW018, MW019
Former WWII RAN Fuel Installation Management Area	MW031, MW035, MW036

Table 2 Surface Water Sampling Locations

Locations	Location ID
HMAS Cairns Management Area	SW030, SW031, SW032, SW033, SW034, SW035
Former WWII RAN Fuel Installation Management Area	SW036, SW100, SW101

Table 3 Sediment Sampling Locations

Locations	Location ID
HMAS Cairns Management Area	SD030, SD031, SD032, SD033, SD034, SD035
Former WWII RAN Fuel Installation Management Area	SD036, SD100, SD101

3.0 Methodology

The methodology used for the September 2022 sampling event was in accordance with the SAQP (AECOM, 2022) as summarised below.

3.1 Groundwater Sampling Methodology

Table 4 Groundwater Sampling Methodology

Item	Details
Groundwater gauging	The depth to groundwater was measured in each monitoring well prior to the installation of HydraSleeves™ and immediately prior to collection of groundwater samples using an interface probe (IP).
Water quality parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and water quality observations were recorded for all groundwater samples except for MW002 where there was insufficient volume of water available to collect parameters. Equipment calibration certificates are provided in **Appendix F**. Issues associated with the calibration of the water quality meter were resolved on the third attempt prior to commencing sampling.
Sampling methodology	Groundwater samples were collected from monitoring wells using no-purge methodology HydraSleeves™, which were installed within the screened interval of each well (based on a review of the well construction log) the morning of sampling (in operational areas with restricted hours) or day prior to the sampling round (as stated in **Table T1**, **Appendix B**). There was insufficient volume of water for HydraSleeve™ deployment at MW015, MW031 and MW036 and these locations were sampled using a decontaminated steel bailer. Once the first tidal sampling round was completed at HMAS Cairns, new HydraSleeves™ were deployed at the screened interval depth in preparation for the second tidal sampling round. New HydraSleeves™ were not deployed following the second tidal sampling round at HMAS Cairns or following the single sampling round at the Former WWII RAN Fuel Installation to avoid conflict with other monitoring programs.

3.2 Surface Water Sampling Methodology

Table 5 Surface Water Sampling Methodology

Item	Details
Water quality parameters	Temperature, EC, DO, ORP, pH and observations of water quality were recorded for all surface water samples at the time of sampling, except for SW030 where these was an insufficient volume of water available for water quality parameters.
Sampling methodology	Samples were collected from immediately below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a decontaminated, stainless steel sampling cup was lowered into the water and collected surface water was poured into a new, laboratory-supplied container with the cap immediately applied once the container was full.

3.3 Sediment Sampling Methodology

Table 6 Sediment Sampling Methodology

Item	Details
Sampling Collection Methodology	Samples representative of potentially deposited sediments were collected from within the water body (if possible) using a decontaminated steel trowel or a gloved hand. At each location, a new, laboratory supplied container was used for each sample with the cap immediately applied once the container was full.
Logging	Sediment characteristics were recorded for each sample.

3.4 Quality Assurance/ Quality Control and Analysis

The Quality Assurance/Quality Control (QA/QC) requirements and analysis completed for the OMP sampling event are summarised in **Table 7**, below.

Table 7 QAQC and Analysis for OMP

Item	Details
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits), trip blanks, and rinsate samples. Refer to **Appendix C** for assessment of QA/QC sample data.
Sample Analysis	All primary samples were submitted for analysis for the PFAS suite using the standard levels of detection. Australian Laboratory Services (ALS) Environmental Brisbane, Queensland (QLD) was used as the primary laboratory. The National Measurement Institute (NMI) of Sydney, New South Wales (NSW) was used as the secondary laboratory. ALS and NMI methods for groundwater analyses are certified by the National Association of Testing Authorities (NATA). Chain of Custody Forms are presented in **Appendix D**. Laboratory certificates are presented in **Appendix E**.

3.5 Adopted Screening Criteria

Adopted screening criteria references national guidance in the form of the PFAS NEMP, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset include the following:

- PFAS NEMP, (HEPA, 2020).
- Department of Health (DoH), 2019. *Health Based Guidance Values for PFAS for use in site investigations in Australia.* April 2017 [updated September 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 1999, Schedule B1*, as amended in 2013 (ASC NEPM, 2013).

The adopted PFAS screening criteria to assess the data generated as part of the ongoing monitoring program are presented in **Table 8** below.

Table 8 Summary of Adopted Screening Criteria

Pathway	Compound	Criteria	Comment / Reference
Human Health Receptors			
Recreational use – surface water	PFOS + PFHxS	2 µg/L	The values are from NHMRC (2019). *All surface water results will be compared to these criteria.*
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater and marine (95% species protection values)	PFOS	0.13 µg/L	The values are from the PFAS NEMP (HEPA, 2020). *All surface water and groundwater results will be compared to these criteria.*
	PFOA	220 µg/L	

There are no human health or ecological guideline values available for sediment.

3.6 Data Quality Objectives and Data Validation

The data quality objectives and data quality indicators adopted for these works are presented in the SAQP (AECOM, 2022).

Data validation assessment is provided in **Appendix C**.

Data validation procedures employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) (Defence, 2018 as amended 2021) Annex L requirements.

3.7 Deviations from the SAQP

Table 9 lists the deviations from the SAQP (AECOM, 2022) during this sampling event.

Table 9 Deviations from the SAQP during sampling event for September 2022

SAQP Requirement	Justification for SAQP Deviation	Impact on Dataset
Water quality parameters to be collected at each surface water location.	Water quality parameters were not taken at SW030 due to an insufficient volume of water at this location.	A potential data gap at this location for water quality parameters only. No additional impacts to dataset.
Water quality parameters to be collected at each groundwater location.	Water quality parameters were not taken at MW002 due to insufficient water at this location.	A potential data gap at this location for water quality parameters only. No additional impacts to dataset.

4.0 Field Observations and Results

The September 2022 sampling event was completed between 11 September 2022 and 13 September 2022, commencing with deployment of HydraSleeves™ and gauging of all wells. The results are summarised in following sections.

Weather conditions during the sampling event were hot and partly cloudy during the sampling event (BOM, 2022a). A summary of the rainfall recorded before and during the event includes:

- May 2022: 178 mm.
- June 2022: 5.6 mm.
- July 2022: 141.0 mm.
- August 2022: 13.8 mm.
- September 2022: 25.8 mm.

October 2022: 87.0 mm (16.8 mm was recorded during the sampling event). Construction activities were occurring in the ship maintenance shed east of MW017 during both the sampling rounds. This construction did not involve earthworks, at the time of sampling, and is considered unlikely to influence concentrations of PFAS in groundwater and surface water or interpretation of these results.

4.1 Groundwater

4.1.1 Observations and Field Measurements

Table 10 Groundwater Observations and Field Measurements

Feature	Details
Access	All monitoring wells were accessible, and samples were collected from all locations.
Monitoring Well Network	One monitoring well (MW031) padlock required replacement due to being rusted shut. The padlock was replaced during the monitoring event. Upon opening the gatic cover, MW013, MW014 and MW017 were observed to be flooded above the top of the casing. The well cap at MW014 and MW017 was appropriately secured and the water was removed at these locations prior to HydraSleeve™ deployment. The well cap was not properly secured at MW013. Whilst the water in the flooded gatic at MW013 was removed prior to deployment, the potential for water ingress into the well prior to HydraSleeve™ deployment and securing the well cap was possible. The well caps were secured upon completion of sampling. At monitoring wells MW015, MW031 and MW036, insufficient water was present for HydraSleeve™ deployment and a decontaminated steel bailer was used to collect these samples. The lugs on MW015 were noted to be broken but this did not affect the ability to sample this well.
Tidal Summary	Tidal samples were collected on 12 September 2022 (low tide) and 13 September 2022 (high tide). The Bureau of Meteorology (BOM, 2022b) tidal summary for Cairns, located at (16°56'S, 145°47'E) was: • Low tide at 16:51, 12 September 2022 with a height of 1.05. • High tide at 11:40, 13 September 2022 with a height of 2.36m.

Feature	Details
Depth to Groundwater	HMAS Cairns Depth to groundwater at low tide was between 0.665 (MW001) and 3.343 (MW015) metres below top of casing (mbtoc) and groundwater elevations were between -0.828 (MW015) and 1.939 (MW09) metres Australian Height Datum (mAHD). Depth to groundwater at high tide was between 0.716 (MW001) and 2.113 (MW018) mbtoc and groundwater elevations were between 0.495 (MW015) and 1.920 (MW009) mAHD. Former WWII RAN Fuel Installation Depth to groundwater was between 1.402 (MW035) and 3.926 (MW031) mbtoc and groundwater elevations were between 1.024 (MW035) and 3.134 (MW031) mAHD. Groundwater gauging data are presented in **Table T1** in **Appendix B**.
Field Observations	Groundwater from four monitoring well locations at HMAS Cairns at low tide (MW004, MW013, MW014 and MW019) had a sulfurous odour. Groundwater from three monitoring well locations at HMAS Cairns at high tide (MW004, MW013 and MW019) had a sulfurous odour. Groundwater colour was noted to be clear, light yellow, orange, light brown and brown. No other visible or olfactory indications of contamination were observed during the sampling of the monitoring wells. Field observations are presented **Table T1** in **Appendix B**.
Groundwater Flow Direction	Groundwater contours and inferred groundwater flow directions at HMAS Cairns at both high and low tide, and the Former WWII RAN Fuel Installation in September 2022 are shown on **Figure 3A** and **Figure 3B** in **Appendix A**. Groundwater is inferred to flow predominantly in an easterly direction at HMAS Cairns towards Trinity Inlet at both high and low tides. The inferred groundwater flow direction at the Former WWII RAN Fuel Installation is to the south-east towards Saltwater Creek.
Water quality parameters	Groundwater quality parameters were measured prior to collecting groundwater samples. The readings are presented in **Table T1** in **Appendix B** and are summarised below. At HMAS Cairns: • DO results ranged between 0.33 mg/L (MW014) and 3.52 mg/L (MW005) at low tide, and between 0.11 mg/L (MW019) and 4.62 mg/L (MW015) at high tide indicating low to well oxygenated conditions. • EC ranged from 4,891 µS/cm (MW011) to 55,758 µS/cm (MW016) at low tide, and from 4,996 µS/cm (MW003) to 89,325 µS/cm (MW016) at high tide indicating saline conditions in groundwater. • pH ranged from 7.01 (MW016) to 9.56 (MW004) at low tide, and from 6.33 (MW016) to 7.75 (MW003) at high tide indicating neutral to slightly alkaline conditions. • ORP ranged from -428.0 mV (MW004) to-218.2 mV (MW015) at low tide, and from -338.5 mV (MW019) to -112.9 mV (MW016) at high tide, indicating strongly reducing conditions. • Temperature ranged from 24.9 °C (MW011) to 28.5 °C (MW016) at low tide, and from 26.1 °C (MW009) to 30.9 °C (MW016) at high tide. At the Former WWII RAN Fuel Installation: • DO results ranged between 0.61 mg/L (MW031) and 1.53 mg/L (MW036) indicating low oxygenated conditions. • EC ranged from 509 µS/cm (MW031) to 1,197 µS/cm (MW036) indicating fresh to brackish groundwater conditions. • pH ranged from 5.48 (MW031) to 5.92 (MW036) indicating slightly acidic conditions. • ORP ranged from -215.7 mV (MW035) to -106.7 mV (MW036) indicating strongly reducing conditions. • Temperature ranged from 22.8°C (MW035) to 25.3°C (MW031).

4.1.2 Analytical Results

All of the groundwater samples analysed during this event reported concentrations of PFAS above the laboratory LOR. The groundwater analytical results from this sampling event are presented in **Table T2** in **Appendix B**. A total of 23 samples from HMAS Cairns and two samples from the Former WWII RAN Fuel Installation exceeded the adopted ecological guideline values for PFOS.

Overall, PFAS concentrations between high and low tide sampling were generally within the same order of magnitude.

There were no first-time detections or new exceedances of guideline values detected in groundwater during this sampling event. New historical maximum concentrations were detected at MW003 (high and low tide for PFOS, PFOA and sum of PFOS+PFHxS), and MW015 (high tide) and at MW031. Historical groundwater results are presented in **Table T7**, **Appendix B**.

4.2 Surface Water

4.2.1 Observations and Field Measurements

Table 11 Surface Water Observations and Field Measurements

Feature	Details
Access	All surface water sampling locations were accessible, and samples were collected from all locations.
Field Observations	Surface water colour ranged from clear to pale yellow and brown. No visual or olfactory indications of contamination were observed during the sampling of the surface water sampling locations. Field observations are presented in **Table T3** in **Appendix B**.
Water quality parameters	Surface water quality parameters were measured prior to collecting surface water samples at each location except for SW030 due to an insufficient volume of water. The readings are presented in **Table T3** in **Appendix B** and are summarised below. At HMAS Cairns: • DO ranged from 2.30 mg/L (SW035) to 5.7 mg/L (SW031) indicating moderately oxygenated conditions. • EC ranged from 50,196 µS/cm (SW031) to 55,410 µS/cm (SW033) indicating saline conditions. • pH ranged from 7.67 (SW032) to 9.03 (SW035) indicating near neutral to slightly alkaline conditions. • ORP ranged from -214.8 mV (SW035) to -132.1mV (SW031) indicating strongly reducing conditions. • Temperature ranged from 25.8°C (SW032) and 31.5°C (SW034 and SW035). At the Former WWII RAN Fuel Installation: • DO ranged from 2.67 mg/L (SW036) to 3.22 mg/L (SW100) indicating slightly oxygenated conditions. • EC was recorded at SW101 at 467.4 µS/cm indicating fresh water conditions. EC was recorded at SW100 at 37,529 µS/cm and 52,384 µS/cm at SW036, indicating saline conditions. • pH ranged from 6.44 (SW101) to 8.10 (SW036) indicating slightly acidic to slightly alkaline. • ORP ranged from -200.9 mV (SW036) to -32.6 mV (SW101) indicating strongly reducing conditions. • Temperature ranged from 24.9°C (SW101) and 36.4°C (SW036).

4.2.2 Analytical Results

Of the nine surface water samples collected during this event, three samples adjacent to HMAS Cairns reported concentrations of PFAS above the laboratory LOR. The surface water analytical results from

this sampling event are presented in **Table T4** in **Appendix B**. One sample (SW030) exceeded the adopted ecological guideline values for PFOS (with a concentration of 2.29 µg/L) and a new exceedance of the human health screening criteria was reported for PFOS+PFHxS (with a concentration of 3.05 µg/L). The PFOS and PFHxS +PFOS concentrations recorded at SW030 are new historical maximum concentrations. There were no first-time detections in other surface water samples from HMAS Cairns.

There were no first-time detections, new exceedances of guideline values or new historical maximums recorded in surface water samples collected from the Former WWII RAN Fuel Installation Management Area with all results reported below the laboratory LOR. Historical surface water results presented in **Table T8**, **Appendix B**.

4.3 Sediment

4.3.1 Observations and Field Measurements

Table 12 Sediment Observations and Field Measurements

Feature	Details
Access	All sediment sampling locations were accessible, and samples were collected from all locations.
Field Observations	No visible or olfactory indications of contamination were observed during the sampling of the sediment locations. Sediment logging data are presented in **Table T5** in **Appendix B**.

4.3.2 Analytical Results

Eight of the nine sediment samples collected reported concentrations of PFOS, PFOA or PFOS+PFHxS above the laboratory LOR. The sediment analytical results from this sampling event are presented in **Table T6** in **Appendix B**.

No new detections were reported in the sediment samples. New historical maximum concentrations of PFOS, PFOA and/or PFOS+PFHxS were detected in SD035 (PFOS 0.0019 mg/kg; PFOS+PFHxS 0.0019 mg/kg). Historical sediment results are presented in **Table T9**, **Appendix B**.

5.0 Summary and Next Sampling Event

5.1 Summary of Monitoring Event

A groundwater, surface water and sediment monitoring event was completed at HMAS Cairns and the Former WWII RAN Fuel Installation between 11 September and 13 September 2022.

The program included sampling of 18 groundwater monitoring wells including 15 wells at HMAS Cairns at both high and low tides and three wells at the Former WWII RAN Fuel Installation, and collection of co-located surface water and sediment samples at nine locations including six locations at HMAS Cairns and three locations at the Former WWII RAN Fuel Installation.

Table 13 summarises the findings of the September 2022 sampling event and the recommended actions.

Table 13 Summary of Sampling Event

Item	Comment	Recommended Actions
Groundwater: Access to sampling locations and monitoring well network condition.	All of the 18 monitoring well locations were accessible. All wells were sampled, however field quality parameters were unable to be observed for MW002 due to an insufficient volume of water.	Ongoing monitoring in accordance with the OMP.
	No issues were identified at 15 monitoring wells visited. One monitoring well (MW015) was observed to have damage to the gatic cover. The damage included broken lugs. MW013 had an unsecure well cap resulting in potential surface water ingress.	Repair the gatic cover at MW015. Ensure well caps are secure.
Sediment/Surface Water: Access to sampling locations.	All nine co-located surface water and sediment sample locations were accessible. All locations were sampled, however field quality parameters were unable to be recorded for SW030 due to an insufficient volume of water.	Ongoing monitoring in accordance with the OMP.
Analytical Results	PFAS were detected above laboratory LOR in all 33 groundwater samples. PFAS were detected above laboratory LOR in three of the nine surface water samples. PFAS were detected above laboratory LOR in eight of the nine sediment samples.	Ongoing monitoring in accordance with the OMP.
First-time detections of PFOS, PFOA or PFOS+PFHxS	No first-time detections of PFOS, PFOA or PFHxS above the laboratory limit of reporting were recorded in any of the groundwater, surface water or sediment samples collected.	Ongoing monitoring in accordance with the OMP.

Item	Comment	Recommended Actions
New exceedances of screening criteria for PFOS, PFOA or PFOS+PFHxS	One new exceedance of the NHMRC (2019) recreational use guidelines was recorded for PFOS+PFHxS in surface water sample SW030. No new exceedances of the NHMRC (2019) recreational use guidelines or the 95% species protection ecological guidelines (HEPA, 2020) were detected in groundwater samples.	Ongoing monitoring in accordance with the OMP.
Historical maximum concentrations of PFOS, PFOA or PFOS+PFHxS	New historical maximum concentrations of PFOS, PFOA or PFOS+PFHxS were detected in samples MW003, MW015, MW031, SW030, SD035 and SD100.	Ongoing monitoring in accordance with the OMP.

5.2 Upcoming Sampling Events

The next biannual sampling event is scheduled for March/April 2023.

5.3 Upcoming Annual Interpretive Report

The next annual interpretive report is scheduled for October 2023.

6.0 References

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Appendix A

Figures

Appendix A Figures

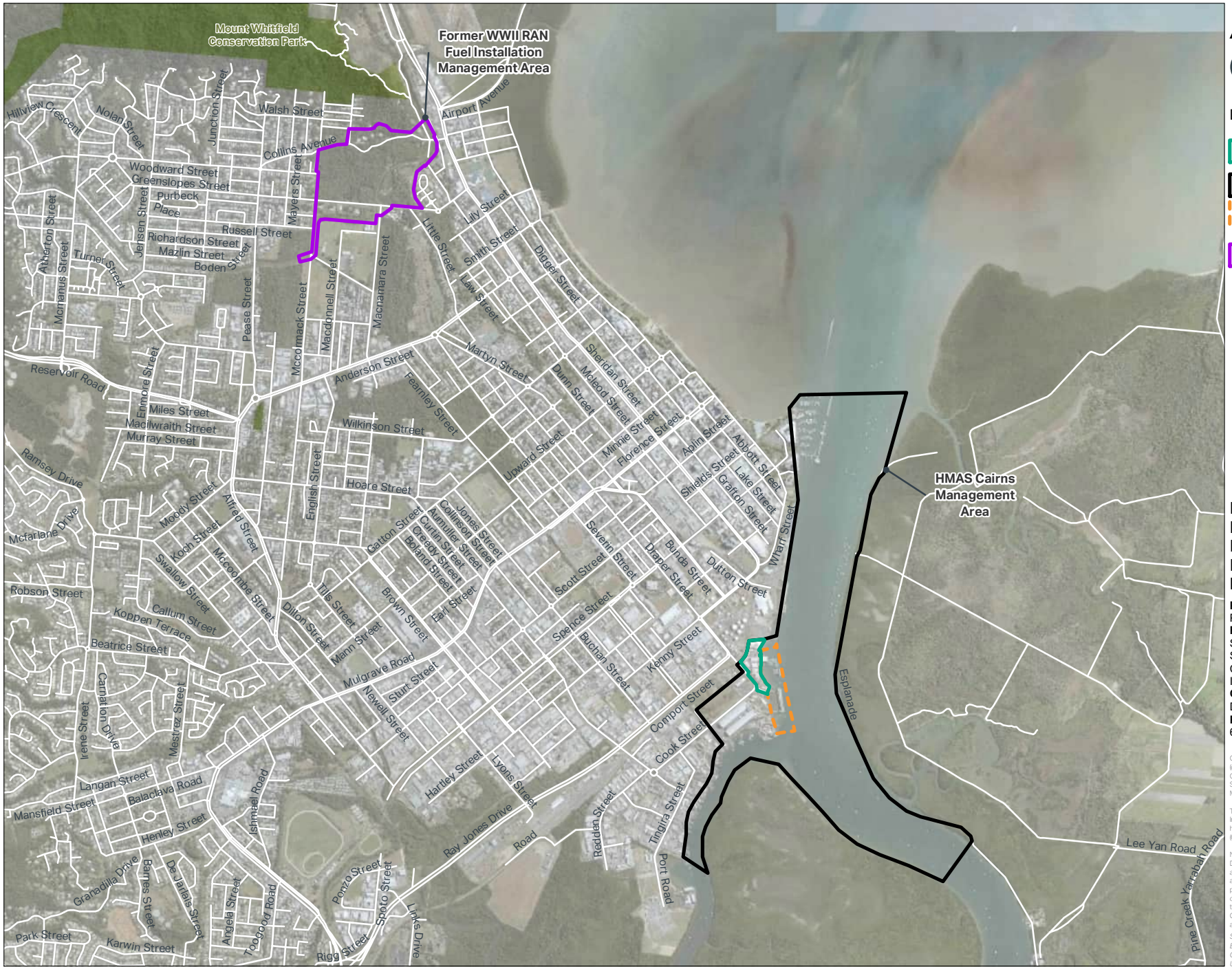
Figure 1 HMAS Cairns and WWII RAN Fuel Installation Location Plan

Figure 2A HMAS Cairns - Sample Locations Dry Season

Figure 2B Former WWII RAN Fuel Installation - Sample Locations Dry Season

Figure 3A HMAS Cairns –Groundwater Elevation and Inferred Groundwater Flow Direction – Dry Season

Figure 3B Former WWII RAN Fuel Installation –Groundwater Elevation and Inferred Groundwater Flow Direction - Dry Season -



AECOM

N

0 500 1,000 m

Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area
- Former WWII RAN Fuel Installation Management Area

FIGURE 1:
HMAS CAIRNS AND FORMER WWII RAN FUEL INSTALLATION LOCATION PLAN

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, September 2022 - PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

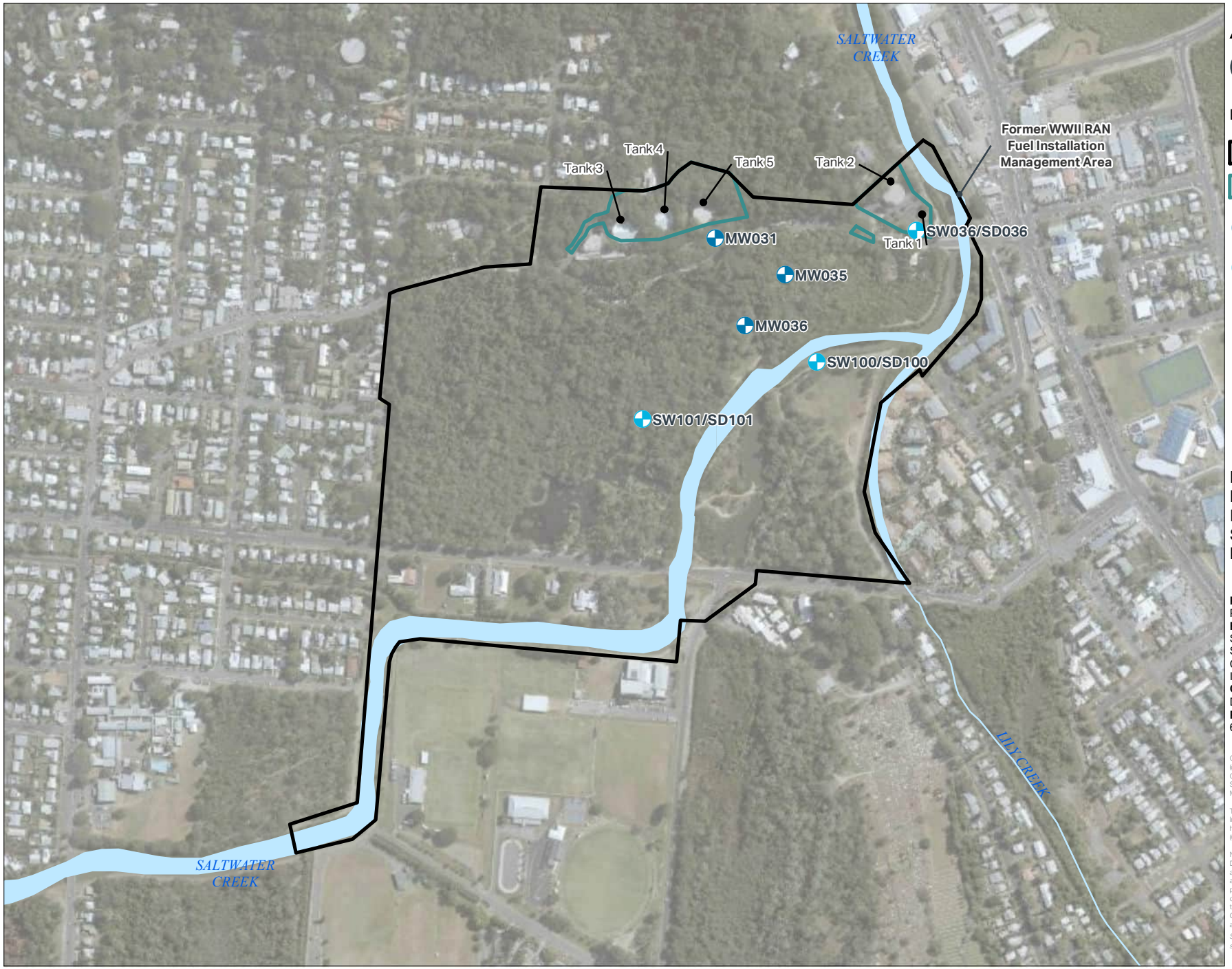
Legend

- HMAS Cairns
- Management Area
- Seabed Area
- Groundwater Monitoring Location
- Combined Surface and Sediment Location

FIGURE 2A: HMAS CAIRNS - SAMPLE LOCATIONS DRY SEASON

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, September 2022 – PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Surface Water and Sediment Location

FIGURE 2B: FORMER WWII RAN FUEL INSTALLATION – SAMPLE LOCATIONS DRY SEASON

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, September 2022 – PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

AECOM

N

0 30 60 m

Legend

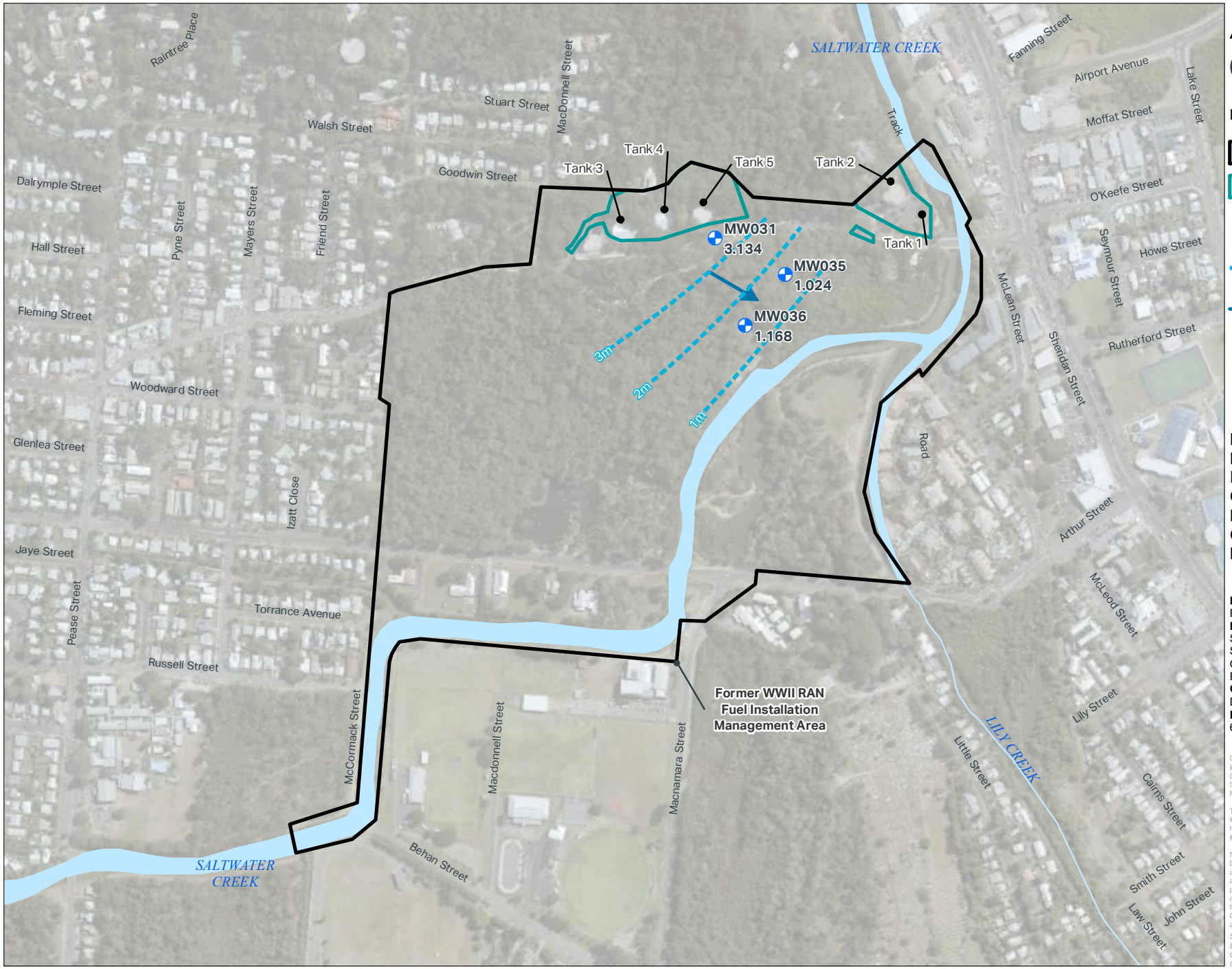
- HMAS Cairns
- Management Area
- Seabed Area
- Groundwater Contours at High Tide (mAHD)
- Groundwater Contours at Low Tide (mAHD)
- Inferred Groundwater Flow Direction
- Groundwater Monitoring Location

1.102 Low Tide Groundwater Elevation (mAHD)
0.247 High tide Groundwater Elevation (mAHD)

FIGURE 3A: HMAS CAIRNS GROUNDWATER ELEVATION AND INFERRED GROUNDWATER FLOW DIRECTION DRY SEASON

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, September 2022 – PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Groundwater Contours (mAHD)
- Inferred Groundwater Flow Direction

FIGURE 3B: FORMER WWII RAN FUEL INSTALLATION GROUNDWATER ELEVATION AND INFERRED GROUNDWATER FLOW DIRECTION - DRY SEASON

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, September 2022 – PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 30 60 m

Legend

- Management Area
- Seabed Area
- HMAS Cairns Property Boundary
- New exceedance of human health screening criteria for PFOS+PFHxS

FIGURE F4A:
HMAS CAIRNS NEW EXCEEDANCE OF PFOS + PFHxS - DRY SEASON

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, September 2022 – PFAS OMP HMAS Cairns and
Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Appendix B

Tables

Appendix B Tables

Table T1: Groundwater Gauging and Water Quality Parameter Results

Property ID	Location ID	HydraSleeve Deployment Date	HydraSleeve Deployment Time	Screen Interval (mbgl)	Hydrasleeve Deployment Collar Depth* (mbgl)	Sample Date	Sample Time	Well Depth (mbtoc)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Condition of Gatic	DO (mg/L)	EC (µS/cm)	pH	Redox (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method	Comment
HMAS Cairns Low Tide																							
0009	MW001	12/09/2022	9:16	2.5 – 5.5	4.05	12/09/2022	16:03	5.35	0.665	2.494	1.829	Good	1.08	35254	8.01	-306.9	28.2	Low	Clear	No odour	No sheen	HydraSleeve	
0009	MW002	12/09/2022	9:22	1.5 – 4.5	2.94	12/09/2022	16:00	4.24	0.896	2.564	1.668	Good	Insufficient volume for water quality parameters								No sheen	HydraSleeve	Data logger
0009	MW003	12/09/2022	9:31	2.5 – 5.5	3.64	12/09/2022	15:54	4.94	1.14	2.542	1.402	Good	1.57	5468	7.73	-320.8	27.7	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW004	12/09/2022	8:57	2.0 – 4.0	2.6	12/09/2022	15:37	3.9	2.071	2.543	0.472	Good	0.92	29250	9.56	-428	27.4	Clear	Clear	Distinct sulfurous	No sheen	HydraSleeve	Data logger
0009	MW005	12/09/2022	8:40	2.0 – 4.0	2.32	12/09/2022	15:45	3.62	2.142	2.548	0.406	Good	3.52	18219	8.5	-298.7	28.4	Clear	Clear	No odour	No sheen	HydraSleeve	Data logger
0009	MW007	11/09/2022	15:20	1.5 – 4.0	2.32	12/09/2022	17:31	3.62	1.005	2.602	1.597	Good	0.93	5406	7.5	-308.6	28.4	Turbid	Light Brown	No odour	No sheen	HydraSleeve	
0009	MW009	11/09/2022	16:02	1.5 – 4.5	3.13	12/09/2022	18:15	4.43	0.72	2.659	1.939	Good	1.11	8758	7.46	-296.3	25.1	Medium	Orange / Brown	No odour	No sheen	HydraSleeve	
0009	MW011	11/09/2022	14:00	2.0 – 3.0	1.65	12/09/2022	18:55	2.95	1.466	2.376	0.91	Good	0.75	4891	7.14	-311.5	24.9	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW013	12/09/2022	8:30	2.0 – 5.0	3.7	12/09/2022	15:48	5.00	2.035	2.437	0.402	Good	0.68	24962	7.72	-388.9	27.7	Low	Clear	Distinct sulfurous	No sheen	HydraSleeve	Water in gatic and j-cap unsecure upon HydraSleeve deployment. Potential water ingress into well prior to deployment.
0009	MW014	11/09/2022	15:00	2.0 – 5.0	3.72	12/09/2022	17:00	5.02	1.332	2.395	1.063	Good	0.33	15484	7.81	-419	26.4	Clear	Clear	Distinct sulfurous	No sheen	HydraSleeve	Gatic flooded above top of casing, water removed before opening well.
0009	MW015	-	-	2.0 – 5.0	-	12/09/2022	17:23	5.05	3.343	2.515	-0.828	Lugs broken	3.29	44606	7.69	-218.2	25.4	Turbid	Light Brown	No odour	No sheen	Steal bailer	Insufficient water column for HydraSleeve deployment.
0009	MW016	11/09/2022	15:49	2.0 – 5.0	3.75	12/09/2022	17:54	5.05	0.83	2.702	1.872	Good	0.78	55758	7.01	-279.9	28.5	Low	Light Brown	No odour	No sheen	HydraSleeve	
0009	MW017	11/09/2022	15:38	2.0 – 5.0	3.66	12/09/2022	17:43	4.96	3.249	2.498	-0.751	Good	3.46	46001	7.28	-237.4	26.5	Turbid	Light Brown	No odour	No sheen	HydraSleeve	Gatic flooded above top of casing, water removed before opening well.
0009	MW018	11/09/2022	16:17	2.0 – 5.0	3.66	12/09/2022	18:25	4.96	2.132	2.668	0.536	Good	1.18	8871	7.67	-307.1	25.8	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW019	11/09/2022	13:45	2.0 – 5.0	3.74	12/09/2022	18:40	5.04	1.311	1.913	0.602	Good	0.68	32943	7.13	-355.1	26.3	Clear	Light Brown	Distinct sulfurous	No sheen	HydraSleeve	
HMAS Cairns High Tide																							
0009	MW001	12/09/2022	16:03	2.5 – 5.5	4.05	13/09/2022	10:18	5.35	0.716	2.494	1.778	Good	0.68	12189	6.93	-175	29.2	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW002	12/09/2022	16:00	1.5 – 4.5	2.94	13/09/2022	10:33	4.24	0.925	2.564	1.639	Good	0.68	8895	7.02	-255.2	29.5	Medium	Light Brown	No odour	No sheen	HydraSleeve	
0009	MW003	12/09/2022	15:54	2.5 – 5.5	3.64	13/09/2022	10:49	4.94	1.17	2.542	1.372	Good	0.69	4996	7.75	-267.6	28.7	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW004	12/09/2022	15:37	2.0 – 4.0	2.6	13/09/2022	11:18	3.90	1.997	2.543	0.546	Good	1.99	22667	7.47	-294.8	26.9	Clear	Clear	Distinct sulfurous	No sheen	HydraSleeve	
0009	MW005	12/09/2022	15:45	2.0 – 4.0	2.32	13/09/2022	11:06	3.62	1.957	2.548	0.591	Good	1.2	14474	7.28	-279.7	27.2	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW007	12/09/2022	17:31	1.5 – 4.0	2.32	13/09/2022	11:52	3.62	1.011	2.602	1.591	Good	0.56	6072	7.37	-250	30.5	Clear	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW009	12/09/2022	18:15	1.5 – 4.5	3.13	13/09/2022	13:04	4.43	0.739	2.659	1.92	Good	0.73	10222	7.25	-288.4	26.1	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW011	12/09/2022	18:55	2.0 – 3.0	1.65	13/09/2022	13:27	2.95	1.478	2.376	0.898	Good	0.76	7042	6.86	-268.6	27	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW013	12/09/2022	15:48	2.0 – 5.0	3.7	13/09/2022	10:58	5.00	1.9	2.437	0.537	Good	0.58	8679	7.38	-323.9	27.9	Clear	Clear	Distinct sulfurous	No sheen	HydraSleeve	
0009	MW014	12/09/2022	17:00	2.0 – 5.0	3.72	13/09/2022	12:15	5.02	1.345	2.395	1.05	Good	0.57	16287	7.65	-312.9	27	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW015	12/09/2022	17:23	2.0 – 5.0	3.75	13/09/2022	12:26	5.05	2.02	2.515	0.495	Lugs broken	4.62	50886	7.59	-192.3	26.2	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW016	12/09/2022	17:54	2.0 – 5.0	3.75	13/09/2022	12:38	5.05	0.85	2.702	1.852	Good	0.72	89325	6.33	-112.9	30.9	Medium	Light Brown	No odour	No sheen	HydraSleeve	
0009	MW017	12/09/2022	17:43	2.0 – 5.0	3.66	13/09/2022	12:03	4.96	1.892	2.498	0.606	Good	4.32	51281	7.5	-203.8	28.4	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW018	12/09/2022	18:25	2.0 – 5.0	3.66	13/09/2022	12:54	4.96	2.113	2.668	0.555	Good	0.55	12021	7.33	-239	27.9	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW019	12/09/2022	18:40	2.0 – 5.0	3.74	13/09/2022	13:13	5.04	1.308	1.913	0.605	Good	0.11	41238	6.9	-338.5	28.3	Low	Light Yellow	Strong sulfurous	No sheen	HydraSleeve	
Former WWII RAN Fuel Installation																							
0009	MW031	-	-	2.5 – 4.5	-	13/09/2022	15:20	5.39	3.926	7.06	3.134	Good	0.61	509	5.48	-114.4	25.3	Clear	Clear	No odour	No sheen	Steal bailer	Insufficent water column for HydraSleeve deployment.
0009	MW035	11/09/2022	16:53	1.0 – 2.0	1.44	13/09/2022	16:16	2.74	1.402	2.426	1.024	Good	0.87	989	5.72	-215.7	22.8	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW036	-	-	0.7 – 1.7	-	13/09/2022	16:07	2.05	1.71	2.878	1.168	Good	1.53	1197	5.92	-106.7	23.5	Low	Brown	No odour	No sheen	Steal bailer	Insufficent water column for HydraSleeve deployment.

*HydraSleeves were installed with bottom weight touching the bottom of the well, HydraSleeve installation depth was claculated based on HydraSleeve length of 1.3 m full length and 0.3 m if installed with a top weight.

mbtoc	metres below top of casing
mAHD	metres above Australian Height Datum
DO	Dissolved Oxygen
EC	Electrical Conductivity
Redox	Oxidation Reduction Potential (not adjusted)
Temp	Temperature
mg/L	milligrams per litre
µS/cm	microsiemens per centimetre
mV	millivolt
°C	degrees Celcius
-	no data collected

Table T2: Groundwater Analytical Results

				4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFOS+PFHxS	Sum of PFAS
			Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																															**0.13**	**220**		
Location ID	**Location**	**Sample ID**	**Sample Date**																														
HMAS Cairns																																	
MW001	MW001	0009_MW001_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.07	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.11	0.16
	MW001	0009_MW001_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.11	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.15	0.21
MW002	MW002	0009_MW002_HT_220913	13/09/2022	<0.1	<0.1	<0.1	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	2.07	0.5	<0.1	<0.1	<0.1	1.48	2.24	7.53	24.1	1.68	2.2	<0.25	<0.1	<0.1	<0.1	**55.4**	3.12	79.5	100
	MW002	0009_MW002_LT_220912	12/09/2022	<0.08	<0.08	<0.08	<0.08	<0.21	<0.08	<0.21	<0.08	<0.21	<0.08	<0.21	1.77	0.5	<0.08	<0.08	<0.08	1.2	2.03	7.03	21.6	1.4	1.83	<0.21	<0.08	<0.08	<0.08	**44.7**	2.59	66.3	84.6
MW003	MW003	0009_MW003_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	0.06	<0.06	<0.02	<0.06	0.49	<0.1	<0.02	<0.02	<0.02	0.32	0.59	1.47	7.59	0.38	0.55	<0.06	<0.02	<0.02	0.04	**22.6**	0.85	30.2	34.9
	MW003	0009_MW003_LT_220012	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	0.07	<0.12	<0.05	<0.12	0.48	<0.2	<0.05	<0.05	<0.05	0.27	0.55	1.64	6.9	0.33	0.5	<0.12	<0.05	<0.05	<0.05	**26.7**	0.77	33.6	38.2
MW004	MW004	0009_MW004_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	0.13	<0.06	<0.02	<0.06	0.39	0.1	<0.02	<0.02	<0.02	0.38	0.5	1	4.48	0.53	0.38	<0.06	<0.02	<0.02	0.03	**27.7**	0.75	32.2	36.4
	MW004	0009_MW004_LT_220912	12/09/2022	<0.05	<0.05	<0.12	<0.05	<0.06	<0.02	<0.06	0.09	<0.06	<0.02	<0.06	0.39	0.1	<0.02	<0.02	<0.02	0.34	0.45	1.1	3.71	0.46	0.32	<0.06	<0.02	<0.02	<0.02	**20.9**	0.72	24.6	28.6
MW005	MW005	0009_MW005_HT_220913	13/09/2022	<0.1	<0.1	<0.1	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	0.42	<0.5	<0.1	<0.1	<0.1	0.32	0.58	1.13	5.07	0.63	0.34	<0.25	<0.1	<0.1	<0.1	**43**	0.73	48.1	52.2
	MW005	0009_MW005_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.13	<0.05	<0.13	<0.05	<0.13	<0.05	<0.13	0.34	<0.2	<0.05	<0.05	<0.05	0.26	0.52	1.09	4.66	0.56	0.35	<0.13	<0.05	<0.05	<0.05	**35**	0.71	39.7	43.5
MW007	MW007	0009_MW007_HT_220913	13/09/2022	<0.1	<0.1	<0.1	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	0.59	<0.5	<0.1	<0.1	<0.1	0.26	0.62	1.59	5.98	0.36	0.74	<0.25	<0.1	<0.1	<0.1	**92.4**	0.83	98.4	103
	MW007	0009_MW007_LT_220912	12/09/2022	<0.1	<0.1	<0.1	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	0.5	<0.5	<0.1	<0.1	<0.1	0.18	0.64	1.42	5.45	0.24	0.68	<0.25	<0.1	<0.1	<0.1	**81.2**	0.7	86.6	91
MW009	MW009	0009_MW009_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.35	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	0.13	0.01	0.48	0.58
	MW009	0009_MW009_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.3	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	0.12	0.02	0.42	0.54
MW011	MW011	0009_MW011_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.07	0.03	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	**0.18**	0.21	0.21	0.59
	MW011	0009_MW011_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.09	<0.02	0.05	0.02	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**0.15**	0.26	0.17	0.6
MW013	MW013	0009_MW013_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	0.02	0.03	0.1	0.48	0.05	0.03	<0.05	<0.02	<0.02	0.14	**1.95**	0.04	2.43	2.86
	MW013	0009_MW013_LT_220912	12/09/2022	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.08	<0.1	<0.02	<0.02	<0.02	0.04	0.03	0.22	0.64	0.07	0.07	<0.05	<0.02	<0.02	0.05	**1.75**	0.06	2.39	3.07
MW014	MW014	0009_MW014_HT_220913	13/09/2022	<0.1	<0.1	<0.1	<0.1	<0.25	<0.1	<0.25	0.32	<0.25	<0.1	<0.25	0.25	<0.5	<0.1	<0.1	<0.1	0.3	0.44	2.59	6.44	0.41	0.31	<0.25	<0.1	<0.1	<0.1	**100**	0.74	106	112
	MW014	0009_MW014_LT_220912	12/09/2022	<0.09	<0.09	<0.09	<0.09	<0.23	<0.09	<0.23	0.26	<0.23	<0.09	<0.23	0.39	<0.4	<0.09	<0.14	<0.09	0.28	0.57	2.9	7.78	0.43	0.4	<0.23	<0.09	<0.09	<0.09	**65.8**	0.81	73.6	79.6
MW015	MW015	0009_MW015_HT_220913	13/09/2022	<0.05	0.1	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.03	0.03	0.16	0.4	0.08	0.02	<0.05	<0.02	<0.02	<0.02	**3.38**	0.05	3.78	4.25
	MW015	0009_MW015_LT_220912	12/09/2022	<0.05	0.16	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.11	0.22	0.05	<0.02	<0.05	<0.02	<0.02	<0.02	**1.8**	0.02	2.02	2.38
MW016	MW016	0009_MW016_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.2	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.38	2.05	0.08	0.28	<0.05	<0.02	<0.02	<0.02	0.11	0.01	2.16	3.17
	MW016	0009_MW016_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.2	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.38	1.8	0.08	0.26	<0.05	<0.02	<0.02	<0.02	**0.14**	<0.01	1.94	2.9
MW017	MW017	0009_MW017_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.19	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.81**	0.01	1	1.04
	MW017	0009_MW017_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.2	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**1.02**	0.01	1.22	1.27
MW018	MW018	0009_MW018_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.03	0.03
	MW018	0009_MW018_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
MW019	MW019	0009_MW019_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	0.04	0.1	0.14	0.48	0.09	0.04	<0.05	<0.02	<0.02	<0.02	**3.22**	0.1	3.7	4.24
	MW019	0009_MW019_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.06	0.1	0.13	0.4	0.08	0.04	<0.05	<0.02	<0.02	<0.02	**2.71**	0.12	3.11	3.68
Former WWII RAN Fuel Installation																																	
MW031	MW031	0009_MW031_220913	13/09/2022	<0.05	0.48	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.22**	<0.01	0.26	0.74
MW035	MW035	0009_MW035_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.18	<0.02	0.04	<0.05	<0.02	<0.02	<0.02	0.08	<0.01	0.26	0.36
MW036	MW036	0009_MW036_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.12	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.22**	<0.01	0.34	0.36

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than
NEMP is National Environmental Management Plan
Denotes first time detection above LOR of PFOS + PFHxS or PFOA
Denotes new exceedance of ecological or human health guideline values

Table T3: Surface Water Quality Parameters

Property ID	Sample ID	Sample Date	Sample Time	DO (mg/L)	EC (uS/cm)	pH	Redox (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Comments
HMAS Cairns													
0009	SW030	12/09/2022	15:20	Insufficient volume for water at low tide to collect water quality parameters.									Tidal water body. Sample collected at low tide.
0009	SW031	12/09/2022	15:12	5.7	50196	8	-132.1	28.1	Turbid	Brown	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW032	13/09/2022	9:04	4.37	54380	7.67	-184.3	25.8	Clear	Clear	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW033	13/09/2022	9:30	3.63	55410	7.75	-195.5	26.1	Clear	Clear	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW034	12/09/2022	14:07	3.55	52919	7.84	-185.2	31.5	Turbid	Brown	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW035	12/09/2022	14:35	2.3	50360	9.03	-214.8	31.5	Turbid	Brown	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
Former WWII RAN Fuel Installation													
0009	SW036	12/09/2022	12:03	2.67	52384	8.1	-200.9	36.4	Low	Brown	No odour	No sheen	Tidal water body (Saltwater Creek). Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW100	13/09/2022	15:58	3.22	37529	7.01	-78.2	28.1	Low	Brown	No odour	No sheen	Tidal water body (Saltwater Creek). Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW101	13/09/2022	15:41	3.17	467.4	6.44	-32.6	24.9	Clear	Pale yellow	No odour	No sheen	Pond in Botanical Gardens. Sample collected with sampling pole and stainless steel cup below the surface of the water

DO	Dissolved Oxygen
EC	Electrical Conductivity
Redox	Oxidation Reduction Potential (not adjusted)
Temp	Temperature
mg/L	milligrams per litre
µs/cm	microsiemens per centimetre
mV	millivolt
°C	degrees Celcius

Table T4: Surface Water Analytical Results

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFOS+PFHxS	Sum of PFAS
	Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
NHMRC (2019) PFAS Recreational Water																														**10**	**2**	
PFAS NEMP 2020 Freshwater and Interim Marine 95%																														***0.13***	***220***	
Location ID	**Sample ID**	**Sample Date**																														
HMAS Cairns																																
SW030	0009_SW030_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.05	0.08	0.14	0.76	0.05	0.06	<0.05	<0.02	<0.02	<0.02	***2.29***	0.09	3.05	3.59
SW031	0009_SW031_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	0.06	<0.02	0.06	0.06
SW032	0009_SW032_22913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW033	0009_SW033_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW034	0009_SW034_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW035	0009_SW035_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
Former WWII RAN Fuel Installation																																
SW036	0009_SW036_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW100	0009_SW100_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW101	0009_SW101_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than
NEMP is National Environmental Management Plan
NHMRC is National Health Medical Research Council
Denotes first time detection above LOR of PFOS + PFHxS, PFOS or PFOA
Denotes new exceedance of ecological or human health guideline values

Table T5: Sediment Observation Results

Property ID	Location ID	Sample Date	Sample Time	Sample Description	Odour	Sheen	Sample Depth
HMAS Cairns							
0009	SD030	12/09/2022	15:20	Silty Sandy CLAY, soft, brown, low plasticity, with some organics (leaves and roots), wet.	No odour	No sheen	0.1 m
0009	SD031	12/09/2022	15:12	Silty Sandy CLAY, soft, brown, low plasticity, with some organics (leaves and roots), wet.	No odour	No sheen	0.1 m
0009	SD032	13/09/2022	9:04	Sandy Silty CLAY, soft, brown, low plasticity, fine to medium sub-angular to sub-rounded sand, with organics (leaves and roots), saturated.	No odour	No sheen	0.1 m
0009	SD033	13/09/2022	9:30	Sandy Silty CLAY, soft, brown, low plasticity, fine to medium sub-angular to sub-rounded sand, with organics (leaves and roots), saturated.	No odour	No sheen	0.1 m
0009	SD034	12/09/2022	14:07	Silty CLAY, soft, brown, low plasticity, highly organic (leaves and roots), wet.	No odour	No sheen	0.1 m
0009	SD035	12/09/2022	14:35	Gravelly CLAY, soft, brown, low plasticity, medium sub-angular gravels, highly organic (leaves and roots), wet.	No odour	No sheen	0.1 m
Former WWII RAN Fuel Installation							
0009	SD036	12/09/2022	12:03	Silty CLAY, soft, brown, low plasticity, highly organic (leaves and roots), wet.	No odour	No sheen	0.1 m
0009	SD100	13/09/2022	15:58	Sandy CLAY, soft, grey, low plasticity, medium sun-angular sand, wet.	No odour	No sheen	0.1 m
0009	SD101	13/09/2022	15:41	Gravelly Clayey SAND, loose, light brown to brown, fine to medium sub-rounded sand, fine gravel, with organics (leaves and roots), saturate	No odour	No sheen	0.1 m

Table T6: Sediment Analytical Results

Location ID	Sample ID	Date	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFOS+PFHxS	Sum of PFAS
Units			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			0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HMAS Cairns																																	
SD030	0009_SD030_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0039	<0.0002	0.0046	0.0046
SD031	0009_SD031_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0046	<0.0002	0.0049	0.0049
SD032	0009_SD032_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0014	<0.0002	0.0014	0.0014
SD033	0009_SD033_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	0.0004	0.0004
SD034	0009_SD034_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
SD035	0009_SD035_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0019	<0.0002	0.0019	0.0019
Former WWII RAN Fuel Installation																																	
SD036	0009_SD036_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	0.0002	0.0002
SD100	0009_SD100_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0011
SD101	0009_SD101_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0004	<0.002	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	<0.0002	<0.0002

LOR is limit of reporting
mg/kg is milligrams per kilogram
"<" denotes concentration less than

Denotes first time detection above LOR of PFOS + PFHxS or PFOA
Concentrations reported at the LOR have not been highlighted.

Table T7: Historical Groundwater Results

		4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFOS+PFHxS	Sum of PFAS
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																												**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																													
HMAS Cairns																															
MW001	MW01_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	<0.05	<0.01	<0.01	<0.01	0.042	0.031	0.29	0.71	0.038	0.11	<0.01	<0.01	<0.01	<0.01	0.025	0.067	0.735	1.529
	MW01_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.066	0.027	<0.001	<0.001	<0.001	0.023	0.039	0.16	0.37	0.027	0.054	<0.001	<0.001	<0.001	<0.001	0.022	0.035	0.392	0.873
	MW01_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.045	0.011	<0.001	<0.001	<0.001	0.013	0.025	0.058	0.25	0.014	0.032	<0.001	<0.001	<0.001	<0.001	0.038	0.019	0.288	0.555
	MW01_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.049	0.02	<0.001	<0.001	<0.001	0.016	0.006	0.1	0.33	0.021	0.046	<0.001	<0.001	<0.001	<0.001	0.1	0.016	0.43	0.734
	0009_MW001_HT_200930	30/09/2020	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	0.04	0.02	0.24	0.73	0.04	0.09	<0.05	<0.02	<0.02	<0.02	**0.16**	0.05	0.89	1.56
	0009_MW001_LT_200930	30/09/2020	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.53	0.1	<0.02	<0.02	<0.02	0.11	0.08	0.76	2.02	0.15	0.42	<0.05	<0.02	<0.02	<0.02	**0.26**	0.17	2.28	4.66
	0009_MW001_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.13	0.32	0.03	0.05	<0.05	<0.02	<0.02	<0.02	**0.23**	0.03	0.55	0.88
	0009_MW001_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.11	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.22	0.54	0.04	0.10	<0.05	<0.02	<0.02	<0.02	0.09	0.04	0.63	1.17
	0009_MW001_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.13	0.32	0.02	0.04	<0.05	<0.02	<0.02	<0.02	0.08	0.02	0.4	0.67
	0009_MW001_LT_211028	28/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.17	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.36**	0.02	0.53	0.67
	0009_MW001_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.09	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.12	<0.01	0.21	0.26
	0009_MW001_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	0.23	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	<0.06	<0.02	0.23	0.37
	0009_MW001_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.11	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.15	0.21
	0009_MW001_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.07	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.11	0.16
MW002	MW02_HIGH_190522	22/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	3.2	1.4	<0.1	<0.1	<0.1	1.9	2.2	14	36	2.4	3	<0.1	<0.1	<0.1	<0.1	**46**	4.1	82	-
	MW02_LOW_190523	23/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	3.2	1.4	<0.1	<0.1	<0.1	1.6	1.4	12	32	2	2.7	<0.1	<0.1	<0.1	<0.1	**41**	3.8	73	-
	MW02_LOW_20190618	18/06/2019	<0.001	0.046	0.02	<0.001	<0.005	<0.005	<0.005	0.052	<0.005	<0.005	<0.005	3.2	1.4	0.013	0.009	<0.001	1.8	2.4	11	31	2.4	3.3	<0.001	<0.001	<0.001	0.067	**49**	3.8	80	112.407
	MW02_HIGH_20190619	19/06/2019	<0.001	0.064	0.024	<0.001	<0.005	<0.005	<0.005	0.056	<0.005	<0.005	<0.005	3.6	1.4	0.013	0.006	<0.001	1.9	1.9	11	26	1.1	2.4	<0.001	<0.001	<0.001	0.062	**53**	3.8	79	108.825
	0009_MW002_HT_200930	30/09/2020	<0.32	<0.32	<0.32	<0.32	<0.81	<0.32	<0.81	<0.32	<0.81	<0.32	<0.81	3.73	<1.6	<0.32	<0.32	<0.32	1.49	2.95	10.6	32.2	2.24	3.18	<0.81	<0.32	<0.32	<0.32	**77.5**	3.63	110	138
	0009_MW002_LT_200930	30/09/2020	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	2.6	<2.5	<0.50	<0.50	<0.50	1.5	2.35	9.35	29.2	1.65	2.5	<1.25	<0.50	<0.50	<0.50	**66**	3.35	95.2	118
	0009_MW002_LT_210408	8/04/2021	<0.37	<0.37	<0.37	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	1.59	<1.8	<0.37	<0.37	<0.37	1.07	2.11	6.55	18.10	1.37	1.59	<0.92	<0.37	<0.37	<0.37	**85.1**	2.40	103.00	120.00
	0009_MW002_HT_210409	9/04/2021	<0.38	<0.38	<0.38	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	1.34	<1.9	<0.38	<0.38	<0.38	1.03	1.80	6.04	14.10	1.38	1.45	<0.96	<0.38	<0.38	<0.38	**78.6**	2.25	92.70	108.00
	0009_MW002_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.07	<0.05	<0.02	<0.05	2.48	1.1	<0.02	<0.02	<0.02	1.52	4.54	10.2	34	1.82	3.36	<0.05	<0.02	<0.02	0.06	**70**	3.57	104	133
	0009_MW002_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.13	<0.05	<0.02	<0.05	2.44	1	<0.02	0.12	<0.02	1.66	4.8	9.94	29.7	1.98	2.45	<0.05	<0.02	<0.02	0.06	**84.6**	3.38	114	142
	0009_MW002_LT_220404	4/04/2022	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.5	<0.2	<0.5	<0.2	<0.5	2.04	<1	<0.2	<0.2	<0.2	1.3	2.56	8.66	25.9	1.6	2.04	<0.5	<0.2	<0.2	<0.2	**83.6**	2.96	110	131
	0009_MW002_HT_220405	5/04/2022	<0.48	<0.48	<0.48	<0.48	<1.19	<0.48	<1.19	<0.48	<1.19	<0.48	<1.19	2.57	<2.4	<0.48	<0.48	<0.48	1.28	2.62	8.05	29.3	1.62	2.48	<1.19	<0.48	<0.48	<0.48	**68.1**	3.14	97.4	119
	0009_MW002_LT_220912	12/09/2022	<0.08	<0.08	<0.08	<0.08	<0.21	<0.08	<0.21	<0.08	<0.21	<0.08	<0.21	1.77	0.5	<0.08	<0.08	<0.08	1.2	2.03	7.03	21.6	1.4	1.83	<0.21	<0.08	<0.08	<0.08	**44.7**	2.59	66.3	84.6
	0009_MW002_HT_220913	13/09/2022	<0.1	<0.1	<0.1	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	2.07	0.5	<0.1	<0.1	<0.1	1.48	2.24	7.53	24.1	1.68	2.2	<0.25	<0.1	<0.1	<0.1	**55.4**	3.12	79.5	100
MW003	MW03_HIGH_190522	22/05/2019	<0.001	<0.005	0.002	<0.001	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	<0.005	0.21	0.09	0.008	<0.001	<0.001	0.11	0.24	0.54	2.4	0.18	0.42	<0.001	<0.001	0.001	0.021	**7.8**	0.23	10.2	12.453
	MW03_LOW_190523	23/05/2019	<0.001	0.007	0.002	<0.001	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.16	0.083	0.008	<0.001	<0.001	0.1	0.35	0.59	2.1	0.13	0.4	<0.001	<0.001	0.001	0.019	**5.4**	0.24	7.5	9.8
	MW03_LOW_20190618	18/06/2019	<0.001	0.011	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.9	0.27	0.003	<0.001	<0.001	0.3	0.57	2.5	8.8	0.42	1	<0.001	<0.001	<0.001	0.012	**2**	0.61	10.8	17.906
	MW03_HIGH_20190619	19/06/2019	<0.001	0.012	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1.1	0.28	0.003	<0.001	<0.001	0.33	0.6	3	9.4	0.81	1	<0.001	<0.001	<0.001	0.014	**1.9**	0.62	11.3	19.629
	0009_MW003_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.33	<0.2	<0.03	<0.03	<0.03	0.11	0.15	0.75	3.16	0.21	0.31	<0.08	<0.03	<0.03	<0.03	**5.58**	0.24	8.74	10.8
	0009_MW003_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.36	<0.2	<0.03	<0.03	<0.03	0.12	0.18	0.85	3.59	0.22	0.35	<0.08	<0.03	<0.03	<0.03	**6.62**	0.29	10.2	12.6
	0009_MW003_LT_210408	8/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.69	0.20	<0.02	<0.02	<0.02	0.25	0.24	1.79	5.43	0.41	0.60	<0.05	<0.02	<0.02	0.02	**4.45**	0.46	9.88	14.60
	0009_MW003_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.94	0.30	<0.02	0.02	<0.02	0.33	0.32	2.58	6.59	0.53	0.86	<0.05	<0.02	<0.02	<0.02	**4.84**	0.64	11.40	18.00
	0009_MW003_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.03	0.4	<0.02	<0.02	<0.02	0.39	0.57	3.6	9.05	0.61	1.18	<0.05	<0.02	<0.02	<0.02	**3.34**	0.76	12.4	20.9
	0009_MW003_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.11	0.4	<0.02	<0.02	<0.02	0.45	0.64	3.89	9.65	0.68	1.3	<0.05	<0.02	<0.02	<0.02	**3.34**	0.78	13	22.2
	0009_MW003_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.02	0.3	<0.02	<0.02	<0.02	0.38	0.49	3.15	8.43	0.6	1.01	<0.05	<0.02	<0.02	<0.02	**4.65**	0.81	13.1	20.8
	0009_MW003_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	1.14	0.2	<0.05	<0.05	<0.05	0.39	0.43	2.97	9.29	0.64	1.25	<0.12	<0.05	<0.05	<0.05	**3.89**	0.78	13.2	21
	0009_MW003_LT_220012	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	0.07	<0.12	<0.05	<0.12	0.48	<0.2	<0.05	<0.05	<0.05	0.27	0.55	1.64	6.9	0.33	0.5	<0.12	<0.05	<0.05	<0.05	**26.7**	0.77	33.6	38.2
	0009_MW003_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	0.06	<0.06	<0.02	<0.06	0.49	<0.1	<0.02	<0.02	<0.02	0.32	0.59	1.47	7.59	0.38	0.55	<0.06	<0.02	<0.02	0.04	**22.6**	0.85	30.2	34.9

Table T7: Historical Groundwater Results

		4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFOS+PFHxS	Sum of PFAS
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																												**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																														
MW004	MW04_HIGH_190522	22/05/2019	<0.001	0.006	0.015	<0.001	<0.005	<0.005	<0.005	0.034	<0.005	<0.005	<0.005	0.4	0.22	0.01	<0.001	<0.001	0.28	0.44	1	3.5	0.54	0.81	<0.001	<0.001	<0.001	0.018	**9.5**	0.47	13	17.483
	MW04_LOW_190523	23/05/2019	<0.001	0.005	0.012	<0.001	<0.005	<0.005	<0.005	0.045	<0.005	<0.005	<0.005	0.41	0.25	0.008	<0.001	<0.001	0.34	0.93	1.2	3.7	0.5	0.89	<0.001	<0.001	<0.001	0.022	**8.5**	0.65	12.2	17.782
	MW04_LOW_20190618	18/06/2019	<0.001	0.008	0.011	<0.001	<0.005	<0.005	<0.005	0.05	<0.005	<0.005	<0.005	0.41	0.23	0.01	<0.001	<0.001	0.32	0.41	1.2	4.9	0.44	0.57	<0.001	<0.001	0.001	0.017	**11**	0.56	15.9	20.497
	MW04_HIGH_20190619	19/06/2019	<0.001	0.006	0.007	<0.001	<0.005	<0.005	<0.005	0.046	<0.005	<0.005	<0.005	0.44	0.26	0.007	<0.001	<0.001	0.35	0.45	1.4	5	0.53	0.66	<0.001	<0.001	<0.001	0.015	**7.7**	0.56	12.7	17.721
	0009_MW004_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.58	0.3	<0.03	<0.03	<0.03	0.37	0.37	1.35	5.22	0.66	0.52	<0.08	<0.03	<0.03	<0.03	**10.6**	0.72	15.8	20.7
	0009_MW004_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.48	0.2	<0.03	<0.03	<0.03	0.29	0.3	1.09	4.2	0.56	0.43	<0.08	<0.03	<0.03	<0.03	**8.24**	0.56	12.4	16.4
	0009_MW004_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	0.66	<0.9	<0.18	<0.18	<0.18	0.53	0.59	1.67	7.01	0.81	0.52	<0.46	<0.18	<0.18	<0.18	**27**	1.16	34.00	40.00
	0009_MW004_HT_210409	9/04/2021	<0.19	<0.19	<0.19	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	0.90	<0.9	<0.19	<0.19	<0.19	0.73	0.92	2.56	7.93	1.27	0.73	<0.47	<0.19	<0.19	<0.19	**31.5**	1.51	39.40	48.00
	0009_MW004_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.08	<0.05	<0.02	<0.05	0.43	0.3	0.02	<0.02	<0.02	0.36	0.29	1.31	3.8	0.52	0.41	<0.05	<0.02	<0.02	<0.02	**8.62**	0.41	12.4	16.6
	0009_MW004_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.08	<0.05	<0.02	<0.05	0.44	0.3	0.02	0.04	<0.02	0.37	0.37	1.32	4.25	0.51	0.36	<0.05	<0.02	<0.02	<0.02	**11**	0.56	15.2	19.6
	0009_MW004_LT_220404	4/04/2022	<0.05	0.06	<0.05	<0.05	<0.06	<0.02	<0.06	0.12	<0.06	<0.02	<0.06	0.4	0.1	<0.02	<0.02	<0.02	0.31	0.38	0.92	3.93	0.44	0.36	<0.06	<0.02	<0.02	<0.02	**22.8**	0.62	26.7	30.4
	0009_MW004_HT_220405	5/04/2022	<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	0.44	<1.2	<0.25	<0.25	<0.25	<0.25	0.27	1.06	4.06	0.4	0.35	<0.62	<0.25	<0.25	<0.25	**20.1**	0.54	24.2	27.2
	0009_MW004_LT_220912	12/09/2022	<0.05	<0.05	<0.12	<0.05	<0.06	<0.02	<0.06	0.09	<0.06	<0.02	<0.06	0.39	0.1	<0.02	<0.02	<0.02	0.34	0.45	1.1	3.71	0.46	0.32	<0.06	<0.02	<0.02	<0.02	**20.9**	0.72	24.6	28.6
	0009_MW004_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	0.13	<0.06	<0.02	<0.06	0.39	0.1	<0.02	<0.02	<0.02	0.38	0.5	1	4.48	0.53	0.38	<0.06	<0.02	<0.02	0.03	**27.7**	0.75	32.2	36.4
MW005	MW05_HIGH_190522	22/05/2019	<0.001	0.011	0.011	<0.001	<0.005	<0.005	<0.005	0.027	<0.005	<0.005	<0.005	0.32	0.22	0.012	0.004	<0.001	0.26	0.8	1.1	3.8	0.61	0.78	<0.001	<0.001	0.003	0.05	**23**	0.62	26.8	31.888
	MW05_LOW_190523	23/05/2019	<0.001	0.011	0.022	<0.001	<0.005	<0.005	<0.005	0.043	<0.005	<0.005	<0.005	0.31	0.19	0.026	0.005	<0.001	0.3	0.59	1.2	3.8	0.5	0.72	<0.001	<0.001	0.006	0.056	**31**	0.67	34.8	-
	MW05_LOW_20190618	18/06/2019	<0.001	0.009	0.007	<0.001	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	0.25	0.15	0.009	0.003	<0.001	0.21	0.58	0.97	4.1	0.42	0.4	<0.001	<0.001	0.002	0.035	**18**	0.48	22.1	25.983
	MW05_HIGH_20190619	19/06/2019	<0.001	0.009	0.005	<0.001	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	0.26	0.14	0.008	0.002	<0.001	0.19	0.56	0.92	3.6	0.4	0.41	<0.001	<0.001	0.002	0.033	**14**	0.43	17.6	21.317
	0009_MW005_HT_200930	30/09/2020	<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	0.42	<0.3	<0.06	<0.06	<0.06	0.24	0.45	1.03	5.1	0.79	0.4	<0.16	<0.06	<0.06	0.06	**24.4**	0.58	29.5	33.5
	0009_MW005_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.39	0.2	<0.03	<0.03	<0.03	0.22	0.35	0.87	4.3	0.62	0.36	<0.08	<0.03	<0.03	0.06	**20.7**	0.52	25	28.6
	0009_MW005_LT_210408	8/04/2021	<0.08	<0.08	<0.08	<0.08	<0.19	<0.08	<0.19	<0.08	<0.19	<0.08	<0.19	0.49	0.40	<0.08	<0.08	<0.08	0.40	0.65	1.48	6.70	0.84	0.50	<0.19	<0.08	<0.08	0.13	**40.6**	0.89	47.30	53.10
	0009_MW005_HT_210409	9/04/2021	<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	0.65	<1	<0.19	<0.19	<0.19	0.49	0.80	1.96	6.94	1.04	0.55	<0.48	<0.19	<0.19	<0.19	**47.3**	1.08	54.20	60.80
	0009_MW005_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.05	<0.05	<0.02	<0.05	0.4	0.2	<0.02	0.04	<0.02	0.21	0.34	1.04	4.05	0.51	0.39	<0.05	<0.02	<0.02	0.04	**19.5**	0.43	23.6	27.2
	0009_MW005_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.05	<0.05	<0.02	<0.05	0.32	0.2	<0.02	0.03	<0.02	0.24	0.36	1	4.01	0.5	0.32	<0.05	<0.02	<0.02	0.03	**18.2**	0.44	22.2	25.7
	0009_MW005_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.47	<0.2	<0.05	<0.05	<0.05	0.33	0.62	1.26	6.45	0.66	0.46	<0.12	<0.05	<0.05	<0.05	**39.9**	0.85	46.4	51
	0009_MW005_HT_220405	5/04/2022	<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	0.4	<1.2	<0.25	<0.25	<0.25	<0.25	0.4	1.26	5.48	0.49	0.34	<0.62	<0.25	<0.25	<0.25	**32.7**	0.69	38.2	41.8
	0009_MW005_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.13	<0.05	<0.13	<0.05	<0.13	<0.05	<0.13	0.34	<0.2	<0.05	<0.05	<0.05	0.26	0.52	1.09	4.66	0.56	0.35	<0.13	<0.05	<0.05	<0.05	**35**	0.71	39.7	43.5
	0009_MW005_HT_220913	13/09/2022	<0.1	<0.1	<0.1	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	0.42	<0.5	<0.1	<0.1	<0.1	0.32	0.58	1.13	5.07	0.63	0.34	<0.25	<0.1	<0.1	<0.1	**43**	0.73	48.1	52.2
MW007	MW07_HIGH_190522	22/05/2019	<0.001	0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.19	0.079	<0.001	<0.001	<0.001	0.079	0.28	0.53	2	0.14	0.42	<0.001	<0.001	<0.001	0.003	**30**	0.24	32	34.092
	MW07_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	0.23	0.1	0.003	0.003	<0.001	0.1	0.65	0.7	2.3	0.14	0.58	<0.001	<0.001	<0.001	0.004	**36**	0.34	38.3	41.818
	MW07_LOW_20190618	18/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.86	0.31	<0.1	<0.1	<0.1	0.35	0.84	2.2	9.9	0.48	1.1	0.21	<0.1	<0.1	<0.1	**110**	0.99	119.9	127.49
	MW07_HIGH_20190619	19/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.65	0.24	<0.1	<0.1	<0.1	0.3	0.74	2	7.8	0.36	0.93	<0.1	<0.1	<0.1	<0.1	**88**	0.95	95.8	102.16
	0009_MW007_HT_200930	30/09/2020	<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	0.28	<0.3	<0.06	<0.06	<0.06	0.11	0.28	0.76	3.28	0.24	0.35	<0.16	<0.06	<0.06	<0.06	**42.2**	0.33	45.5	47.8
	0009_MW007_LT_200930	30/09/2020	<0.16	<0.16	<0.16	<0.16	<0.41	<0.16	<0.41	<0.16	<0.41	<0.16	<0.41	0.39	<0.8	<0.16	<0.16	<0.16	<0.16	0.32	1.02	4.14	0.29	0.44	<0.41	<0.16	<0.16	<0.16	**51.1**	0.37	55.2	58.1
	0009_MW007_LT_210408	8/04/2021	<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	0.19	<1	<0.19	<0.19	<0.19	<0.19	0.34	0.71	2.58	0.23	0.29	<0.48	<0.19	<0.19	<0.19	**35**	0.38	37.60	39.70
	0009_MW007_HT_210409	9/04/2021	<0.24	<0.24	<0.24	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	0.39	<1.2	<0.24	<0.24	<0.24	<0.32	0.36	1.29	4.27	0.34	0.66	<0.61	<0.24	<0.24	<0.24	**45.5**	0.58	49.80	53.40
	0009_MW007_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.03	<0.05	<0.02	<0.05	0.62	0.3	<0.02	<0.02	<0.02	0.27	0.82	1.87	6.7	0.41	0.77	<0.05	<0.02	<0.02	<0.02	**94.6**	0.85	101	107
	0009_MW007_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.04	<0.05	<0.02	<0.05	0.66	0.3	<0.02	0.03	<0.02	0.31	0.99	1.98	7.66	0.44	0.7	<0.05	<0.02	<0.02	<0.02	**92.7**	0.92	100	107
	0009_MW007_LT_220404	4/04/2022	<0.1	<0.1	<0.1	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	0.43	<0.5	<0.1	<0.1	<0.1	0.2	0.53	1.2	5.09	0.33	0.52	<0.24	<0.1	<0.1	<0.1	**86.4**	0.63	91.5	95.3
	0009_MW007_HT_220405	5/04/2022	<0.46	<0.46	<0.46	<0.46	<1.16	<0.46	<1.16	<0.46	<1.16	<0.46	<1.16	<0.46	<2.3	<0.46	<0.46	<0.46	<0.46	<0.46	0.98	4.74	<0.46	0.46	<1.16	<0.46	<0.46	<0.46	**68.2**	<0.46	72.9	74.4
	0009_MW007_LT_220912	12/09/2022	<0.1	<0.1	<0.1	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	0.5	<0.5	<0.1	<0.1	<0.1	0.18	0.64	1.42	5.45	0.24	0.68	<0.25	<0.1	<0.1	<0.1	**81.2**	0.7	86.6	91
	0009_MW007_HT_220913	13/09/2022	<0.1	<0.1	<0.1	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	0.59	<0.5	<0.1	<0.1	<0.1	0.26	0.62	1.59	5.98	0.36	0.74	<0.25	<0.1	<0.1	<0.1	**92.4**	0.83	98.4	103

Table T7: Historical Groundwater Results

		4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFOS+PFHxS	Sum of PFAS
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																												**0.13**	**220**		

Location ID	Sample ID	Sample Date																														
MW009	MW09_LOW_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.2	0.064	<0.01	<0.01	<0.01	0.15	0.023	0.98	1.8	0.08	0.33	<0.01	<0.01	<0.01	<0.01	**0.19**	0.1	1.99	3.968
	MW09_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	0.065	<0.01	<0.01	<0.01	0.16	0.031	0.93	2	0.091	0.34	<0.01	<0.01	<0.01	<0.01	**0.32**	0.12	2.32	4.319
	MW09_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	<0.001	0.003	0.002	0.021	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	0.071	0.002	0.092	0.104
	MW09_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.005	<0.001	<0.001	<0.001	0.001	0.003	0.005	0.056	0.002	0.003	<0.001	<0.001	<0.001	<0.001	0.093	0.002	0.149	0.168
	0009_MW009_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.12	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.27**	<0.01	0.39	0.39
	0009_MW009_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.16	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.25**	<0.01	0.41	0.43
	0009_MW009_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.10	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.10	<0.01	0.20	0.20
	0009_MW009_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.18**	<0.01	0.26	0.26
	0009_MW009_HT_211027	27/10/2021	<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.1	0.62	<0.02	0.04	<0.05	<0.02	<0.02	<0.02	**0.23**	0.04	0.85	1.17
	0009_MW009_LT_211028	28/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.09	0.43	0.02	0.04	<0.05	<0.02	<0.02	<0.02	**0.21**	0.03	0.64	0.94
	0009_MW009_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.2	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.1	0.01	0.3	0.38
	0009_MW009_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.22	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.12	0.01	0.34	0.4
	0009_MW009_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.3	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	0.12	0.02	0.42	0.54
	0009_MW009_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.35	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	0.13	0.01	0.48	0.58
MW011	MW11_HIGH_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.019	<0.01	0.021	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	0.12	0.078	0.27
	MW11_LOW_190524	24/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	0.003	<0.001	<0.001	0.015	0.004	0.026	0.005	0.008	<0.001	<0.001	<0.001	<0.001	0.005	0.048	0.13	0.053	0.244
	MW11_LOW_20190619	19/06/2019	<0.001	0.006	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	0.006	0.004	<0.001	<0.001	0.042	0.007	0.025	0.022	0.017	0.003	<0.001	<0.001	<0.001	0.019	0.12	0.32	0.142	0.593
	MW11_HIGH_20190620	20/06/2019	<0.001	0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	0.007	0.006	<0.001	<0.001	0.048	0.009	0.03	0.036	0.013	0.004	<0.001	<0.001	<0.001	0.021	**0.17**	0.3	0.206	0.652
	0009_MW011_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.07	<0.02	0.06	0.05	0.04	<0.02	<0.05	<0.02	<0.02	0.03	**0.35**	0.36	0.4	0.96
	0009_MW011_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.07	<0.02	0.06	0.07	0.04	<0.02	<0.05	<0.02	<0.02	0.03	**0.34**	0.38	0.41	0.99
	0009_MW011_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	0.07	0.14	0.27
	0009_MW011_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.04	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**0.23**	0.18	0.23	0.52
	0009_MW011_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.03	0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	0.11	0.04	0.21
	0009_MW011_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.03	0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	0.11	0.05	0.21
	0009_MW011_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.04	0.01	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**0.21**	0.15	0.22	0.48
	0009_MW011_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.09	<0.02	0.05	0.02	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**0.15**	0.26	0.17	0.6
	0009_MW011_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.07	0.03	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	**0.18**	0.21	0.21	0.59
MW013	MW13_HIGH_190522	22/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.047	0.033	0.003	<0.001	<0.001	0.041	0.059	0.14	0.87	0.083	0.086	<0.001	<0.001	0.002	0.13	**4.1**	0.084	4.97	5.708
	MW13_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.042	0.032	0.003	<0.001	<0.001	0.034	0.072	0.14	0.79	0.061	0.072	<0.001	<0.001	0.001	0.11	**2.3**	0.071	3.09	3.778
	MW13_LOW_20190618	18/06/2019	<0.001	0.006	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.064	0.038	0.002	<0.001	<0.001	0.055	0.065	0.17	1.1	0.086	0.098	<0.001	<0.001	<0.001	0.11	**1.7**	0.085	2.8	3.619
	MW13_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.059	0.039	0.002	<0.001	<0.001	0.058	0.085	0.18	1.6	0.083	0.1	<0.001	<0.001	<0.001	0.15	**2.4**	0.089	4	4.885
	0009_MW013_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.11	<0.2	<0.05	<0.05	<0.05	0.05	<0.05	0.27	1.1	0.08	0.09	<0.12	<0.05	<0.05	0.09	**2.27**	0.09	3.37	4.15
	0009_MW013_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.09	<0.2	<0.05	<0.05	<0.05	0.05	0.06	0.25	1.21	0.1	0.09	<0.12	<0.05	<0.05	0.11	**3.06**	0.11	4.27	5.13
	0009_MW013_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.05	0.06	0.17	0.97	0.10	0.08	<0.05	<0.02	<0.02	0.24	**3.58**	0.09	4.55	5.40
	0009_MW013_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.05	0.05	0.15	0.55	0.07	0.05	<0.05	<0.02	<0.02	0.08	**2.49**	0.08	3.04	3.63
	0009_MW013_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.16	<0.1	<0.02	<0.02	<0.02	0.12	0.14	0.51	2	0.21	0.18	<0.05	<0.02	<0.02	0.1	**4.16**	0.21	6.16	7.79
	0009_MW013_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.13	<0.1	<0.02	<0.02	<0.02	0.09	0.1	0.38	1.55	0.16	0.12	<0.05	<0.02	<0.02	0.1	**4.19**	0.16	5.74	6.98
	0009_MW013_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.04	0.05	0.16	0.79	0.07	0.06	<0.05	<0.02	<0.02	0.13	**2.68**	0.07	3.47	4.11
	0009_MW013_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.05	0.05	0.2	0.88	0.08	0.07	<0.05	<0.02	<0.02	0.15	**2.33**	0.09	3.21	3.97
	0009_MW013_LT_220912	12/09/2022	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.08	<0.1	<0.02	<0.02	<0.02	0.04	0.03	0.22	0.64	0.07	0.07	<0.05	<0.02	<0.02	0.05	**1.75**	0.06	2.39	3.07
	0009_MW013_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	0.02	0.03	0.1	0.48	0.05	0.03	<0.05	<0.02	<0.02	0.14	**1.95**	0.04	2.43	2.86
MW014	MW14_HIGH_190522	22/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.16	<0.1	<0.1	<0.1	0.45	0.51	<0.1	<0.1	<0.1	0.61	0.59	4.3	11	1.1	0.53	<0.1	<0.1	<0.1	<0.1	**77**	1.3	88	-
	MW14_LOW_190523	23/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	0.24	<0.1	0.11	<0.1	<0.1	<0.1	0.38	0.54	<0.1	<0.1	<0.1	0.34	0.66	3.6	8.9	0.6	0.44	<0.1	<0.1	<0.1	<0.1	**65**	1.1	73.9	-
	MW14_LOW_20190618	18/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.4	0.25	<0.1	<0.1	<0.1	0.35	0.61	2.6	9.7	0.32	0.38	0.018	<0.1	<0.1	<0.1	**86**	0.76	95.7	101.768
	MW14_HIGH_20190619	19/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.27	<0.1	<0.1	<0.1	0.34	0.22	<0.1	<0.1	<0.1	0.33	0.6	2.7	8.8	0.42	0.38	0.016	<0.1	<0.1	<0.1	**84**	0.69	92.8	98.916
	0009_MW014_HT_200930	30/09/2020	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	7.9	<0.50	<0.50	<1.25	<0.50	<0.50	<0.50	**120**	0.85	128	132
	0009_MW014_LT_200930	30/09/2020	<0.25	<0.25	<0.25	<0.25	<0.63	<0.25	<0.63	0.35	<0.63	<0.25	<0.63	0.3	<1.2	<0.25	<0.25	<0.25	0.35	0.43	3.92	7.31	0.48	0.33	<0.63	<0.25	<0.25	<0.25	**101**	0.93	108	115
	0009_MW014_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	0.69	<0.9	<0.18	<0.18	<0.18	0.46	0.69	3.03	11.50	0.64	0.51	<0.46	<0.18	<0.18	<0.18	**48.5**	0.91	60.00	66.90
	0009_MW014_HT_210409	9/04/2021	<0.18	<0.18	<0.18	<0.18	<0.45	<0.18	<0.45	<0.18	<0.45	<0.18	<0.45	0.58	<0.9	<0.18	<0.18	<0.18	0.36	0.54	2.89	7.99	0.65	0.49	<0.45	<0.18	<0.18	<0.18	**42**	0.73	50.00	56.20
	0009_MW014_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.22	<0.05	<0.02	<0.05	0.5	0.3	<0.02	<0.02	<0.02	0.44	0.86	3.91	10.7	0.63	0.6	<0.05	<0.02	<0.02	0.02	**54.6**	0.85	65.3	73.6
	0009_MW014_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.12	<0.05	<0.02	<0.05	0.54	0.3	<0.02	0.07	<0.02	0.33	0.67	3.14	8.5	0.5	0.46	<0.05	<0.02	<0.02	<0.02	**41.9**	0.65	50.4	57.2
	0009_MW014_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.03	<0.05	<0.02	<0.05	0.72	0.3	<0.02	<0.02	<0.02	0.26	0.26	2.2	8.11	0.43	0.51	<0.05	<0.02	<0.02	<0.02	**11.2**	0.38	19.3	24.4
	0009_MW014_HT_220405	5/04/2022	<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	0.47	<1.2	<0.25	<0.25	<0.25	<0.25	0.35	2.23	8.09	0.32	0.37	<0.62	<0.25	<0.25	<0.25	**30.7**	0.42	38.8	43
	0009_MW014_LT_220912	12/09/2022	<0.09	<0.09	<0.09	<0.09	<0.23	<0.09	<0.23	0.26	<0.23	<0.09	<0.23	0.39	<0.4	<0.09	<0.14	<0.09	0.28	0.57	2.9	7.78	0.43	0.4	<0.23	<0.09	<0.09	<0.09	**65.8**	0.81	73.6	79.6
	0009_MW014_HT_220913	13/09/2022	<0.1	<0.1	<0.1	<0.1	<0.25	<0.1	<0.25	0.32	<0.25	<0.1	<0.25	0.25	<0.5	<0.1	<0.1	<0.1	0.3	0.44	2.59	6.44	0.41	0.31	<0.25	<0.1	<0.1	<0.1	**100**	0.74	106	112

Table T7: Historical Groundwater Results

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFOS+PFHxS	Sum of PFAS
	Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																														
MW015	MW15_HIGH_190522	22/05/2019	<0.001	0.009	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.012	<0.001	<0.001	<0.001	0.012	0.014	0.069	0.22	0.028	0.016	<0.001	<0.001	<0.001	0.002	**2.1**	0.022	2.32	2.515
	MW15_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.016	0.016	<0.001	<0.001	<0.001	0.018	0.029	0.095	0.33	0.036	0.029	<0.001	<0.001	<0.001	0.003	**3**	0.034	3.33	-
	MW15_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.012	0.014	<0.001	<0.001	<0.001	0.013	0.016	0.096	0.25	0.034	0.016	<0.001	<0.001	<0.001	0.001	**1**	0.021	1.25	1.473
	MW15_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.014	0.015	<0.001	<0.001	<0.001	0.017	0.02	0.097	0.28	0.035	0.019	<0.001	<0.001	<0.001	0.002	**1.7**	0.024	1.98	2.249
	0009_MW015_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	0.35	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	**1.74**	<0.05	2.09	2.25
	0009_MW015_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.21	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	**1.17**	<0.02	1.38	1.46
	0009_MW015_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.21	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**1.44**	0.02	1.65	1.78
	0009_MW015_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.10	0.27	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	**2.52**	0.03	2.79	2.98
	0009_MW015_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.18	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**1.43**	0.01	1.61	1.66
	0009_MW015_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.23	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.97**	0.01	1.2	1.25
	0009_MW015_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.24	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**1.79**	0.02	2.03	2.14
	0009_MW015_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.28	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	**3.04**	0.03	3.32	3.47
	0009_MW015_LT_220912	12/09/2022	<0.05	0.16	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.11	0.22	0.05	<0.02	<0.05	<0.02	<0.02	<0.02	**1.8**	0.02	2.02	2.38
	0009_MW015_HT_220913	13/09/2022	<0.05	0.1	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.03	0.03	0.16	0.4	0.08	0.02	<0.05	<0.02	<0.02	<0.02	**3.38**	0.05	3.78	4.25
MW016	MW16_LOW_190521	21/05/2019	<0.001	0.058	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.17	0.049	<0.001	<0.001	<0.001	0.033	0.11	0.34	1.5	0.098	0.27	<0.001	<0.001	<0.001	0.002	**1.6**	0.075	3.1	4.355
	MW16_HIGH_190522	22/05/2019	<0.001	0.048	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.2	0.054	<0.001	<0.001	<0.001	0.036	0.1	0.41	1.4	0.11	0.36	<0.001	<0.001	<0.001	0.002	**1.6**	0.067	3	4.447
	MW16_LOW_20190618	18/06/2019	<0.001	0.017	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.18	0.047	<0.001	<0.001	<0.001	0.029	0.035	0.4	1.1	0.12	0.23	<0.001	<0.001	<0.001	<0.001	**0.57**	0.027	1.67	2.825
	MW16_HIGH_20190619	19/06/2019	<0.001	0.02	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.19	0.051	<0.001	<0.001	<0.001	0.033	0.042	0.42	1.3	0.089	0.23	<0.001	<0.001	<0.001	<0.001	**0.53**	0.024	1.83	3.009
	0009_MW016_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.35	<0.2	<0.05	<0.05	<0.05	0.07	<0.05	0.69	3.2	0.11	0.45	<0.12	<0.05	<0.05	<0.05	0.07	<0.05	3.27	4.94
	0009_MW016_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.36	<0.2	<0.05	<0.05	<0.05	0.07	<0.05	0.67	3.08	<0.05	0.44	<0.12	<0.05	<0.05	<0.05	0.1	<0.05	3.18	4.72
	0009_MW016_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.31	<0.1	<0.02	<0.02	<0.02	0.08	<0.02	0.58	2.59	0.16	0.38	<0.05	<0.02	<0.02	<0.02	**0.15**	0.02	2.74	4.27
	0009_MW016_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.20	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.42	1.72	0.09	0.34	<0.05	<0.02	<0.02	<0.02	**0.22**	0.01	1.94	3.05
	0009_MW016_HT_211027	27/10/2021	<0.05	0.18	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.15	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.32	1.08	0.08	0.18	<0.05	<0.02	<0.02	<0.02	**0.27**	<0.01	1.35	2.29
	0009_MW016_LT_211028	28/10/2021	<0.05	0.24	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.29	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.48	2.03	0.1	0.23	<0.05	<0.02	<0.02	<0.02	**0.16**	0.01	2.19	3.59
	0009_MW016_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.25	1.19	0.06	0.19	<0.05	<0.02	<0.02	<0.02	**0.18**	<0.01	1.37	2.03
	0009_MW016_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.23	1.1	0.05	0.16	<0.05	<0.02	<0.02	<0.02	**0.15**	<0.01	1.25	1.83
	0009_MW016_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.2	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.38	1.8	0.08	0.26	<0.05	<0.02	<0.02	<0.02	**0.14**	<0.01	1.94	2.9
	0009_MW016_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.2	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.38	2.05	0.08	0.28	<0.05	<0.02	<0.02	<0.02	0.11	0.01	2.16	3.17
MW017	MW17_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.014	<0.05	<0.01	<0.01	<0.01	0.014	0.013	0.056	0.22	0.026	0.026	<0.01	<0.01	<0.01	<0.01	**1.1**	0.033	1.32	1.516
	MW17_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.019	0.014	<0.001	<0.001	<0.001	0.016	0.026	0.064	0.31	0.025	0.035	<0.001	<0.001	<0.001	0.001	**1**	0.03	1.31	1.54
	MW17_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.008	<0.001	<0.001	<0.001	0.008	0.007	0.037	0.16	0.018	0.017	<0.001	<0.001	<0.001	<0.001	**0.38**	0.013	0.54	0.659
	MW17_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.034	0.019	<0.001	<0.001	<0.001	0.021	0.03	0.094	0.5	0.034	0.051	<0.001	<0.001	<0.001	0.002	**1.3**	0.041	1.8	2.126
	0009_MW017_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.31	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	**1.13**	0.03	1.44	1.58
	0009_MW017_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.21	<0.02	0.02	<0.05	<0.02	<0.02	<0.02	**0.87**	0.02	1.08	1.17
	0009_MW017_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.34	0.03	0.04	<0.05	<0.02	<0.02	<0.02	**1.67**	0.03	2.01	2.22
	0009_MW017_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.23	0.02	0.02	<0.05	<0.02	<0.02	<0.02	**0.97**	0.02	1.20	1.31
	0009_MW017_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.02	0.04	0.12	0.64	0.04	0.07	<0.05	<0.02	<0.02	<0.02	**2.08**	0.06	2.72	3.11
	0009_MW017_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	0.03	0.08	0.45	0.02	0.03	<0.05	<0.02	<0.02	<0.02	**2.25**	0.04	2.7	2.93
	0009_MW017_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.03	0.03
	0009_MW017_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.38	0.03	0.03	<0.05	<0.02	<0.02	<0.02	**1.44**	0.03	1.82	2.01
	0009_MW017_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.2	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**1.02**	0.01	1.22	1.27
	0009_MW017_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.19	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.81**	0.01	1	1.04

Table T7: Historical Groundwater Results

			4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFOS+PFHxS	Sum of PFAS
	Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													**0.13**	**220**		
Location ID	**Sample ID**	**Sample Date**																														
MW018	MW18_LOW_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	0.002	<0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.013	0.016	0.025	0.059
	MW18_HIGH_190522	22/05/2019	<0.001	<0.005	0.001	zxxxxxxx	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	0.003	0.001	0.004	0.014	0.003	0.001	<0.001	<0.001	<0.001	<0.001	0.068	0.012	0.082	0.107
	MW18_LOW_20190619	19/06/2019	<0.001	0.007	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	0.002	<0.001	0.003	0.005	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.013	0.011	0.018	0.046
	MW18_HIGH_20190620	20/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	0.002	<0.001	0.003	0.005	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.012	0.009	0.017	0.036
	0009_MW018_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.08	<0.01	0.08	0.08
	0009_MW018_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_MW018_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_MW018_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_MW018_HT_211027	27/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.09
	0009_MW018_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_MW018_211208	8/12/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.06	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.03	<0.01	<0.01	<0.01
	0009_MW018_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_MW018_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_MW018_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.03	0.03
MW019	MW19_HIGH_190521	21/05/2019	<0.001	0.078	0.002	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.081	0.055	<0.001	<0.001	<0.001	0.18	0.34	0.41	1.1	0.29	0.16	<0.001	<0.001	<0.001	0.017	**5.4**	0.38	6.5	8.513
	MW19_LOW_190524	24/05/2019	<0.001	0.11	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.076	0.053	<0.001	<0.001	<0.001	0.17	0.36	0.39	1.2	0.28	0.14	<0.001	<0.001	<0.001	0.021	**8.3**	0.38	9.5	11.503
	MW19_LOW_20190619	19/06/2019	<0.001	0.047	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.034	0.03	<0.001	<0.001	<0.001	0.071	0.1	0.18	0.55	0.12	0.046	<0.001	<0.001	<0.001	0.006	**1.7**	0.11	2.25	3.004
	MW19_HIGH_20190620	20/06/2019	<0.001	0.036	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.035	0.03	<0.001	<0.001	<0.001	0.065	0.093	0.18	0.54	0.13	0.052	<0.001	<0.001	<0.001	0.006	**1.2**	0.1	1.74	2.477
	0009_MW019_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.06	<0.2	<0.05	<0.05	<0.05	<0.05	0.09	0.2	0.55	0.07	<0.05	<0.12	<0.05	<0.05	<0.05	**3.16**	0.12	3.71	4.25
	0009_MW019_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.07	<0.2	<0.05	<0.05	<0.05	0.06	0.14	0.24	0.63	0.06	<0.05	<0.12	<0.05	<0.05	<0.05	**4.82**	0.18	5.45	6.2
	0009_MW019_LT_210408	8/04/2021	<0.1	0.31	<0.1	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.24	<0.1	<0.5	<0.1	<0.1	<0.1	0.11	0.24	0.26	0.86	0.15	<0.1	<0.24	<0.1	<0.1	<0.1	**11.7**	0.26	12.60	13.90
	0009_MW019_HT_210409	9/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.07	0.13	0.16	0.47	0.10	0.05	<0.05	<0.02	<0.02	<0.02	**4.21**	0.14	4.68	5.43
	0009_MW019_HT_211027	27/10/2021	<0.05	0.63	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	0.03	0.06	0.1	0.23	0.06	0.02	<0.05	<0.02	<0.02	<0.02	**2.11**	0.06	2.34	3.32
	0009_MW019_LT_211028	28/10/2021	<0.05	0.38	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	0.04	0.07	0.13	0.28	0.08	0.03	<0.05	<0.02	<0.02	<0.02	**2.4**	0.07	2.68	3.5
	0009_MW019_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.15	<0.1	<0.02	<0.02	<0.02	0.07	0.18	0.19	0.62	0.1	0.05	<0.05	<0.02	<0.02	<0.02	**6.64**	0.19	7.26	8.19
	0009_MW019_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	0.07	0.16	0.18	0.58	0.1	0.04	<0.05	<0.02	<0.02	<0.02	**4.4**	0.15	4.98	5.73
	0009_MW019_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.06	0.1	0.13	0.4	0.08	0.04	<0.05	<0.02	<0.02	<0.02	**2.71**	0.12	3.11	3.68
	0009_MW019_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	0.04	0.1	0.14	0.48	0.09	0.04	<0.05	<0.02	<0.02	<0.02	**3.22**	0.1	3.7	4.24
Former WWII RAN Fuel Installation																																
MW031	MW31_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.005	0.001	<0.001	<0.001	<0.001	0.001	0.011	0.035	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	**0.31**	0.002	0.345	0.366
	MW31_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	<0.001	0.002	0.006	0.026	0.003	0.003	<0.001	<0.001	<0.001	<0.001	**0.32**	0.001	0.346	0.363
	0009_MW031_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.26**	<0.01	0.31	0.31
	0009_MW031_210408	8/04/2021	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.24**	<0.01	0.30	0.37
	0009_MW031_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.12	<0.01	0.14	0.14
	0009_MW031_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.33**	<0.01	0.42	0.42
	0009_MW031_220913	13/09/2022	<0.05	0.48	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.22**	<0.01	0.26	0.74
MW035	CRC_MW01_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.2	0.035	<0.001	<0.001	<0.001	0.004	0.027	0.054	0.8	0.02	0.32	<0.001	<0.001	<0.001	<0.001	0.097	0.009	0.897	1.626
	CRC_MW01_190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.19	0.046	<0.001	<0.001	<0.001	0.003	0.025	0.078	0.67	0.017	0.2	<0.001	<0.001	<0.001	<0.001	**0.34**	0.01	1.01	1.679
	0009_MW035_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.1	0.1
	0009_MW035_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.50	<0.02	0.16	<0.05	<0.02	<0.02	<0.02	0.13	<0.01	0.63	0.96
	0009_MW035_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_MW035_220405	5/04/2022	<0.05	0.15	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.13	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.42	<0.02	0.1	<0.05	<0.02	<0.02	<0.02	**0.2**	<0.01	0.62	1
	0009_MW035_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.18	<0.02	0.04	<0.05	<0.02	<0.02	<0.02	0.08	<0.01	0.26	0.36
MW036	CRC_MW02_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.017	<0.001	<0.001	<0.001	0.004	0.008	0.044	0.21	0.018	0.036	<0.001	<0.001	<0.001	<0.001	**0.16**	0.01	0.37	0.557
	CRC_MW02_190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.027	0.01	<0.001	<0.001	<0.001	0.002	0.008	0.044	0.17	0.011	0.031	<0.001	<0.001	<0.001	<0.001	**0.28**	0.008	0.45	0.601
	0009_MW036_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.11	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.29**	<0.01	0.4	0.4
	0009_MW036_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.25	<0.02	0.06	<0.05	<0.02	<0.02	<0.02	**0.29**	0.01	0.54	0.71
	0009_MW036_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.17	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	**0.22**	<0.01	0.39	0.51
	0009_MW036_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.12	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.22**	<0.01	0.34	0.36

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than

Table T8: Historical Surface Water Results

Location ID	Sample ID	Sample Date	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFOS+PFHxS	Sum of PFAS
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
NHMRC (2019) PFAS Recreational Water																														**10**	**2**	
PFAS NEMP 2020 Freshwater and Interim Marine 95%																													***0.13***	***220***		
HMAS Cairns																																		
SW030	HCSW2	4/03/2016	-	<0.1	<0.1	-	<0.05	-	<0.5	<0.02	<0.5	-	<0.5	<0.02	-	<0.02	<0.02	<0.05	<0.02	-	0.04	0.04	-	-	<0.5	<0.05	<0.05	<0.02	***0.2***	0.01	-	-
	0009_SW022_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.06	0.3	0.02	0.03	<0.05	<0.02	<0.02	<0.02	***1.24***	0.04	1.54	1.74
	0009_SW030_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	***0.15***	<0.01	0.20	0.20
	0009_SW030_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_SW030_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_SW030_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.05	0.08	0.14	0.76	0.05	0.06	<0.05	<0.02	<0.02	<0.02	***2.29***	0.09	**3.05**	3.59
SW031	0009_SW003_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.12	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	***1.03***	0.03	1.15	1.22
	0009_SW023_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	**<0.01**	0.01	0.01
	0009_SW031_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW031_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	**<0.01**	0.01	0.01
	0009_SW031_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW031_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	0.06	**<0.02**	0.06	0.06
SW032	HCSW1	4/03/2016	-	<0.1	<0.1	-	<0.05	-	<0.5	<0.02	<0.5	-	<0.5	<0.02	-	<0.02	<0.02	<0.05	<0.02	-	0.06	0.27	-	-	<0.5	<0.05	<0.05	<0.02	***0.24***	0.01	-	-
	HCSW01_190404	4/04/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.004	0.007	<0.001	<0.001	<0.001	0.006	0.006	0.018	0.084	0.008	0.008	<0.001	<0.001	<0.001	<0.001	***0.38***	0.014	0.464	0.535
	0009_SW001_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.1	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	***0.6***	0.01	0.7	0.71
	0009_SW021_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW032_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	**<0.01**	0.04	0.04
	0009_SW032_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW032_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW032_22913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
SW033	HCSW4	4/03/2016	-	<0.1	<0.1	-	<0.05	-	<0.5	<0.02	<0.5	-	<0.5	<0.02	-	<0.02	<0.02	<0.05	<0.02	-	<0.02	<0.02	-	-	<0.5	<0.05	<0.05	<0.02	0.06	0.03	-	-
	HCSW04_190404	4/04/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	0.003	<0.001	<0.001	0.003	<0.001	0.004	0.006	0.004	<0.001	<0.001	<0.001	<0.001	0.001	0.025	0.007	0.031	0.053
	HCSW05_190404	4/04/2019	<0.001	0.005	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.004	0.007	<0.001	<0.001	<0.001	0.008	0.003	0.023	0.084	0.018	0.006	<0.001	<0.001	0.002	0.005	***0.25***	0.009	0.334	0.427
	0009_SW004_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	***0.22***	**<0.01**	0.22	0.22
	0009_SW024_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW033_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	**<0.01**	0.03	0.03
	0009_SW033_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW033_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW033_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
SW034	HCSW06_190404	4/04/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	0.003	0.001	0.01	0.033	0.01	0.002	<0.001	<0.001	<0.001	0.002	0.094	0.004	0.127	0.162
	HCSW5_190617	17/06/2019	<0.001	0.007	0.002	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	0.012	<0.001	<0.001	<0.001	0.012	0.005	0.038	0.064	<0.05	0.006	0.016	<0.001	<0.001	0.003	***0.28***	0.012	0.344	0.462
	0009_SW005_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.06	<0.01	0.08	0.08
	0009_SW025_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_SW034_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.09	<0.01	0.12	0.12
	0009_SW034_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW034_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_SW034_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW035	HCSW6_190617	17/06/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	0.008	<0.001	<0.001	<0.001	0.009	0.001	0.031	0.053	<0.05	0.004	<0.001	<0.001	<0.001	0.003	***0.16***	0.008	0.213	0.281
	0009_SW006_200501	1/05/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_SW026_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
	0009_SW035_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
	0009_SW035_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW035_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.07	**<0.01**	0.11	0.11
	0009_SW035_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
Former WWII RAN Fuel Installation																																		
SW036	SW08_190513	13/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<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	0.003	0.001	0.004	0.006
	SW08_190618	18/06/2019	<0.001	<0.005	0.013	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0057	0.001	0.0077	0.0257
	0009_SW008_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW036_210408	8/04/2021	<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	0.08
	0009_SW036_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW036_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW036_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
SW100	SW20_190912	12/09/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0037	<0.001	0.0057	0.0057
	0009_SW020_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW100_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW100_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	**<0.01**	0.01	0.01
	0009_SW100_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	**<0.01**	<0.01	<0.01
	0009_SW100_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
SW101	SW17_190912	12/09/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0034	0.001	0.0054	0.0064
	0009_SW017_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW101_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW101_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	**<0.01**	0.01	0.01
	0009_SW101_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01
	0009_SW101_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	**<0.01**	<0.01	<0.01

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than

Table T9: Historical Sediment Results

Location ID	Sample ID	Date	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFOS+PFHxS	Sum of PFAS
		Units	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	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HMAS Cairns																																
SD030	HCSW2_SD	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW2_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.02	<0.005	0.02	<0.05
	0009_SD020_200930	30/09/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0026	<0.0002	0.003	0.003
	0009_SD030_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0115	<0.0002	0.0121	0.0129
	0009_SD030_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0047	<0.0002	0.0047	0.005
	0009_SD030_220404	4/04/2022	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.001	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0076	<0.0002	0.0076	0.0094
	0009_SD030_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0039	<0.0002	0.0046	0.0046
SD031	HCSW3_SD	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW3_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD021_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.001	<0.0002	0.001	0.001
	0009_SD031_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0024	<0.0002	0.0024	0.0027
	0009_SD031_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.002	<0.0002	0.002	0.002
	0009_SD031_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0243	<0.0002	0.0247	0.025
	0009_SD031_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0046	<0.0002	0.0049	0.0049
SD032	HCSW01_190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW1_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD019_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD032_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0024	<0.0002	0.0024	0.0024
	0009_SD032_211028	28/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003
	0009_SD032_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.001	<0.0002	0.001	0.001
	0009_SD032_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0014	<0.0002	0.0014	0.0014
SD033	HCSW05_190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW4_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD022_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	0009_SD033_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	0009_SD033_211028	28/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	0009_SD033_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD033_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	0.0004	0.0004
SD034	HCSW06_190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW5_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD023_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD034_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0012	<0.0002	0.0012	0.0012
	0009_SD034_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD034_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.002	0.0002	0.002	0.0022
	0009_SD034_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
SD035	HCSW06_20190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	HCSW6_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD024_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	0.0007	0.0007
	0009_SD035_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0009	<0.0002	0.0009	0.0009
	0009_SD035_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	0.0007	0.0007
	0009_SD035_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0016	<0.0002	0.0016	0.0018
	0009_SD035_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0019	<0.0002	0.0019	0.0019
Former WWII RAN Fuel Installation																																
SD036	SD08_190513	13/05/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	SW08_SD_0-0.1	18/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD008_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD036_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD036_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	0.0002	0.0006	0.0008
	0009_SD036_211208	8/12/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0009
	0009_SD036_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	0.0003	0.0008	0.0011
	0009_SD036_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	0.0002	0.0002
SD100	SW20_190912_SD	12/09/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD100_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD100_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	0.0003	0.0003
	0009_SD100_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD100_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0009
	0009_SD100_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0011
SD101	SW17_190912_SD	12/09/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	0009_SD101_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD101_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD101_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD101_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD101_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0004	<0.002	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Appendix C

Analytical Data Validation

DATA VALIDATION REPORT

Project No.:	60612487	**Validation by:**	[redacted]	**Date:**	01/12/2022
Client:	Department of Defence				
Site:	HMAS Cairns (0009)				
Matrix type:	Groundwater, surface water, sediment	**Data verified by:**	[redacted]	**Date:**	01/12/2022
No. of primary samples:	15 groundwater (sample replicated on both high and low tide), 3 groundwater (no tidal replication), 9 surface water, 9 sediment				
Laboratory:	ALS (Brisbane), NMI (Sydney)	**Project Manager:**	[redacted]		
Lab reference:	ET2204898, RN1366950				

Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication on data interpretation and therefore decision-making on the project. The data are considered appropriate for use to meet the project objectives.

Field QA/QC

Sampling personnel	Sampling was conducted by AECOM personnel from 11-13 September 2022.
Sampling Methodology	Groundwater samples were collected using appropriate methods as identified within the main body of the report. Hydrasleeves^{TM} were installed in the well for a minimum of 24 hours prior to collection for the first sampling round and then collected at shorter sampling intervals between tides, with the exception of wells in the DFI area. Three groundwater samples were collected with a steel bailer. Surface water and sediment samples were collected using appropriate methods as outline in the SAQP (AECOM, 2022).
Chain of Custody (COC)	COC documents completed as per AECOM procedures.
Rinsate Blank	Rinsate blank samples were collected at a frequency of one per field staff per day of sampling (two in total). Concentrations of all analytes tested were reported below the LOR for rinsate samples.
Trip Blanks	One trip blank sample was submitted to the laboratory per batch of primary samples delivered to the laboratory. Concentrations were reported below the LOR for all analytes tested in the trip blank.
Eskies to Laboratory	A total of two eskies of samples in one delivery was submitted to ALS. One esky was submitted to NMI.
Frequency of field QC	Field duplicates (inter-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected at a target frequency of one in ten primary samples (four duplicates and triplicates for groundwater, one duplicate and triplicate for surface water and one duplicate and triplicate for sediment). The target frequency of 10% for field duplicates and triplicates was achieved for all matrices.
Handling and preservation	Primary, duplicate and triplicate samples were received preserved and chilled at the laboratory. Sample receipt temperature was reported between 2.0°C and 5.0°C. All samples were received at the laboratory in appropriate sample containers with no sample container / preservation non-compliances noted.
Equipment Calibration	Calibration of the water quality meter was conducted each day before sampling, see **Appendix F**.

Laboratory QA/QC	
Tests requested/reported	Samples were analysed and reported as requested on the COC.
Holding time compliance	Samples were extracted and analysed within recommended holding times.
Laboratory Accreditation	The laboratory analysis was conducted by ALS Environmental Pty Ltd (Brisbane) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate samples were analysed at the National Measurement Institute (Sydney), also a NATA accredited laboratory.
Frequency of laboratory QC	The laboratory reported sufficient frequency of quality control samples to assess whether the results were reported to an acceptable accuracy and precision, except for the frequency of laboratory duplicates and matrix spikes which was lower than the expected 10% (actual rate of 6% and 2%, respectively) in batch ET2204898.
Method Blank	No method blank value outliers were reported.
Laboratory duplicate RPDs	Laboratory duplicate Relative Percentage Differences (RPD) were within control limits. Laboratory duplicates were not performed for soils in NMI batch RN1366950.
Laboratory control spike (LCS) recovery	All LCS recoveries were reported within acceptable limits.
Matrix spike recovery	All matrix spike (MS) recoveries were within control limits, except PFOS was not determined in water for sample 0009_MW005_HT_220913 due to background level being greater than or equal to four times the spike level. Matrix spikes were not completed for NMI batch RN1366950.
Surrogate spike recovery	No surrogate recovery outliers were reported.

QA/QC Data Evaluation	
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted.
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.
Limits of reporting	Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted screening levels.
Field duplicate RPDs	Field duplicate RPDs were reported within control limits.
Field triplicate RPDs	Field triplicate RPDs were reported within control limits for all sample sets with the exception of the following (the sample with the higher concentration is in bold): • Perfluorohexane sulfonic acid (PFHxS) in 0009_MW016_LT_220912 and **0009_QC200_220912** with an RPD of 48%. • Perfluorooctane sulfonic acid (PFOS) in **0009_MW019_LT_220912** and 0009_QC201_220912 with an RPD of 57%. • Perfluorobutane sulfonic acid (PFBS), Perfluoroheptane sulfonic acid (PFHpS), Perfluoroheptane sulfonic acid (PFHpS), Perfluoroheptanoic acid (PFHpA), Perfluorohexanoic acid (PFHxA), Perfluoropentane sulfonic acid (PFPeS), Perfluoropentanoic acid (PFPeA), PFOS, Perfluorooctanoic Acid (PFOA), PFHxS in **0009_MW002_HT_220913** and 0009_QC204_220913 with an RPD of 32%, 53%, 39%, 46%, 44%, 42%, 35%, 59% and 35% respectively.

- Perfluorobutanoic acid (PFBA) in 0009_MW002_HT_220913 and **0009_QC204_220913** with an RPD of 41%.
- PFHxS in **0009_MW016_HT_220913** and 0009_QC205_220913 with an RPD of 52% respectively.
- PFOS in 0009_SD033_220913 and **0009_QC203_220913** with an RPD of 138%.

Three of the four primary groundwater samples analysed reported higher PFAS concentrations than the corresponding triplicate samples indicating that the more conservative concentration was considered in the data assessment. Triplicate concentrations in groundwater were within the same order of magnitude compared to the concentrations in the primary sample and this is not considered to impact interpretation of results. The PFOS concentration in 0009_QC203_220913 was an order of magnitude higher than that in the primary sample. The variability between the primary and triplicate results is inferred to be the result of slight differences in analytical methods employed by the two laboratories. This is demonstrated through the laboratory duplicate results all being within acceptable limits.

Table C1: Groundwater RPDs

Lab Report Number	ET2204898	ET2204898	RPD	RN1366950	RPD	ET2204898	ET2204898	RPD	RN1366950	RPD
Field ID	0009_MW016_LT_220912	0009_QC100_220912		0009_QC200_220912		0009_MW019_LT_220912	0009_QC101_220912		0009_QC201_220912	
Sampled Date/Time	12/09/2022 18:07	12/09/2022 18:07		12/09/2022 18:07		12/09/2022 18:40	12/09/2022 18:40		12/09/2022 18:40	
Sample Type	Primary	Duplicate		Triplicate		Primary	Duplicate		Triplicate	
Chemical Name	**Units**	**EQL**								
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	0.014	NC	<0.05	<0.05	NC	0.029	NC
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC	<0.05	<0.05	NC	<0.05	NC
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC	<0.05	<0.05	NC	<0.05	NC
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.2	0.2	0	0.13	42	0.04	0.03	29	0.026	42
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	NC	<0.05	NC	<0.1	<0.1	NC	<0.05	NC
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	0.1	0.1	0	0.054	60
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.04	0	0.028	35	0.06	0.06	0	0.036	50
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.38	0.38	0	0.23	49	0.13	0.13	0	0.09	36
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.26	0.26	0	0.16	48	0.04	0.05	22	0.029	32
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.08	0.08	0	0.062	25	0.08	0.08	0	0.069	15
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	NC	<0.02	NC	<0.02	<0.02	NC	<0.02	NC
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0.14	0.14	0	0.12	15	2.71	3.18	16	1.5	**57**
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	NC	<0.01	NC	0.12	0.12	0	0.07	53
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	1.8	1.71	5	1.1	**48**	0.4	0.4	0	0.3	29

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 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
NC = not calculated due to value below EQL

Table C1: Groundwater RPDs

Lab Report Number	ET2204898	ET2204898	RPD	RN1366950	RPD	ET2204898	ET2204898	RPD	RN1366950	RPD
Field ID	0009_MW002_HT_220913	0009_QC104_220913		0009_QC204_220913		0009_MW016_HT_220913	0009_QC105_220913		0009_QC205_220913	
Sampled Date/Time	13/09/2022 10:33	13/09/2022 10:33		13/09/2022 10:33		13/09/2022 12:46	13/09/2022 12:46		13/09/2022 12:46	
Sample Type	Primary	Duplicate		Triplicate		Primary	Duplicate		Triplicate	

Chemical Name	Units	EQL									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.1	<0.1	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.1	<0.1	NC	<0.01	NC	<0.05	<0.05	NC	<0.01	NC
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.1	<0.1	NC	0.025	NC	<0.05	<0.05	NC	0.015	NC
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.1	<0.1	NC	0.025	NC	<0.05	<0.05	NC	<0.01	NC
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.25	<0.25	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.1	<0.1	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.25	<0.25	NC	<0.05	NC	<0.05	<0.05	NC	<0.05	NC
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.25	<0.25	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.1	<0.1	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.25	<0.25	NC	<0.05	NC	<0.05	<0.05	NC	<0.05	NC
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	2.07	2.02	2	1.5	**32**	0.2	0.17	16	0.15	29
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	0.5	0.6	18	0.76	**41**	<0.1	<0.1	NC	<0.05	NC
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.1	<0.1	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.1	<0.1	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.1	<0.1	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	2.24	2.42	8	1.3	**53**	<0.02	<0.02	NC	<0.01	NC
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	1.48	1.38	7	1	**39**	0.06	0.04	40	0.033	58
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	7.53	8.25	9	4.7	**46**	0.38	0.43	12	0.26	38
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.1	<0.1	NC	0.048	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.1	<0.1	NC	0.041	NC	<0.02	<0.02	NC	<0.01	NC
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	2.2	2.3	4	1.4	**44**	0.28	0.31	10	0.18	43
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	1.68	1.72	2	1.1	**42**	0.08	0.1	22	0.068	16
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.25	<0.25	NC	<0.02	NC	<0.05	<0.05	NC	<0.02	NC
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.1	<0.1	NC	<0.02	NC	<0.02	<0.02	NC	<0.02	NC
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.1	<0.1	NC	<0.01	NC	<0.02	<0.02	NC	<0.01	NC
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	55.4	58.4	5	39	**35**	0.11	0.11	0	0.11	0
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	3.12	3.06	2	1.7	**59**	0.01	0.01	0	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	24.1	24.9	3	17	**35**	2.05	2.15	5	1.2	**52**

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL); 50 (10-20
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any m
NC = not calculated due to value below EQL

Table C2: Surface Water RPDs

Lab Report Number	ET2204898	ET2204898		RN1366950		
Field ID	0009_SW033_220913	0009_QC102_220913	**RPD**	0009_QC202_220913	**RPD**	
Sampled Date/Time	13/09/2022 9:36	13/09/2022 9:36		13/09/2022 9:36		
Sample Type	Primary	Duplicate		Triplicate		
Chemical Name	**Units**	**EQL**				
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	NC	<0.01	NC
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	NC	<0.05	NC
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	NC	<0.05	NC
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	NC	<0.02	NC
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	NC	<0.02	NC
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	NC	<0.02	NC
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	NC	<0.01	NC
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	<0.01	<0.01	NC	<0.02	NC
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	NC	<0.01	NC
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	NC	<0.01	NC

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 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
NC = not calculated due to value below EQL

Table C3: Sediment RPDs

Lab Report Number	ET2204898	ET2204898		RN1366950	
Field ID	0009_SD033_220913	0009_QC103_220913	**RPD**	0009_QC203_220913	**RPD**
Sampled Date/Time	13/09/2022 9:37	13/09/2022 9:37		13/09/2022 9:37	

ChemName	Units	EQL					
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.002	NC
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.001	NC
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.001	NC
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.001	NC
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.002	NC
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.002	NC
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.005	NC
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.002	NC
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.002	NC
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.005	NC
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
Perfluorobutanoic acid (PFBA)	mg/kg	0.001	<0.001	<0.001	NC	<0.002	NC
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.002	NC
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
Perfluorononanoic acid (PFNA)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.002	NC
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005	<0.0005	<0.0005	NC	<0.002	NC
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.002	NC
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.002	NC
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002	0.0004	0.0005	22	0.0022	**138**
Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002	<0.0002	<0.0002	NC	<0.001	NC

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 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
NC = not calculated due to value below EQL

Table C4: Rinsate Analytical Results

Lab Report Number	ET2204898	ET2204898
Field ID	0009_QC300_220912	0009_QC301_220913
Sampled_Date/Time	12/09/2022 19:10	13/09/2022 16:35
Sample Type	Rinsate	Rinsate

ChemName	Units	EQL		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01

Table C5: Trip Blank Analytical Results

Lab Report Number	ET2204898
Field ID	0009_QC500_220912
Sampled_Date/Time	12/09/2022 12:10
Sample Type	Trip Blank

ChemName	Units	EQL	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01

Appendix D

Chain of Custody Forms

Environmental Division
Townsville
Work Order Reference
ET2204898

Telephone : +61 7 4773 0000

ALSCompass SAMPLING Intelligence

Custody Document for Submissions via ALS Compass App

Project: QLD-0009_PFASOMP_20 **Client:** AECOM **Project Manager:**

Phone: ( )

ALS Compass COC Reference: 42288 **# Samples:** 60 **Sampler:**

Phone: [redacted]

Turnaround Requirements: Standard ✓ 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?		°C	

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	[redacted]		[redacted]
Date / Time: 15/9/22 10:52	Date / Time: 15/9/22 1052	Date / Time:	Date / Time: 16.9.22 800

CHAIN OF CUSTODY

COC#: **42288** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0009_SW036_220912		12/09/2022 12:03 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
002	0009_SD036_220912		12/09/2022 12:08 PM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
003	0009_QC500_220912		12/09/2022 12:10 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
004	0009_SD034_220912		12/09/2022 02:07 PM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
005	0009_SW034_220912		12/09/2022 02:07 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
006	0009_SD035_220912		12/09/2022 02:36 PM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
007	0009_SW035_220912		12/09/2022 02:37 PM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol for pan QC
008	0009_MW002_LT_220912		12/09/2022 04:00 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
009	0009_MW005_LT_220912		12/09/2022 03:45 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

ALS COC#: 42288 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0009_MW001_LT_220912		12/09/2022 04:03 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
011	0009_MW003_LT_220012		12/09/2022 03:55 PM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol for Ken QC304
012	0009_MW013_LT_220912		12/09/2022 03:48 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
013	0009_MW004_LT_220912		12/09/2022 03:30 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
014	0009_SD031_220912		12/09/2022 03:15 PM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
015	0009_SW031_220912		12/09/2022 03:15 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
016	0009_SD030_220912		12/09/2022 03:20 PM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
017	0009_SW030_220912		12/09/2022 03:20 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
018	0009_MW014_LT_220912		12/09/2022 05:01 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

COC#: 42288 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0009_MW015_LT_220912		12/09/2022 05:23 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
020	0009_MW007_LT_220912		12/09/2022 05:37 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
021	0009_MW017_LT_220912		12/09/2022 05:48 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
022	0009_MW016_LT_220912		12/09/2022 06:07 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
023	0009_QC100_220912		12/09/2022 06:08 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
024	0009_MW009_LT_220912		12/09/2022 06:19 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
025	0009_MW018_LT_220912		12/09/2022 06:30 PM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		
026	0009_MW019_LT_220912		12/09/2022 06:40 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
027	0009_QC101_220912		12/09/2022 06:40 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

COC#: 42288 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0009_MW011_LT_220912		12/09/2022 06:55 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
029	0009_QC300_220912		12/09/2022 07:10 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
030	0009_SW032_22913		13/09/2022 08:50 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
031	0009_SD032_220913		13/09/2022 08:50 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
032	0009_SW033_220913		13/09/2022 09:36 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
033	0009_QC102_220913		13/09/2022 09:37 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
034	0009_SD033_220913		13/09/2022 09:37 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
035	0009_QC103_220913		13/09/2022 09:39 AM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
036	0009_MW001_HT_220913		13/09/2022 10:20 AM	Water	ALS: 3 Non ALS: 0	No		Partial 1/4		Extra vol for lab QC

CHAIN OF CUSTODY

COC#: **42288** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0009_MW002_HT_220913		13/09/2022 10:33 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
038	0009_QC104_220913		13/09/2022 10:33 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
039	0009_MW003_HT_220913		13/09/2022 10:49 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
040	0009_MW005_HT_220913		13/09/2022 11:07 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
041	0009_MW004_HT_220913		13/09/2022 11:18 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
042	0009_MW007_HT_220913		13/09/2022 11:58 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
043	0009_MW017_HT_220913		13/09/2022 12:10 PM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		
044	0009_MW014_HT_220913		13/09/2022 12:22 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
045	0009_MW015_HT_220913		13/09/2022 12:29 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

ALS COC#: 42288 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0009_MW016_HT_220913		13/09/2022 12:46 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
047	0009_QC105_220913		13/09/2022 12:48 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
048	0009_MW018_HT_220913		13/09/2022 12:58 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
049	0009_MW009_HT_220913		13/09/2022 01:08 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
050	0009_MW019_HT_220913		13/09/2022 01:20 PM	Water	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol for lab QC
051	0009_MW011_HT_220913		13/09/2022 01:31 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
052	0009_MW031_220913		13/09/2022 03:25 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
053	0009_SW101_220913		13/09/2022 03:41 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
054	0009_SD101_220913		13/09/2022 03:41 PM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			

CHAIN OF CUSTODY

(ALS) COC#: **42288** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0009_SD100_220913		13/09/2022 03:58 PM	Soil	ALS: 1 Non ALS: 0	No	Partial 1/4			
056	0009_MW036_220913		13/09/2022 04:07 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
057	0009_SW100_220913		13/09/2022 03:58 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
058	0009_MW035_220913		13/09/2022 04:16 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
059	0009_QC301_220913		13/09/2022 04:35 PM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		
060	0009_MW013_HT_220913		13/09/2022 11:00 AM	Water	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

ALS COC#: 42288 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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	PARTIAL ANALYSIS GROUP NAME	MATRIX	SELECTED ANALYSIS NAME
001	0009_SW036_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
002	0009_SD036_220912	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
003	0009_QC500_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
004	0009_SD034_220912	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
005	0009_SW034_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
006	0009_SD035_220912	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
007	0009_SW035_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
008	0009_MW002_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
009	0009_MW005_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
010	0009_MW001_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
011	0009_MW003_LT_220012	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
012	0009_MW013_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
013	0009_MW004_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
014	0009_SD031_220912	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
015	0009_SW031_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

COC#: **42288** *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

016	0009_SD030_220912	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
017	0009_SW030_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
018	0009_MW014_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
019	0009_MW015_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
020	0009_MW007_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
021	0009_MW017_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
022	0009_MW016_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
023	0009_QC100_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
024	0009_MW009_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
025	0009_MW018_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
026	0009_MW019_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
027	0009_QC101_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
028	0009_MW011_LT_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
029	0009_QC300_220912	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
030	0009_SW032_22913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
031	0009_SD032_220913	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

COC#: 42288 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:

032	0009_SW033_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
033	0009_QC102_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
034	0009_SD033_220913	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
035	0009_QC103_220913	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
036	0009_MW001_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
037	0009_MW002_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
038	0009_QC104_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
039	0009_MW003_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
040	0009_MW005_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
041	0009_MW004_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
042	0009_MW007_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
043	0009_MW017_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
044	0009_MW014_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
045	0009_MW015_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
046	0009_MW016_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
047	0009_QC105_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

COC#: 42288 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO: [redacted]

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

048	0009_MW018_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
049	0009_MW009_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
050	0009_MW019_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
051	0009_MW011_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
052	0009_MW031_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
053	0009_SW101_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
054	0009_SD101_220913	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
055	0009_SD100_220913	Sediments SEDIMENT	Soil	- EP231X (solids) PFAS - Full Suite (28 analytes)
056	0009_MW036_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
057	0009_SW100_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
058	0009_MW035_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
059	0009_QC301_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)
060	0009_MW013_HT_220913	Waters WATER	Water	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

COC#: 42288 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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	0009_SW036_220912	HDPE (no PTFE)	20 mL	00352010065555	Grey	No	
001	0009_SW036_220912	HDPE (no PTFE)	20 mL	00352010065492	Grey	No	
002	0009_SD036_220912	HDPE Soil Jar	200 mL	00621019064199	Grey	No	
003	0009_QC500_220912	HDPE (no PTFE)	20 mL	00350621050485	Grey	No	
003	0009_QC500_220912	HDPE (no PTFE)	20 mL	00350621050440	Grey	No	
004	0009_SD034_220912	HDPE Soil Jar	200 mL	00621019064164	Grey	No	
005	0009_SW034_220912	HDPE (no PTFE)	20 mL	00350621051060	Grey	No	
005	0009_SW034_220912	HDPE (no PTFE)	20 mL	00352010065574	Grey	No	
006	0009_SD035_220912	HDPE Soil Jar	200 mL	00621019064183	Grey	No	
007	0009_SW035_220912	HDPE (no PTFE)	20 mL	00352010065593	Grey	No	
007	0009_SW035_220912	HDPE (no PTFE)	20 mL	00352010065566	Grey	No	
007	0009_SW035_220912	HDPE (no PTFE)	20 mL	00352010065628	Grey	No	
007	0009_SW035_220912	HDPE (no PTFE)	20 mL	00350621050871	Grey	No	
008	0009_MW002_LT_220912	HDPE (no PTFE)	20 mL	00352101033532	Grey	No	
008	0009_MW002_LT_220912	HDPE (no PTFE)	20 mL	00352101033455	Grey	No	
009	0009_MW005_LT_220912	HDPE (no PTFE)	20 mL	00350621050968	Grey	No	
009	0009_MW005_LT_220912	HDPE (no PTFE)	20 mL	00350621051053	Grey	No	
010	0009_MW001_LT_220912	HDPE (no PTFE)	20 mL	00350621050426	Grey	No	
010	0009_MW001_LT_220912	HDPE (no PTFE)	20 mL	00350621030141	Grey	No	
011	0009_MW003_LT_220012	HDPE (no PTFE)	20 mL	00350019045216	Grey	No	
011	0009_MW003_LT_220012	HDPE (no PTFE)	20 mL	00350019024911	Grey	No	
011	0009_MW003_LT_220012	HDPE (no PTFE)	20 mL	00350019024947	Grey	No	
011	0009_MW003_LT_220012	HDPE (no PTFE)	20 mL	00350019045258	Grey	No	
012	0009_MW013_LT_220912	HDPE (no PTFE)	20 mL	00352010065708	Grey	No	
012	0009_MW013_LT_220912	HDPE (no PTFE)	20 mL	00352010065712	Grey	No	
013	0009_MW004_LT_220912	HDPE (no PTFE)	20 mL	00350621051067	Grey	No	

CHAIN OF CUSTODY

COC#: 42288 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:

013	0009_MW004_LT_220912	HDPE (no PTFE)	20 mL	00350621050884	Grey	No	
014	0009_SD031_220912	HDPE Soil Jar	200 mL	00621019064260	Grey	No	
015	0009_SW031_220912	HDPE (no PTFE)	20 mL	00350621051005	Grey	No	
015	0009_SW031_220912	HDPE (no PTFE)	20 mL	00350621051094	Grey	No	
016	0009_SD030_220912	HDPE Soil Jar	200 mL	00621019064239	Grey	No	
017	0009_SW030_220912	HDPE (no PTFE)	20 mL	00350621050878	Grey	No	
017	0009_SW030_220912	HDPE (no PTFE)	20 mL	00350621051079	Grey	No	
018	0009_MW014_LT_220912	HDPE (no PTFE)	20 mL	00350019045198	Grey	No	
018	0009_MW014_LT_220912	HDPE (no PTFE)	20 mL	00350019045179	Grey	No	
019	0009_MW015_LT_220912	HDPE (no PTFE)	20 mL	00352010065623	Grey	No	
019	0009_MW015_LT_220912	HDPE (no PTFE)	20 mL	00352010065483	Grey	No	
020	0009_MW007_LT_220912	HDPE (no PTFE)	20 mL	00350019024915	Grey	No	
020	0009_MW007_LT_220912	HDPE (no PTFE)	20 mL	00350019024925	Grey	No	
021	0009_MW017_LT_220912	HDPE (no PTFE)	20 mL	00350621050976	Grey	No	
021	0009_MW017_LT_220912	HDPE (no PTFE)	20 mL	00350621050943	Grey	No	
022	0009_MW016_LT_220912	HDPE (no PTFE)	20 mL	00350621051002	Grey	No	
022	0009_MW016_LT_220912	HDPE (no PTFE)	20 mL	00350621051069	Grey	No	
023	0009_QC100_220912	HDPE (no PTFE)	20 mL	00352010065651	Grey	No	
023	0009_QC100_220912	HDPE (no PTFE)	20 mL	00352010065585	Grey	No	
024	0009_MW009_LT_220912	HDPE (no PTFE)	20 mL	00350621050946	Grey	No	
024	0009_MW009_LT_220912	HDPE (no PTFE)	20 mL	00350621050963	Grey	No	
025	0009_MW018_LT_220912	HDPE (no PTFE)	20 mL	00352010065693	Grey	No	
025	0009_MW018_LT_220912	HDPE (no PTFE)	20 mL	00352010065577	Grey	No	
025	0009_MW018_LT_220912	HDPE (no PTFE)	20 mL	00350621030165	Grey	No	
025	0009_MW018_LT_220912	HDPE (no PTFE)	20 mL	00350621030151	Grey	No	
026	0009_MW019_LT_220912	HDPE (no PTFE)	20 mL	00352010065539	Grey	No	
026	0009_MW019_LT_220912	HDPE (no PTFE)	20 mL	00352010065440	Grey	No	

CHAIN OF CUSTODY

COC#: 42288 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:

027	0009_QC101_220912	HDPE (no PTFE)	20 mL	00352010065556	Grey	No	
027	0009_QC101_220912	HDPE (no PTFE)	20 mL	00352010065557	Grey	No	
028	0009_MW011_LT_220912	HDPE (no PTFE)	20 mL	00350621051108	Grey	No	
028	0009_MW011_LT_220912	HDPE (no PTFE)	20 mL	00350621050889	Grey	No	
029	0009_QC300_220912	HDPE (no PTFE)	20 mL	00352010078124	Grey	No	
029	0009_QC300_220912	HDPE (no PTFE)	20 mL	00352010078240	Grey	No	
030	0009_SW032_22913	HDPE (no PTFE)	20 mL	00350621050461	Grey	No	
030	0009_SW032_22913	HDPE (no PTFE)	20 mL	00350621050412	Grey	No	
031	0009_SD032_220913	HDPE Soil Jar	200 mL	00621019064234	Grey	No	
032	0009_SW033_220913	HDPE (no PTFE)	20 mL	00352010065691	Grey	No	
032	0009_SW033_220913	HDPE (no PTFE)	20 mL	00352010065588	Grey	No	
033	0009_QC102_220913	HDPE (no PTFE)	20 mL	00350621051004	Grey	No	
033	0009_QC102_220913	HDPE (no PTFE)	20 mL	00350621050883	Grey	No	
034	0009_SD033_220913	HDPE Soil Jar	200 mL	00621019064175	Grey	No	
035	0009_QC103_220913	HDPE Soil Jar	200 mL	00621019064216	Grey	No	
036	0009_MW001_HT_220913	HDPE (no PTFE)	20 mL	00352010065472	Grey	No	
036	0009_MW001_HT_220913	HDPE (no PTFE)	20 mL	00352010065616	Grey	No	
036	0009_MW001_HT_220913	HDPE (no PTFE)	20 mL	00352010065445	Grey	No	
037	0009_MW002_HT_220913	HDPE (no PTFE)	20 mL	00352010065640	Grey	No	
037	0009_MW002_HT_220913	HDPE (no PTFE)	20 mL	00352010065553	Grey	No	
038	0009_QC104_220913	HDPE (no PTFE)	20 mL	00352010065624	Grey	No	
038	0009_QC104_220913	HDPE (no PTFE)	20 mL	00352010065474	Grey	No	
039	0009_MW003_HT_220913	HDPE (no PTFE)	20 mL	00352010065444	Grey	No	
039	0009_MW003_HT_220913	HDPE (no PTFE)	20 mL	00352010065573	Grey	No	
040	0009_MW005_HT_220913	HDPE (no PTFE)	20 mL	00352010065663	Grey	No	
040	0009_MW005_HT_220913	HDPE (no PTFE)	20 mL	00352010065450	Grey	No	
041	0009_MW004_HT_220913	HDPE (no PTFE)	20 mL	00352010065430	Grey	No	

CHAIN OF CUSTODY

COC#: 42288 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO: [redacted]

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

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:

041	0009_MW004_HT_220913	HDPE (no PTFE)	20 mL	00352010065435	Grey	No	
042	0009_MW007_HT_220913	HDPE (no PTFE)	20 mL	00352010065523	Grey	No	
042	0009_MW007_HT_220913	HDPE (no PTFE)	20 mL	00352010065465	Grey	No	
043	0009_MW017_HT_220913	HDPE (no PTFE)	20 mL	00352010065439	Grey	No	
043	0009_MW017_HT_220913	HDPE (no PTFE)	20 mL	00352010065447	Grey	No	
043	0009_MW017_HT_220913	HDPE (no PTFE)	20 mL	00352010065594	Grey	No	
043	0009_MW017_HT_220913	HDPE (no PTFE)	20 mL	00352010065446	Grey	No	
044	0009_MW014_HT_220913	HDPE (no PTFE)	20 mL	00350621050906	Grey	No	
044	0009_MW014_HT_220913	HDPE (no PTFE)	20 mL	00350621050899	Grey	No	
045	0009_MW015_HT_220913	HDPE (no PTFE)	20 mL	00352010065597	Grey	No	
045	0009_MW015_HT_220913	HDPE (no PTFE)	20 mL	00352010065657	Grey	No	
046	0009_MW016_HT_220913	HDPE (no PTFE)	20 mL	00352010065598	Grey	No	
046	0009_MW016_HT_220913	HDPE (no PTFE)	20 mL	00352010065655	Grey	No	
047	0009_QC105_220913	HDPE (no PTFE)	20 mL	00352010065564	Grey	No	
047	0009_QC105_220913	HDPE (no PTFE)	20 mL	00352010065547	Grey	No	
048	0009_MW018_HT_220913	HDPE (no PTFE)	20 mL	00352010065487	Grey	No	
048	0009_MW018_HT_220913	HDPE (no PTFE)	20 mL	00352010065449	Grey	No	
049	0009_MW009_HT_220913	HDPE (no PTFE)	20 mL	00352010065658	Grey	No	
049	0009_MW009_HT_220913	HDPE (no PTFE)	20 mL	00352010065615	Grey	No	
050	0009_MW019_HT_220913	HDPE (no PTFE)	20 mL	00352010065488	Grey	No	
050	0009_MW019_HT_220913	HDPE (no PTFE)	20 mL	00352010065517	Grey	No	
050	0009_MW019_HT_220913	HDPE (no PTFE)	20 mL	00352010065620	Grey	No	
050	0009_MW019_HT_220913	HDPE (no PTFE)	20 mL	00352010065560	Grey	No	
051	0009_MW011_HT_220913	HDPE (no PTFE)	20 mL	00352010065436	Grey	No	
051	0009_MW011_HT_220913	HDPE (no PTFE)	20 mL	00352010065469	Grey	No	
052	0009_MW031_220913	HDPE (no PTFE)	20 mL	00352010065526	Grey	No	
052	0009_MW031_220913	HDPE (no PTFE)	20 mL	00352010065454	Grey	No	

CHAIN OF CUSTODY

COC#: **42288** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_20

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:

053	0009_SW101_220913	HDPE (no PTFE)	20 mL	00352010065477	Grey	No	
053	0009_SW101_220913	HDPE (no PTFE)	20 mL	00352010065438	Grey	No	
054	0009_SD101_220913	HDPE Soil Jar	200 mL	00621019064244	Grey	No	
055	0009_SD100_220913	HDPE Soil Jar	200 mL	00621019064223	Grey	No	
056	0009_MW036_220913	HDPE (no PTFE)	20 mL	00352010065565	Grey	No	
056	0009_MW036_220913	HDPE (no PTFE)	20 mL	00352010065561	Grey	No	
057	0009_SW100_220913	HDPE (no PTFE)	20 mL	00352010065514	Grey	No	
057	0009_SW100_220913	HDPE (no PTFE)	20 mL	00352010065537	Grey	No	
058	0009_MW035_220913	HDPE (no PTFE)	20 mL	00352010065578	Grey	No	
058	0009_MW035_220913	HDPE (no PTFE)	20 mL	00352010065545	Grey	No	
059	0009_QC301_220913	HDPE (no PTFE)	20 mL	00352010065576	Grey	No	
059	0009_QC301_220913	HDPE (no PTFE)	20 mL	00352010065520	Grey	No	
060	0009_MW013_HT_220913	HDPE (no PTFE)	20 mL	00352010065467	Grey	No	
060	0009_MW013_HT_220913	HDPE (no PTFE)	20 mL	00352010065452	Grey	No	

Total Bottle Count: ALS: 121, Non ALS: 0

CHAIN OF CUSTODY DOCUMENTATION

RECEIPT REF

CLIENT: AECOM Australia

ADDRESS / OFFICE: AECOM Townsville, level 5 7-13 Tomlins St, South Townsville

PROJECT MANAGER: [redacted]

PROJECT ID: QLD_0009_PFASOMP_20

SITE: QLD_0009

P.O. NO.: 60612467_4.1

RESULTS REQUIRED (Date): Standard TAT

QUOTE NO:

SAMPLER: [redacted]

MOBILE:

PHONE:

EMAIL REPORT TO: [redacted]

EMAIL INVOICE TO: [redacted]

NMI

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No N/A

SAMPLE TEMPERATURE

CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

ALS ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFORMATION: Type / Code	Total bottles	WATER - PFAS Standard 28 analytes	SOIL - PFAS Standard 28 analytes	HOLD
	0009_QC200_220912	W	12/09/22		1 X P	1	x		
	0009_QC201_220912	W	12/09/22		1 X P	1	x		
	0009_QC202_220913	W	13/09/22		1 X P	1	x		
	0009_QC203_220913	S	13/09/22		1 X P	1		x	
	0009_QC204_220913	W	13/09/22		1 X P	1	x		
	0009_QC205_220913	W	13/09/22		1 X P	1	x		

N22/018477
N22/018478
N22/018479
N22/018480
N22/018481
N22/018482

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected".
Extra volume for QC or trace LORs etc.

Name: [redacted]

Of: AECOM

Name:

Of:

Date: 14/09/22

Time: 3:00pm

RECEIVED BY

Name:

Of:

Date:

Time:

Name:

Of:

Date:

Time:

METHOD OF SHIPMENT

Con' Note No:

Transport Co:

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;
V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; 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

ENFM (204/5)

Appendix E

Laboratory Analytical Certificates and QA/QC Reports

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ET2204898**	Page	: 1 of 27
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 5 7-13 TOMLINS STREET SOUTH TOWNSVILLE 4810	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 15-Sep-2022 10:52
Order number	: 60612487_4.1	Date Analysis Commenced	: 21-Sep-2022
C-O-C number	: 42288	Issue Date	: 07-Oct-2022 14:42
Sampler	: [redacted]		
Site	: QLD_0009		
Quote number	: TV/007/21 v2 - Compass		
No. of samples received	: 60		
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]	Assistant Laboratory Manager	Brisbane Inorganics, Stafford, QLD
[redacted]	Assistant Laboratory Manager	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 QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X PFAS: The LOR of particular analytes for sample “0009_SD101_220913” have been raised due to sample matrix interferences.
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- EP231X PFAS: Whole bottle extraction was not possible for particular samples. Samples required dilution prior to extraction due to either matrix interference (sediment) or the presence of high level contaminants. LOR values have been adjusted accordingly.
- 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.
- 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: SOIL (Matrix: SOIL)				Sample ID	0009_SD036_220912	0009_SD034_220912	0009_SD035_220912	0009_SD031_220912	0009_SD030_220912
				Sampling date / time	12-Sep-2022 12:08	12-Sep-2022 14:07	12-Sep-2022 14:36	12-Sep-2022 15:15	12-Sep-2022 15:20
Compound	CAS Number	LOR	Unit		ET2204898-002	ET2204898-004	ET2204898-006	ET2204898-014	ET2204898-016
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**45.0**	**50.8**	**51.3**	**43.5**	**38.3**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0003**	**0.0007**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0002**	**0.0005**	**0.0019**	**0.0046**	**0.0039**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD036_220912	0009_SD034_220912	0009_SD035_220912	0009_SD031_220912	0009_SD030_220912
				Sampling date / time	12-Sep-2022 12:08	12-Sep-2022 14:07	12-Sep-2022 14:36	12-Sep-2022 15:15	12-Sep-2022 15:20
Compound	CAS Number	LOR	Unit		ET2204898-002	ET2204898-004	ET2204898-006	ET2204898-014	ET2204898-016
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0002**	**0.0005**	**0.0019**	**0.0049**	**0.0046**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0002**	**0.0005**	**0.0019**	**0.0049**	**0.0046**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0002**	**0.0005**	**0.0019**	**0.0049**	**0.0046**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**89.5**	**76.0**	**76.5**	**81.5**	**82.0**
13C8-PFOA	----	0.0002	%		**120**	**121**	**108**	**111**	**102**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD032_220913	0009_SD033_220913	0009_QC103_220913	0009_SD101_220913	0009_SD100_220913
				Sampling date / time	13-Sep-2022 08:50	13-Sep-2022 09:37	13-Sep-2022 09:39	13-Sep-2022 15:41	13-Sep-2022 15:58
Compound	CAS Number	LOR	Unit		ET2204898-031	ET2204898-034	ET2204898-035	ET2204898-054	ET2204898-055
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**51.3**	**51.6**	**50.3**	**47.5**	**47.8**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0014**	**0.0004**	**0.0005**	<0.0004	**0.0007**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0002**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0002**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0004	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0020	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD032_220913	0009_SD033_220913	0009_QC103_220913	0009_SD101_220913	0009_SD100_220913
				Sampling date / time	13-Sep-2022 08:50	13-Sep-2022 09:37	13-Sep-2022 09:39	13-Sep-2022 15:41	13-Sep-2022 15:58
Compound	CAS Number	LOR	Unit		ET2204898-031	ET2204898-034	ET2204898-035	ET2204898-054	ET2204898-055
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0014**	**0.0004**	**0.0005**	<0.0002	**0.0011**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0014**	**0.0004**	**0.0005**	<0.0002	**0.0007**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0014**	**0.0004**	**0.0005**	<0.0002	**0.0011**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**79.0**	**88.0**	**76.5**	**86.5**	**82.5**
13C8-PFOA	----	0.0002	%		**106**	**117**	**115**	**108**	**116**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW036_220912	0009_QC500_220912	0009_SW034_220912	0009_SW035_220912	0009_MW002_LT_220912
				Sampling date / time	12-Sep-2022 12:03	12-Sep-2022 12:10	12-Sep-2022 14:07	12-Sep-2022 14:37	12-Sep-2022 16:00
					ET2204898-001	ET2204898-003	ET2204898-005	ET2204898-007	ET2204898-008
					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	**1.77**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**1.83**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.02	<0.01	**21.6**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**2.03**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	<0.02	**0.02**	**44.7**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.08
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	**0.5**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**1.40**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**7.03**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**1.20**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.02	<0.01	**2.59**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.08
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.08
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.08
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.08
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.08
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.06	<0.05	<0.21
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.08
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.06	<0.05	<0.21
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.06	<0.05	<0.21

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW036_220912	0009_QC500_220912	0009_SW034_220912	0009_SW035_220912	0009_MW002_LT_220912
				Sampling date / time	12-Sep-2022 12:03	12-Sep-2022 12:10	12-Sep-2022 14:07	12-Sep-2022 14:37	12-Sep-2022 16:00
					ET2204898-001	ET2204898-003	ET2204898-005	ET2204898-007	ET2204898-008
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.06	<0.05	<0.21
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.06	<0.05	<0.21
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.08
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.08
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	<0.08
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.08
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.08
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.08
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<0.01	<0.02	**0.02**	**84.6**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	<0.02	**0.02**	**66.3**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	<0.02	**0.02**	**80.8**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**97.4**	**94.9**	**93.9**	**94.2**	**104**
13C8-PFOA	----	0.02	%		**98.9**	**98.6**	**97.8**	**96.5**	**99.3**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW005_LT_220912	0009_MW001_LT_220912	0009_MW003_LT_220012	0009_MW013_LT_220912	0009_MW004_LT_220912
				Sampling date / time	12-Sep-2022 15:45	12-Sep-2022 16:03	12-Sep-2022 15:55	12-Sep-2022 15:48	12-Sep-2022 15:30
					ET2204898-009	ET2204898-010	ET2204898-011	ET2204898-012	ET2204898-013
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.34**	**0.02**	**0.48**	**0.08**	**0.39**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.35**	<0.02	**0.50**	**0.07**	**0.32**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**4.66**	**0.11**	**6.90**	**0.64**	**3.71**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.52**	<0.02	**0.55**	**0.03**	**0.45**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**35.0**	**0.04**	**26.7**	**1.75**	**20.9**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.05	<0.02	<0.05	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.2	<0.1	<0.2	<0.1	**0.1**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.56**	<0.02	**0.33**	**0.07**	**0.46**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**1.09**	**0.04**	**1.64**	**0.22**	**1.10**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.26**	<0.02	**0.27**	**0.04**	**0.34**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.71**	<0.01	**0.77**	**0.06**	**0.72**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.05	<0.02	<0.05	**0.05**	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.05	<0.02	<0.05	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.05	<0.02	<0.05	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.05	<0.02	<0.05	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.05	<0.02	<0.05	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.13	<0.05	<0.12	<0.05	<0.06
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.05	<0.02	**0.07**	<0.02	**0.09**
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.13	<0.05	<0.12	<0.05	<0.06
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.13	<0.05	<0.12	<0.05	<0.06

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW005_LT_220912	0009_MW001_LT_220912	0009_MW003_LT_220012	0009_MW013_LT_220912	0009_MW004_LT_220912
				Sampling date / time	12-Sep-2022 15:45	12-Sep-2022 16:03	12-Sep-2022 15:55	12-Sep-2022 15:48	12-Sep-2022 15:30
					ET2204898-009	ET2204898-010	ET2204898-011	ET2204898-012	ET2204898-013
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.13	<0.05	<0.12	<0.05	<0.06
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.13	<0.05	<0.12	<0.05	<0.06
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.05	<0.02	<0.05	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.05	<0.02	<0.05	<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	**0.06**	<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	<0.12
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		**43.5**	**0.21**	**38.2**	**3.07**	**28.6**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**39.7**	**0.15**	**33.6**	**2.39**	**24.6**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**42.6**	**0.21**	**37.1**	**2.92**	**27.7**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**99.0**	**102**	**96.7**	**114**	**92.8**
13C8-PFOA	----	0.02	%		**99.0**	**102**	**97.6**	**99.7**	**98.9**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW031_220912	0009_SW030_220912	0009_MW014_LT_220912	0009_MW015_LT_220912	0009_MW007_LT_220912
				Sampling date / time	12-Sep-2022 15:15	12-Sep-2022 15:20	12-Sep-2022 17:01	12-Sep-2022 17:23	12-Sep-2022 17:37
					ET2204898-015	ET2204898-017	ET2204898-018	ET2204898-019	ET2204898-020
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.07**	**0.39**	<0.02	**0.50**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.06**	**0.40**	<0.02	**0.68**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.02	**0.76**	**7.78**	**0.22**	**5.45**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	**0.08**	**0.57**	<0.02	**0.64**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.06**	**2.29**	**65.8**	**1.80**	**81.2**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.14	<0.02	<0.10
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.4	<0.1	<0.5
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	**0.05**	**0.43**	**0.05**	**0.24**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.14**	**2.90**	**0.11**	**1.42**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**0.05**	**0.28**	**0.02**	**0.18**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.02	**0.09**	**0.81**	**0.02**	**0.70**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.09	<0.02	<0.10
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.09	<0.02	<0.10
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.09	<0.02	<0.10
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.09	<0.02	<0.10
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.09	<0.02	<0.10
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.06	<0.05	<0.23	<0.05	<0.25
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	**0.26**	<0.02	<0.10
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.06	<0.05	<0.23	<0.05	<0.25
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.06	<0.05	<0.23	<0.05	<0.25

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW031_220912	0009_SW030_220912	0009_MW014_LT_220912	0009_MW015_LT_220912	0009_MW007_LT_220912
				Sampling date / time	12-Sep-2022 15:15	12-Sep-2022 15:20	12-Sep-2022 17:01	12-Sep-2022 17:23	12-Sep-2022 17:37
Compound	CAS Number	LOR	Unit		ET2204898-015	ET2204898-017	ET2204898-018	ET2204898-019	ET2204898-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.06	<0.05	<0.23	<0.05	<0.25
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.06	<0.05	<0.23	<0.05	<0.25
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.09	<0.02	<0.10
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.09	<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		<0.05	<0.05	<0.09	<0.05	<0.10
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.09	**0.16**	<0.10
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.09	<0.05	<0.10
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.09	<0.05	<0.10
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**0.06**	**3.59**	**79.6**	**2.38**	**91.0**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.06**	**3.05**	**73.6**	**2.02**	**86.6**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.06**	**3.45**	**78.4**	**2.38**	**89.7**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**104**	**94.7**	**114**	**76.6**	**86.8**
13C8-PFOA	----	0.02	%		**100**	**97.2**	**105**	**99.5**	**97.9**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW017_LT_220912	0009_MW016_LT_220912	0009_QC100_220912	0009_MW009_LT_220912	0009_MW018_LT_220912
				Sampling date / time	12-Sep-2022 17:48	12-Sep-2022 18:07	12-Sep-2022 18:08	12-Sep-2022 18:19	12-Sep-2022 18:30
					ET2204898-021	ET2204898-022	ET2204898-023	ET2204898-024	ET2204898-025
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.20**	**0.20**	**0.03**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.26**	**0.26**	**0.03**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.20**	**1.80**	**1.71**	**0.30**	<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		**1.02**	**0.14**	**0.14**	**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	**0.08**	**0.08**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.04**	**0.38**	**0.38**	**0.04**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**0.04**	**0.04**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.01**	<0.01	<0.01	**0.02**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW017_LT_220912	0009_MW016_LT_220912	0009_QC100_220912	0009_MW009_LT_220912	0009_MW018_LT_220912
				Sampling date / time	12-Sep-2022 17:48	12-Sep-2022 18:07	12-Sep-2022 18:08	12-Sep-2022 18:19	12-Sep-2022 18:30
Compound	CAS Number	LOR	Unit		ET2204898-021	ET2204898-022	ET2204898-023	ET2204898-024	ET2204898-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**1.27**	**2.90**	**2.81**	**0.54**	**0.02**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**1.22**	**1.94**	**1.85**	**0.42**	**0.02**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.27**	**2.64**	**2.55**	**0.51**	**0.02**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**103**	**95.4**	**101**	**89.2**	**106**
13C8-PFOA	----	0.02	%		**95.6**	**97.3**	**96.7**	**102**	**105**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW019_LT_220912	0009_QC101_220912	0009_MW011_LT_220912	0009_QC300_220912	0009_SW032_22913
				Sampling date / time	12-Sep-2022 18:40	12-Sep-2022 18:40	12-Sep-2022 18:55	12-Sep-2022 19:10	13-Sep-2022 08:50
					ET2204898-026	ET2204898-027	ET2204898-028	ET2204898-029	ET2204898-030
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.04**	**0.03**	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.04**	**0.05**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.40**	**0.40**	**0.02**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.10**	**0.10**	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**2.71**	**3.18**	**0.15**	<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		**0.08**	**0.08**	**0.03**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.13**	**0.13**	**0.05**	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.06**	**0.06**	**0.09**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.12**	**0.12**	**0.26**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW019_LT_220912	0009_QC101_220912	0009_MW011_LT_220912	0009_QC300_220912	0009_SW032_22913
				Sampling date / time	12-Sep-2022 18:40	12-Sep-2022 18:40	12-Sep-2022 18:55	12-Sep-2022 19:10	13-Sep-2022 08:50
					ET2204898-026	ET2204898-027	ET2204898-028	ET2204898-029	ET2204898-030
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**3.68**	**4.15**	**0.60**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**3.11**	**3.58**	**0.17**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**3.54**	**4.00**	**0.60**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**88.3**	**114**	**93.4**	**90.9**	**93.2**
13C8-PFOA	----	0.02	%		**105**	**106**	**100**	**104**	**104**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW033_220913	0009_QC102_220913	0009_MW001_HT_220913	0009_MW002_HT_220913	0009_QC104_220913
				Sampling date / time	13-Sep-2022 09:36	13-Sep-2022 09:37	13-Sep-2022 10:20	13-Sep-2022 10:33	13-Sep-2022 10:33
					ET2204898-032	ET2204898-033	ET2204898-036	ET2204898-037	ET2204898-038
					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**	**2.07**	**2.02**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	**2.20**	**2.30**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	**0.07**	**24.1**	**24.9**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	**2.24**	**2.42**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	**0.04**	**55.4**	**58.4**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.10	<0.10
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	**0.5**	**0.6**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	**1.68**	**1.72**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	**0.03**	**7.53**	**8.25**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	**1.48**	**1.38**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	**3.12**	**3.06**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.10	<0.10
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.10	<0.10
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.10	<0.10
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.10	<0.10
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.10	<0.10
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.25	<0.25
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.10	<0.10
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.25	<0.25
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.25	<0.25

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_SW033_220913	0009_QC102_220913	0009_MW001_HT_220913	0009_MW002_HT_220913	0009_QC104_220913
				Sampling date / time	13-Sep-2022 09:36	13-Sep-2022 09:37	13-Sep-2022 10:20	13-Sep-2022 10:33	13-Sep-2022 10:33
					ET2204898-032	ET2204898-033	ET2204898-036	ET2204898-037	ET2204898-038
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.25	<0.25
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.25	<0.25
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.10	<0.10
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.10	<0.10
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	<0.10	<0.10
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.10	<0.10
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.10	<0.10
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.10	<0.10
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<0.01	**0.16**	**100**	**105**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.11**	**79.5**	**83.3**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**0.16**	**95.9**	**100**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**101**	**112**	**88.2**	**88.9**	**91.8**
13C8-PFOA	----	0.02	%		**101**	**99.5**	**98.0**	**100**	**102**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW003_HT_220913	0009_MW005_HT_220913	0009_MW004_HT_220913	0009_MW007_HT_220913	0009_MW017_HT_220913
				Sampling date / time	13-Sep-2022 10:49	13-Sep-2022 11:07	13-Sep-2022 11:18	13-Sep-2022 11:58	13-Sep-2022 12:10
					ET2204898-039	ET2204898-040	ET2204898-041	ET2204898-042	ET2204898-043
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.49**	**0.42**	**0.39**	**0.59**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.55**	**0.34**	**0.38**	**0.74**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**7.59**	**5.07**	**4.48**	**5.98**	**0.19**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.59**	**0.58**	**0.50**	**0.62**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**22.6**	**43.0**	**27.7**	**92.4**	**0.81**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.10	<0.02	<0.10	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.5	**0.1**	<0.5	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.38**	**0.63**	**0.53**	**0.36**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**1.47**	**1.13**	**1.00**	**1.59**	**0.03**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.32**	**0.32**	**0.38**	**0.26**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.85**	**0.73**	**0.75**	**0.83**	**0.01**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		**0.04**	<0.10	**0.03**	<0.10	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.10	<0.02	<0.10	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.10	<0.02	<0.10	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.10	<0.02	<0.10	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.10	<0.02	<0.10	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.06	<0.25	<0.06	<0.25	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		**0.06**	<0.10	**0.13**	<0.10	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.06	<0.25	<0.06	<0.25	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.06	<0.25	<0.06	<0.25	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW003_HT_220913	0009_MW005_HT_220913	0009_MW004_HT_220913	0009_MW007_HT_220913	0009_MW017_HT_220913
				Sampling date / time	13-Sep-2022 10:49	13-Sep-2022 11:07	13-Sep-2022 11:18	13-Sep-2022 11:58	13-Sep-2022 12:10
Compound	CAS Number	LOR	Unit		ET2204898-039	ET2204898-040	ET2204898-041	ET2204898-042	ET2204898-043
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.06	<0.25	<0.06	<0.25	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.06	<0.25	<0.06	<0.25	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.10	<0.02	<0.10	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.10	<0.02	<0.10	<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	<0.10	<0.05	<0.10	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.10	<0.05	<0.10	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.10	<0.05	<0.10	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.10	<0.05	<0.10	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**34.9**	**52.2**	**36.4**	**103**	**1.04**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**30.2**	**48.1**	**32.2**	**98.4**	**1.00**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**33.7**	**51.3**	**35.3**	**102**	**1.04**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**97.4**	**107**	**94.9**	**115**	**99.2**
13C8-PFOA	----	0.02	%		**101**	**102**	**99.1**	**103**	**97.1**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW014_HT_220913	0009_MW015_HT_220913	0009_MW016_HT_220913	0009_QC105_220913	0009_MW018_HT_220913
				Sampling date / time	13-Sep-2022 12:22	13-Sep-2022 12:29	13-Sep-2022 12:46	13-Sep-2022 12:48	13-Sep-2022 12:58
					ET2204898-044	ET2204898-045	ET2204898-046	ET2204898-047	ET2204898-048
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.25**	<0.02	**0.20**	**0.17**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.31**	**0.02**	**0.28**	**0.31**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**6.44**	**0.40**	**2.05**	**2.15**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.44**	**0.03**	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**100**	**3.38**	**0.11**	**0.11**	**0.03**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.10	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.5	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.41**	**0.08**	**0.08**	**0.10**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**2.59**	**0.16**	**0.38**	**0.43**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.30**	**0.03**	**0.06**	**0.04**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.74**	**0.05**	**0.01**	**0.01**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.10	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.10	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.10	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.10	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.10	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.25	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		**0.32**	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.25	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.25	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW014_HT_220913	0009_MW015_HT_220913	0009_MW016_HT_220913	0009_QC105_220913	0009_MW018_HT_220913
				Sampling date / time	13-Sep-2022 12:22	13-Sep-2022 12:29	13-Sep-2022 12:46	13-Sep-2022 12:48	13-Sep-2022 12:58
					ET2204898-044	ET2204898-045	ET2204898-046	ET2204898-047	ET2204898-048
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.25	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.25	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.10	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.10	<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		<0.10	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.10	**0.10**	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.10	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.10	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**112**	**4.25**	**3.17**	**3.32**	**0.03**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**106**	**3.78**	**2.16**	**2.26**	**0.03**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**111**	**4.20**	**2.89**	**3.01**	**0.03**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**101**	**108**	**113**	**82.0**	**90.3**
13C8-PFOA	----	0.02	%		**103**	**105**	**104**	**98.7**	**90.2**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW009_HT_220913	0009_MW019_HT_220913	0009_MW011_HT_220913	0009_MW031_220913	0009_SW101_220913
				Sampling date / time	13-Sep-2022 13:08	13-Sep-2022 13:20	13-Sep-2022 13:31	13-Sep-2022 15:25	13-Sep-2022 15:41
					ET2204898-049	ET2204898-050	ET2204898-051	ET2204898-052	ET2204898-053
					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		**0.03**	**0.04**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.35**	**0.48**	**0.03**	**0.04**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	**0.10**	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.13**	**3.22**	**0.18**	**0.22**	<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	**0.09**	**0.04**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.04**	**0.14**	**0.07**	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**0.04**	**0.06**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.01**	**0.10**	**0.21**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW009_HT_220913	0009_MW019_HT_220913	0009_MW011_HT_220913	0009_MW031_220913	0009_SW101_220913
				Sampling date / time	13-Sep-2022 13:08	13-Sep-2022 13:20	13-Sep-2022 13:31	13-Sep-2022 15:25	13-Sep-2022 15:41
Compound	CAS Number	LOR	Unit		ET2204898-049	ET2204898-050	ET2204898-051	ET2204898-052	ET2204898-053
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.48**	<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		**0.58**	**4.24**	**0.59**	**0.74**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.48**	**3.70**	**0.21**	**0.26**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.55**	**4.10**	**0.59**	**0.74**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**77.9**	**77.0**	**78.3**	**80.3**	**87.7**
13C8-PFOA	----	0.02	%		**96.3**	**105**	**93.0**	**90.0**	**97.9**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW036_220913	0009_SW100_220913	0009_MW035_220913	0009_QC301_220913	0009_MW013_HT_220913
				Sampling date / time	13-Sep-2022 16:07	13-Sep-2022 15:58	13-Sep-2022 16:16	13-Sep-2022 16:35	13-Sep-2022 11:00
					ET2204898-056	ET2204898-057	ET2204898-058	ET2204898-059	ET2204898-060
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.06**	<0.02	**0.02**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.04**	<0.02	**0.03**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.12**	<0.01	**0.18**	<0.01	**0.48**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**0.03**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.22**	<0.01	**0.08**	<0.01	**1.95**
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	**0.05**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.02**	<0.02	<0.02	<0.02	**0.10**
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	**0.04**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**0.14**
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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW036_220913	0009_SW100_220913	0009_MW035_220913	0009_QC301_220913	0009_MW013_HT_220913
				Sampling date / time	13-Sep-2022 16:07	13-Sep-2022 15:58	13-Sep-2022 16:16	13-Sep-2022 16:35	13-Sep-2022 11:00
Compound	CAS Number	LOR	Unit		ET2204898-056	ET2204898-057	ET2204898-058	ET2204898-059	ET2204898-060
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**0.36**	<0.01	**0.36**	<0.01	**2.86**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.34**	<0.01	**0.26**	<0.01	**2.43**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.36**	<0.01	**0.32**	<0.01	**2.66**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**78.8**	**80.0**	**90.9**	**89.9**	**81.4**
13C8-PFOA	----	0.02	%		**94.1**	**95.2**	**93.9**	**95.8**	**92.0**

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(WATER) EP231D: (n:2) Fluorotelomer Sulfonic Acids
(WATER) EP231P: PFAS Sums
(WATER) EP231S: PFAS Surrogate
(WATER) EP231A: Perfluoroalkyl Sulfonic Acids
(WATER) EP231B: Perfluoroalkyl Carboxylic Acids
(WATER) EP231C: Perfluoroalkyl Sulfonamides
(SOIL) EP231B: Perfluoroalkyl Carboxylic Acids
(SOIL) EP231D: (n:2) Fluorotelomer Sulfonic Acids
(SOIL) EP231C: Perfluoroalkyl Sulfonamides
(SOIL) EP231A: Perfluoroalkyl Sulfonic Acids
(SOIL) EP231P: PFAS Sums
(SOIL) EP231S: PFAS Surrogate
(SOIL) EA055: Moisture Content (Dried @ 105-110°C)

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ET2204898**	Page	: 1 of 14
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 5 7-13 TOMLINS STREET SOUTH TOWNSVILLE 4810	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 15-Sep-2022
Order number	: 60612487_4.1	Date Analysis Commenced	: 21-Sep-2022
C-O-C number	: 42288	Issue Date	: 07-Oct-2022
Sampler	: [redacted]		
Site	: QLD_0009		
Quote number	: TV/007/21 v2 - Compass		
No. of samples received	: 60		
No. of samples analysed	: 60		

ilac-MRA NATA
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]	Assistant Laboratory Manager	Brisbane Inorganics, Stafford, QLD
[redacted]	Assistant Laboratory Manager	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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4593689)									
ET2204898-002	0009_SD036_220912	EA055: Moisture Content	----	0.1	%	45.0	47.0	4.3	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4593688)									
EB2227769-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ET2204898-034	0009_SD033_220913	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0004	0.0005	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4593688)									
EB2227769-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 4593688) - continued									
EB2227769-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ET2204898-034	0009_SD033_220913	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4593688)									
EB2227769-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ET2204898-034	0009_SD033_220913	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4593688)									

Sub-Matrix: **SOIL**

				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: 4593688) - continued									
EB2227769-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ET2204898-034	0009_SD033_220913	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	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 (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4603198)									
ET2204898-025	0009_MW018_LT_220912	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	0.02	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: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ET2204898-038	0009_QC104_220913	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	24.9	23.7	5.0	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	58.4	62.0	5.9	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	2.02	2.05	1.5	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	2.30	2.14	7.2	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	2.42	2.31	4.7	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.10	<0.10	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4603199)									
ET2204898-050	0009_MW019_HT_220913	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.48	0.45	5.3	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	3.22	3.04	5.8	0% - 20%
		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	0.04	0.04	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.10	0.10	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: 4603198)									
ET2204898-025	0009_MW018_LT_220912	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	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: 4603198) - continued									
ET2204898-025	0009_MW018_LT_220912	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
ET2204898-038	0009_QC104_220913	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	3.06	2.96	3.3	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	1.72	1.70	1.2	0% - 50%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	8.25	7.55	8.9	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	1.38	1.48	6.3	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.10	<0.10	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.10	<0.10	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.10	<0.10	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.10	<0.10	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.10	<0.10	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.25	<0.25	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.6	0.5	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4603199)									
ET2204898-050	0009_MW019_HT_220913	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.10	0.10	0.0	0% - 50%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.14	0.15	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.04	0.04	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: 4603198)									
ET2204898-025	0009_MW018_LT_220912	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 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: 4603198) - continued									
ET2204898-025	0009_MW018_LT_220912	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
ET2204898-038	0009_QC104_220913	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.10	<0.10	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.10	<0.10	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.10	<0.10	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.25	<0.25	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.25	<0.25	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.25	<0.25	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.25	<0.25	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4603199)									
ET2204898-050	0009_MW019_HT_220913	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: 4603198)									
ET2204898-025	0009_MW018_LT_220912	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: 4603198) - continued									
ET2204898-025	0009_MW018_LT_220912	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
ET2204898-038	0009_QC104_220913	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.10	<0.10	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.10	<0.10	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.10	<0.10	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.10	<0.10	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4603199)									
ET2204898-050	0009_MW019_HT_220913	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: 4603198)									
ET2204898-025	0009_MW018_LT_220912	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ET2204898-038	0009_QC104_220913	EP231X: Sum of PFAS	----	0.01	µg/L	105	106	1.3	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	83.3	85.7	2.8	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	100	102	1.6	0% - 20%
EP231P: PFAS Sums (QC Lot: 4603199)									
ET2204898-050	0009_MW019_HT_220913	EP231X: Sum of PFAS	----	0.01	µg/L	4.24	4.04	4.8	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	3.70	3.49	5.8	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	4.10	3.90	5.0	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: **SOIL**

				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: 4593688)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0011 mg/kg	98.2	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00117 mg/kg	122	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	97.0	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	109	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	111	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0012 mg/kg	106	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4593688)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	102	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.7	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4593688)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.6	59.6	143
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	97.1	62.8	140
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.1	61.5	139
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	61.9	137
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4593688)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	84.6	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00118 mg/kg	108	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	122	65.0	137

Sub-Matrix: **SOIL**

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: 4593688) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.0012 mg/kg	119	54.8	124

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: 4603195)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	101	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	85.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	84.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	92.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	91.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	85.7	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4603198)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	77.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	76.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	68.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	71.6	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	84.4	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4603199)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	84.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	91.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	96.9	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	102	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	98.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	103	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4603195)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	91.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	87.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	92.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	91.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	97.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.8	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: 4603198)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4603198) - continued								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	73.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	73.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	74.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	78.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	76.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	69.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	78.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	69.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	79.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	74.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	77.5	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4603199)								
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	95.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.0	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	86.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	97.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	97.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4603195)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	96.3	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	85.0	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	89.0	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	94.6	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	86.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	86.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4603198)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	75.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	68.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	65.0	60.5	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4603198) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	73.3	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	74.9	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	77.8	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	76.6	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4603199)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	108	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	104	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.1	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	85.0	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	101	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	91.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	94.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4603195)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	99.9	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	87.7	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	81.9	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	133	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4603198)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	84.9	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	64.3	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	67.9	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	78.6	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4603199)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	108	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	110	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	109	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	127	64.2	133
EP231P: PFAS Sums (QCLot: 4603195)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----

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
EP231P: PFAS Sums (QCLot: 4603195) - continued								
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4603198)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4603199)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

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: **SOIL**

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: 4593688)							
EB2227769-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0011 mg/kg	104	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00117 mg/kg	121	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00118 mg/kg	103	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	97.9	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	112	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0012 mg/kg	107	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4593688)							
EB2227769-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	121	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	104	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	125	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	129	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	124	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	99.6	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	108	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	120	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	126	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	134	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	86.5	69.0	133

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4593688)							
EB2227769-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	85.6	48.0	128
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	92.6	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	96.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	118	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	92.6	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	90.8	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	82.8	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4593688)							
EB2227769-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	92.3	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00118 mg/kg	114	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	95.8	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0012 mg/kg	94.6	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4603198)							
ET2204898-040	0009_MW005_HT_220913	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	84.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	80.7	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	73.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	85.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	78.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4603198)							
ET2204898-040	0009_MW005_HT_220913	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	84.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	79.2	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	76.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	84.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	78.4	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	90.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	89.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	79.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	80.2	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: 4603198) - continued							
ET2204898-040	0009_MW005_HT_220913	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	80.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4603198)							
ET2204898-040	0009_MW005_HT_220913	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	84.4	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	85.7	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	77.8	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	78.6	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	87.5	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	82.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	86.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4603198)							
ET2204898-040	0009_MW005_HT_220913	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	81.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	78.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	75.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	72.5	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ET2204898**	Page	: 1 of 11
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_20	Date Samples Received	: 15-Sep-2022
Site	: QLD_0009	Issue Date	: 07-Oct-2022
Sampler	: [redacted]	No. of samples received	: 60
Order number	: 60612487_4.1	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, 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	ET2204898--040	0009_MW005_HT_220913	**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
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	3	50	6.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	50	2.00	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: **SOIL**

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*
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055) 0009_SD036_220912, 0009_SD034_220912, 0009_SD035_220912, 0009_SD031_220912, 0009_SD030_220912	**12-Sep-2022**	**----**	----	----	**21-Sep-2022**	26-Sep-2022	✓
HDPE Soil Jar (EA055) 0009_SD032_220913, 0009_SD033_220913, 0009_QC103_220913, 0009_SD101_220913, 0009_SD100_220913	**13-Sep-2022**	**----**	----	----	**21-Sep-2022**	27-Sep-2022	✓

Matrix: **SOIL**

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 Soil Jar (EP231X) 0009_SD036_220912, 0009_SD034_220912, 0009_SD035_220912, 0009_SD031_220912, 0009_SD030_220912	**12-Sep-2022**	**23-Sep-2022**	11-Mar-2023	✓	**28-Sep-2022**	02-Nov-2022	✓
HDPE Soil Jar (EP231X) 0009_SD032_220913, 0009_SD033_220913, 0009_QC103_220913, 0009_SD101_220913, 0009_SD100_220913	**13-Sep-2022**	**23-Sep-2022**	12-Mar-2023	✓	**28-Sep-2022**	02-Nov-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X) 0009_SD036_220912, 0009_SD034_220912, 0009_SD035_220912, 0009_SD031_220912, 0009_SD030_220912	**12-Sep-2022**	**23-Sep-2022**	11-Mar-2023	✓	**28-Sep-2022**	02-Nov-2022	✓
HDPE Soil Jar (EP231X) 0009_SD032_220913, 0009_SD033_220913, 0009_QC103_220913, 0009_SD101_220913, 0009_SD100_220913	**13-Sep-2022**	**23-Sep-2022**	12-Mar-2023	✓	**28-Sep-2022**	02-Nov-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X) 0009_SD036_220912, 0009_SD034_220912, 0009_SD035_220912, 0009_SD031_220912, 0009_SD030_220912	**12-Sep-2022**	**23-Sep-2022**	11-Mar-2023	✓	**28-Sep-2022**	02-Nov-2022	✓
HDPE Soil Jar (EP231X) 0009_SD032_220913, 0009_SD033_220913, 0009_QC103_220913, 0009_SD101_220913, 0009_SD100_220913	**13-Sep-2022**	**23-Sep-2022**	12-Mar-2023	✓	**28-Sep-2022**	02-Nov-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X) 0009_SD036_220912, 0009_SD034_220912, 0009_SD035_220912, 0009_SD031_220912, 0009_SD030_220912	**12-Sep-2022**	**23-Sep-2022**	11-Mar-2023	✓	**28-Sep-2022**	02-Nov-2022	✓
HDPE Soil Jar (EP231X) 0009_SD032_220913, 0009_SD033_220913, 0009_QC103_220913, 0009_SD101_220913, 0009_SD100_220913	**13-Sep-2022**	**23-Sep-2022**	12-Mar-2023	✓	**28-Sep-2022**	02-Nov-2022	✓

Matrix: **SOIL**

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 Soil Jar (EP231X) 0009_SD036_220912, 0009_SD034_220912, 0009_SD035_220912, 0009_SD031_220912, 0009_SD030_220912	**12-Sep-2022**	**23-Sep-2022**	11-Mar-2023	✓	**28-Sep-2022**	02-Nov-2022	✓
HDPE Soil Jar (EP231X) 0009_SD032_220913, 0009_SD033_220913, 0009_QC103_220913, 0009_SD101_220913, 0009_SD100_220913	**13-Sep-2022**	**23-Sep-2022**	12-Mar-2023	✓	**28-Sep-2022**	02-Nov-2022	✓

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

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) 0009_MW018_LT_220912, 0009_MW019_LT_220912, 0009_QC101_220912, 0009_MW011_LT_220912, 0009_QC300_220912	**12-Sep-2022**	**05-Oct-2022**	11-Mar-2023	✓	**05-Oct-2022**	11-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW036_220912, 0009_QC500_220912, 0009_SW034_220912, 0009_SW035_220912, 0009_MW002_LT_220912, 0009_MW005_LT_220912, 0009_MW001_LT_220912, 0009_MW003_LT_220012, 0009_MW013_LT_220912, 0009_MW004_LT_220912, 0009_SW031_220912, 0009_SW030_220912, 0009_MW014_LT_220912, 0009_MW015_LT_220912, 0009_MW007_LT_220912, 0009_MW017_LT_220912, 0009_MW016_LT_220912, 0009_QC100_220912, 0009_MW009_LT_220912	**12-Sep-2022**	**30-Sep-2022**	11-Mar-2023	✓	**04-Oct-2022**	11-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_QC105_220913, 0009_MW018_HT_220913, 0009_MW009_HT_220913, 0009_MW019_HT_220913, 0009_MW011_HT_220913, 0009_MW031_220913, 0009_SW101_220913, 0009_MW036_220913, 0009_SW100_220913, 0009_MW035_220913, 0009_QC301_220913, 0009_MW013_HT_220913	**13-Sep-2022**	**04-Oct-2022**	12-Mar-2023	✓	**04-Oct-2022**	12-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW032_22913, 0009_SW033_220913, 0009_QC102_220913, 0009_MW001_HT_220913, 0009_MW002_HT_220913, 0009_QC104_220913, 0009_MW003_HT_220913, 0009_MW005_HT_220913, 0009_MW004_HT_220913, 0009_MW007_HT_220913, 0009_MW017_HT_220913, 0009_MW014_HT_220913, 0009_MW015_HT_220913, 0009_MW016_HT_220913	**13-Sep-2022**	**05-Oct-2022**	12-Mar-2023	✓	**05-Oct-2022**	12-Mar-2023	✓

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) 0009_MW018_LT_220912, 0009_MW019_LT_220912, 0009_QC101_220912, 0009_MW011_LT_220912, 0009_QC300_220912	**12-Sep-2022**	**05-Oct-2022**	11-Mar-2023	✓	**05-Oct-2022**	11-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW036_220912, 0009_QC500_220912, 0009_SW034_220912, 0009_SW035_220912, 0009_MW002_LT_220912, 0009_MW005_LT_220912, 0009_MW001_LT_220912, 0009_MW003_LT_220012, 0009_MW013_LT_220912, 0009_MW004_LT_220912, 0009_SW031_220912, 0009_SW030_220912, 0009_MW014_LT_220912, 0009_MW015_LT_220912, 0009_MW007_LT_220912, 0009_MW017_LT_220912, 0009_MW016_LT_220912, 0009_QC100_220912, 0009_MW009_LT_220912	**12-Sep-2022**	**30-Sep-2022**	11-Mar-2023	✓	**04-Oct-2022**	11-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_QC105_220913, 0009_MW018_HT_220913, 0009_MW009_HT_220913, 0009_MW019_HT_220913, 0009_MW011_HT_220913, 0009_MW031_220913, 0009_SW101_220913, 0009_MW036_220913, 0009_SW100_220913, 0009_MW035_220913, 0009_QC301_220913, 0009_MW013_HT_220913	**13-Sep-2022**	**04-Oct-2022**	12-Mar-2023	✓	**04-Oct-2022**	12-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW032_22913, 0009_SW033_220913, 0009_QC102_220913, 0009_MW001_HT_220913, 0009_MW002_HT_220913, 0009_QC104_220913, 0009_MW003_HT_220913, 0009_MW005_HT_220913, 0009_MW004_HT_220913, 0009_MW007_HT_220913, 0009_MW017_HT_220913, 0009_MW014_HT_220913, 0009_MW015_HT_220913, 0009_MW016_HT_220913	**13-Sep-2022**	**05-Oct-2022**	12-Mar-2023	✓	**05-Oct-2022**	12-Mar-2023	✓

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) 0009_MW018_LT_220912, 0009_MW019_LT_220912, 0009_QC101_220912, 0009_MW011_LT_220912, 0009_QC300_220912	**12-Sep-2022**	**05-Oct-2022**	11-Mar-2023	✓	**05-Oct-2022**	11-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW036_220912, 0009_QC500_220912, 0009_SW034_220912, 0009_SW035_220912, 0009_MW002_LT_220912, 0009_MW005_LT_220912, 0009_MW001_LT_220912, 0009_MW003_LT_220012, 0009_MW013_LT_220912, 0009_MW004_LT_220912, 0009_SW031_220912, 0009_SW030_220912, 0009_MW014_LT_220912, 0009_MW015_LT_220912, 0009_MW007_LT_220912, 0009_MW017_LT_220912, 0009_MW016_LT_220912, 0009_QC100_220912, 0009_MW009_LT_220912	**12-Sep-2022**	**30-Sep-2022**	11-Mar-2023	✓	**04-Oct-2022**	11-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_QC105_220913, 0009_MW018_HT_220913, 0009_MW009_HT_220913, 0009_MW019_HT_220913, 0009_MW011_HT_220913, 0009_MW031_220913, 0009_SW101_220913, 0009_MW036_220913, 0009_SW100_220913, 0009_MW035_220913, 0009_QC301_220913, 0009_MW013_HT_220913	**13-Sep-2022**	**04-Oct-2022**	12-Mar-2023	✓	**04-Oct-2022**	12-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW032_22913, 0009_SW033_220913, 0009_QC102_220913, 0009_MW001_HT_220913, 0009_MW002_HT_220913, 0009_QC104_220913, 0009_MW003_HT_220913, 0009_MW005_HT_220913, 0009_MW004_HT_220913, 0009_MW007_HT_220913, 0009_MW017_HT_220913, 0009_MW014_HT_220913, 0009_MW015_HT_220913, 0009_MW016_HT_220913	**13-Sep-2022**	**05-Oct-2022**	12-Mar-2023	✓	**05-Oct-2022**	12-Mar-2023	✓

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) 0009_MW018_LT_220912, 0009_MW019_LT_220912, 0009_QC101_220912, 0009_MW011_LT_220912, 0009_QC300_220912	**12-Sep-2022**	**05-Oct-2022**	11-Mar-2023	✓	**05-Oct-2022**	11-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW036_220912, 0009_QC500_220912, 0009_SW034_220912, 0009_SW035_220912, 0009_MW002_LT_220912, 0009_MW005_LT_220912, 0009_MW001_LT_220912, 0009_MW003_LT_220012, 0009_MW013_LT_220912, 0009_MW004_LT_220912, 0009_SW031_220912, 0009_SW030_220912, 0009_MW014_LT_220912, 0009_MW015_LT_220912, 0009_MW007_LT_220912, 0009_MW017_LT_220912, 0009_MW016_LT_220912, 0009_QC100_220912, 0009_MW009_LT_220912	**12-Sep-2022**	**30-Sep-2022**	11-Mar-2023	✓	**04-Oct-2022**	11-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_QC105_220913, 0009_MW018_HT_220913, 0009_MW009_HT_220913, 0009_MW019_HT_220913, 0009_MW011_HT_220913, 0009_MW031_220913, 0009_SW101_220913, 0009_MW036_220913, 0009_SW100_220913, 0009_MW035_220913, 0009_QC301_220913, 0009_MW013_HT_220913	**13-Sep-2022**	**04-Oct-2022**	12-Mar-2023	✓	**04-Oct-2022**	12-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW032_22913, 0009_SW033_220913, 0009_QC102_220913, 0009_MW001_HT_220913, 0009_MW002_HT_220913, 0009_QC104_220913, 0009_MW003_HT_220913, 0009_MW005_HT_220913, 0009_MW004_HT_220913, 0009_MW007_HT_220913, 0009_MW017_HT_220913, 0009_MW014_HT_220913, 0009_MW015_HT_220913, 0009_MW016_HT_220913	**13-Sep-2022**	**05-Oct-2022**	12-Mar-2023	✓	**05-Oct-2022**	12-Mar-2023	✓

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) 0009_MW018_LT_220912, 0009_MW019_LT_220912, 0009_QC101_220912, 0009_MW011_LT_220912, 0009_QC300_220912	**12-Sep-2022**	**05-Oct-2022**	11-Mar-2023	✓	**05-Oct-2022**	11-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW036_220912, 0009_QC500_220912, 0009_SW034_220912, 0009_SW035_220912, 0009_MW002_LT_220912, 0009_MW005_LT_220912, 0009_MW001_LT_220912, 0009_MW003_LT_220012, 0009_MW013_LT_220912, 0009_MW004_LT_220912, 0009_SW031_220912, 0009_SW030_220912, 0009_MW014_LT_220912, 0009_MW015_LT_220912, 0009_MW007_LT_220912, 0009_MW017_LT_220912, 0009_MW016_LT_220912, 0009_QC100_220912, 0009_MW009_LT_220912	**12-Sep-2022**	**30-Sep-2022**	11-Mar-2023	✓	**04-Oct-2022**	11-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_QC105_220913, 0009_MW018_HT_220913, 0009_MW009_HT_220913, 0009_MW019_HT_220913, 0009_MW011_HT_220913, 0009_MW031_220913, 0009_SW101_220913, 0009_MW036_220913, 0009_SW100_220913, 0009_MW035_220913, 0009_QC301_220913, 0009_MW013_HT_220913	**13-Sep-2022**	**04-Oct-2022**	12-Mar-2023	✓	**04-Oct-2022**	12-Mar-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW032_22913, 0009_SW033_220913, 0009_QC102_220913, 0009_MW001_HT_220913, 0009_MW002_HT_220913, 0009_QC104_220913, 0009_MW003_HT_220913, 0009_MW005_HT_220913, 0009_MW004_HT_220913, 0009_MW007_HT_220913, 0009_MW017_HT_220913, 0009_MW014_HT_220913, 0009_MW015_HT_220913, 0009_MW016_HT_220913	**13-Sep-2022**	**05-Oct-2022**	12-Mar-2023	✓	**05-Oct-2022**	12-Mar-2023	✓

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: **SOIL**

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)							
Moisture Content	EA055	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	14	**14.29**	**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	1	14	**7.14**	**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	3	50	**6.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	50	**6.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	50	**6.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	50	**2.00**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed 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 soil 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 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 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
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 : **ET2204898**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 5 7-13 TOMLINS STREET SOUTH TOWNSVILLE 4810	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: +[redacted]
Facsimile	: ----	Facsimile	:
Project	: QLD_0009_PFASOMP_20	Page	: 1 of 4
Order number	: 60612487_4.1	Quote number	: ET2021AECOMAU0001 (TV/007/21 v2 - Compass)
C-O-C number	: 42288	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: QLD_0009		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Sep-2022 10:52	Issue Date	: 21-Sep-2022
Client Requested Due Date	: 04-Oct-2022	Scheduled Reporting Date	: **04-Oct-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 2.0/5.0°C - Ice present
Receipt Detail	: ESKY	No. of samples received / analysed	: 60 / 60

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 be advised that an additional container has been added to the sample "0009_MW001_HT_220913" (ALS #36) based on the sampling container ID. If this is incorrect or for more information please contact Client Services at [redacted]**
- *Samples were originally received by ALS Townsville on 15/09/22 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.
- $$ conducted by ALS Townsville, NATA accreditation no. 825, (Site no. 23472 for Chemical Testing and Site no. 23313 for Biological Testing)
- 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.
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- 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.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ET2204898-008	: 12-Sep-2022 16:00	: 0009_MW002_LT_220912
ET2204898-009	: 12-Sep-2022 15:45	: 0009_MW005_LT_220912
ET2204898-010	: 12-Sep-2022 16:03	: 0009_MW001_LT_220912
ET2204898-011	: 12-Sep-2022 15:55	: 0009_MW003_LT_220012
ET2204898-012	: 12-Sep-2022 15:48	: 0009_MW013_LT_220912
ET2204898-013	: 12-Sep-2022 15:30	: 0009_MW004_LT_220912
ET2204898-018	: 12-Sep-2022 17:01	: 0009_MW014_LT_220912
ET2204898-019	: 12-Sep-2022 17:23	: 0009_MW015_LT_220912
ET2204898-020	: 12-Sep-2022 17:37	: 0009_MW007_LT_220912
ET2204898-021	: 12-Sep-2022 17:48	: 0009_MW017_LT_220912
ET2204898-022	: 12-Sep-2022 18:07	: 0009_MW016_LT_220912
ET2204898-024	: 12-Sep-2022 18:19	: 0009_MW009_LT_220912
ET2204898-025	: 12-Sep-2022 18:30	: 0009_MW018_LT_220912
ET2204898-026	: 12-Sep-2022 18:40	: 0009_MW019_LT_220912
ET2204898-028	: 12-Sep-2022 18:55	: 0009_MW011_LT_220912
ET2204898-036	: 13-Sep-2022 10:20	: 0009_MW001_HT_220913
ET2204898-037	: 13-Sep-2022 10:33	: 0009_MW002_HT_220913
ET2204898-039	: 13-Sep-2022 10:49	: 0009_MW003_HT_220913
ET2204898-040	: 13-Sep-2022 11:07	: 0009_MW005_HT_220913
ET2204898-041	: 13-Sep-2022 11:18	: 0009_MW004_HT_220913
ET2204898-042	: 13-Sep-2022 11:58	: 0009_MW007_HT_220913
ET2204898-043	: 13-Sep-2022 12:10	: 0009_MW017_HT_220913
ET2204898-044	: 13-Sep-2022 12:22	: 0009_MW014_HT_220913
ET2204898-045	: 13-Sep-2022 12:29	: 0009_MW015_HT_220913
ET2204898-046	: 13-Sep-2022 12:46	: 0009_MW016_HT_220913
ET2204898-048	: 13-Sep-2022 12:58	: 0009_MW018_HT_220913
ET2204898-049	: 13-Sep-2022 13:08	: 0009_MW009_HT_220913
ET2204898-050	: 13-Sep-2022 13:20	: 0009_MW019_HT_220913
ET2204898-051	: 13-Sep-2022 13:31	: 0009_MW011_HT_220913
ET2204898-060	: 13-Sep-2022 11:00	: 0009_MW013_HT_220913

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: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ET2204898-002	12-Sep-2022 12:08	0009_SD036_220912	✓	✓
ET2204898-004	12-Sep-2022 14:07	0009_SD034_220912	✓	✓
ET2204898-006	12-Sep-2022 14:36	0009_SD035_220912	✓	✓
ET2204898-014	12-Sep-2022 15:15	0009_SD031_220912	✓	✓
ET2204898-016	12-Sep-2022 15:20	0009_SD030_220912	✓	✓
ET2204898-031	13-Sep-2022 08:50	0009_SD032_220913	✓	✓
ET2204898-034	13-Sep-2022 09:37	0009_SD033_220913	✓	✓
ET2204898-035	13-Sep-2022 09:39	0009_QC103_220913	✓	✓

			SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ET2204898-054	13-Sep-2022 15:41	0009_SD101_220913	✓	✓
ET2204898-055	13-Sep-2022 15:58	0009_SD100_220913	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (28 analytes)
ET2204898-001	12-Sep-2022 12:03	0009_SW036_220912	✓
ET2204898-003	12-Sep-2022 12:10	0009_QC500_220912	✓
ET2204898-005	12-Sep-2022 14:07	0009_SW034_220912	✓
ET2204898-007	12-Sep-2022 14:37	0009_SW035_220912	✓
ET2204898-008	12-Sep-2022 16:00	0009_MW002_LT_220912	✓
ET2204898-009	12-Sep-2022 15:45	0009_MW005_LT_220912	✓
ET2204898-010	12-Sep-2022 16:03	0009_MW001_LT_220912	✓
ET2204898-011	12-Sep-2022 15:55	0009_MW003_LT_220012	✓
ET2204898-012	12-Sep-2022 15:48	0009_MW013_LT_220912	✓
ET2204898-013	12-Sep-2022 15:30	0009_MW004_LT_220912	✓
ET2204898-015	12-Sep-2022 15:15	0009_SW031_220912	✓
ET2204898-017	12-Sep-2022 15:20	0009_SW030_220912	✓
ET2204898-018	12-Sep-2022 17:01	0009_MW014_LT_220912	✓
ET2204898-019	12-Sep-2022 17:23	0009_MW015_LT_220912	✓
ET2204898-020	12-Sep-2022 17:37	0009_MW007_LT_220912	✓
ET2204898-021	12-Sep-2022 17:48	0009_MW017_LT_220912	✓
ET2204898-022	12-Sep-2022 18:07	0009_MW016_LT_220912	✓
ET2204898-023	12-Sep-2022 18:08	0009_QC100_220912	✓
ET2204898-024	12-Sep-2022 18:19	0009_MW009_LT_220912	✓
ET2204898-025	12-Sep-2022 18:30	0009_MW018_LT_220912	✓
ET2204898-026	12-Sep-2022 18:40	0009_MW019_LT_220912	✓
ET2204898-027	12-Sep-2022 18:40	0009_QC101_220912	✓
ET2204898-028	12-Sep-2022 18:55	0009_MW011_LT_220912	✓
ET2204898-029	12-Sep-2022 19:10	0009_QC300_220912	✓
ET2204898-030	13-Sep-2022 08:50	0009_SW032_22913	✓
ET2204898-032	13-Sep-2022 09:36	0009_SW033_220913	✓
ET2204898-033	13-Sep-2022 09:37	0009_QC102_220913	✓

			WATER - EP231X PFAS - Full Suite (28 analytes)
ET2204898-036	13-Sep-2022 10:20	0009_MW001_HT_220913	✓
ET2204898-037	13-Sep-2022 10:33	0009_MW002_HT_220913	✓
ET2204898-038	13-Sep-2022 10:33	0009_QC104_220913	✓
ET2204898-039	13-Sep-2022 10:49	0009_MW003_HT_220913	✓
ET2204898-040	13-Sep-2022 11:07	0009_MW005_HT_220913	✓
ET2204898-041	13-Sep-2022 11:18	0009_MW004_HT_220913	✓
ET2204898-042	13-Sep-2022 11:58	0009_MW007_HT_220913	✓
ET2204898-043	13-Sep-2022 12:10	0009_MW017_HT_220913	✓
ET2204898-044	13-Sep-2022 12:22	0009_MW014_HT_220913	✓
ET2204898-045	13-Sep-2022 12:29	0009_MW015_HT_220913	✓
ET2204898-046	13-Sep-2022 12:46	0009_MW016_HT_220913	✓
ET2204898-047	13-Sep-2022 12:48	0009_QC105_220913	✓
ET2204898-048	13-Sep-2022 12:58	0009_MW018_HT_220913	✓
ET2204898-049	13-Sep-2022 13:08	0009_MW009_HT_220913	✓
ET2204898-050	13-Sep-2022 13:20	0009_MW019_HT_220913	✓
ET2204898-051	13-Sep-2022 13:31	0009_MW011_HT_220913	✓
ET2204898-052	13-Sep-2022 15:25	0009_MW031_220913	✓
ET2204898-053	13-Sep-2022 15:41	0009_SW101_220913	✓
ET2204898-056	13-Sep-2022 16:07	0009_MW036_220913	✓
ET2204898-057	13-Sep-2022 15:58	0009_SW100_220913	✓
ET2204898-058	13-Sep-2022 16:16	0009_MW035_220913	✓
ET2204898-059	13-Sep-2022 16:35	0009_QC301_220913	✓
ET2204898-060	13-Sep-2022 11:00	0009_MW013_HT_220913	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/220919 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
				N22/018477				
PFBA (375-22-4)	NR70	0.05	< 0.05	< 0.05	< 0.05	-	115	NA
PFPeA (2706-90-3)	NR70	0.02	< 0.02	0.062	0.059	5.0	108	NA
PFHxA (307-24-4)	NR70	0.01	< 0.01	0.23	0.21	9.0	105	NA
PFHpA (375-85-9)	NR70	0.01	< 0.01	0.028	0.026	7.0	107	NA
PFOA (335-67-1)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	107	NA
PFNA (375-95-1)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	104	NA
PFDA (335-76-2)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	109	NA
PFUdA (2058-94-8)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	113	NA
PFDoA (307-55-1)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	105	NA
PFTrDA (72629-94-8)	NR70	0.02	< 0.02	< 0.02	< 0.02	-	103	NA
PFTeDA (376-06-7)	NR70	0.02	< 0.02	< 0.02	< 0.02	-	107	NA
PFHxDA (67905-19-5)	NR70	0.02	< 0.02	< 0.02	< 0.02	-	99	NA
PFODA (16517-11-6)	NR70	0.05	< 0.05	< 0.05	< 0.05	-	110	NA
FOUEA (70887-84-2)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	108	NA
PFBS (375-73-5)	NR70	0.01	< 0.01	0.13	0.12	8.0	103	NA
PFPeS (2706-91-4)	NR70	0.01	< 0.01	0.16	0.15	6.0	110	NA
PFHxS (355-46-4)	NR70	0.01	< 0.01	1.2	1.1	9.0	100	NA
PFHpS (375-92-8)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	105	NA
PFOS (1763-23-1)	NR70	0.02	< 0.02	0.12	0.11	9.0	103	NA
PFNS (68259-12-1)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	106	NA
PFDS (335-77-3)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	101	NA
PFOSA (754-91-6)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	101	NA
N-MeFOSA (31506-32-8)	NR70	0.02	< 0.02	< 0.02	< 0.02	-	114	NA
N-EtFOSA (4151-50-2)	NR70	0.02	< 0.02	< 0.02	< 0.02	-	108	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	107	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	107	NA
N-MeFOSE (24448-09-7)	NR70	0.05	< 0.05	< 0.05	< 0.05	-	104	NA
N-EtFOSE (1691-99-2)	NR70	0.05	< 0.05	< 0.05	< 0.05	-	101	NA
4:2 FTS (757124-72-4)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	104	NA
6:2 FTS (27619-97-2)	NR70	0.01	< 0.01	0.014	0.014	0	102	NA
8:2 FTS (39108-34-4)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	112	NA
10:2 FTS (120226-60-0)	NR70	0.01	< 0.01	< 0.01	< 0.01	-	101	NA
8:2 diPAP (678-41-1)	NR70	0.02	< 0.02	< 0.02	< 0.02	-	77	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]

[redacted]
Organics Manager, NMI-North Ryde

Date: **28/09/2022**

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/220919 **Sample Matrix:** Solid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		mg/kg	mg/kg	mg/kg	mg/kg	%	%	%
PFBA (375-22-4)	NR70	0.002	< 0.002	NA	NA	NA	102	NA
PFPeA (2706-90-3)	NR70	0.002	< 0.002	NA	NA	NA	101	NA
PFHxA (307-24-4)	NR70	0.001	< 0.001	NA	NA	NA	103	NA
PFHpA (375-85-9)	NR70	0.001	< 0.001	NA	NA	NA	104	NA
PFOA (335-67-1)	NR70	0.001	< 0.001	NA	NA	NA	105	NA
PFNA (375-95-1)	NR70	0.001	< 0.001	NA	NA	NA	105	NA
PFDA (335-76-2)	NR70	0.001	< 0.001	NA	NA	NA	109	NA
PFUdA (2058-94-8)	NR70	0.002	< 0.002	NA	NA	NA	104	NA
PFDoA (307-55-1)	NR70	0.002	< 0.002	NA	NA	NA	103	NA
PFTrDA (72629-94-8)	NR70	0.002	< 0.002	NA	NA	NA	102	NA
PFTeDA (376-06-7)	NR70	0.002	< 0.002	NA	NA	NA	106	NA
PFHxDA (67905-19-5)	NR70	0.002	< 0.002	NA	NA	NA	98	NA
PFODA (16517-11-6)	NR70	0.005	< 0.005	NA	NA	NA	97	NA
FOUEA (70887-84-2)	NR70	0.001	< 0.001	NA	NA	NA	98	NA
PFBS (375-73-5)	NR70	0.001	< 0.001	NA	NA	NA	109	NA
PFPeS (2706-91-4)	NR70	0.001	< 0.001	NA	NA	NA	119	NA
PFHxS (355-46-4)	NR70	0.001	< 0.001	NA	NA	NA	106	NA
PFHpS (375-92-8)	NR70	0.001	< 0.001	NA	NA	NA	117	NA
PFOS (1763-23-1)	NR70	0.002	< 0.002	NA	NA	NA	108	NA
PFNS (68259-12-1)	NR70	0.001	< 0.001	NA	NA	NA	106	NA
PFDS (335-77-3)	NR70	0.001	< 0.001	NA	NA	NA	103	NA
PFOSA (754-91-6)	NR70	0.001	< 0.001	NA	NA	NA	100	NA
N-MeFOSA (31506-32-8)	NR70	0.002	< 0.002	NA	NA	NA	108	NA
N-EtFOSA (4151-50-2)	NR70	0.002	< 0.002	NA	NA	NA	101	NA
N-MeFOSAA (2355-31-9)	NR70	0.002	< 0.002	NA	NA	NA	105	NA
N-EtFOSAA(2991-50-6)	NR70	0.002	< 0.002	NA	NA	NA	101	NA
N-MeFOSE (24448-09-7)	NR70	0.005	< 0.005	NA	NA	NA	100	NA
N-EtFOSE (1691-99-2)	NR70	0.005	< 0.005	NA	NA	NA	95	NA
4:2 FTS (757124-72-4)	NR70	0.001	< 0.001	NA	NA	NA	100	NA
6:2 FTS (27619-97-2)	NR70	0.001	< 0.001	NA	NA	NA	101	NA
8:2 FTS (39108-34-4)	NR70	0.001	< 0.001	NA	NA	NA	113	NA
10:2 FTS (120226-60-0)	NR70	0.002	< 0.002	NA	NA	NA	119	NA
8:2 diPAP (678-41-1)	NR70	0.002	< 0.002	NA	NA	NA	73	NA

Results expressed in percentage (%) or mg/kg 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]

[redacted]
Organics Manager, NMI-North Ryde

Date: **28/09/2022**

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 8
FORTITUDE VALLEY QLD 4006

Email: [redacted]

Telephone:

Fax:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: [redacted]

Address: 105 Delhi Road, North Ryde, NSW
NSW 2113

Email: [redacted]

Telephone: [redacted]

Fax:

SAMPLE DETAILS

NMI Job Name: **AECO06/220919**

Total No. of Samples: **6**

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N22/018477	27-SEP-2022	0009_QC200_220912	WATER

N22/018478	27-SEP-2022	0009_QC201_220912	WATER
N22/018479	27-SEP-2022	0009_QC202_220913	WATER
N22/018480	27-SEP-2022	0009_QC203_220913	SOIL
N22/018481	27-SEP-2022	0009_QC204_220913	WATER
N22/018482	27-SEP-2022	0009_QC205_220913	WATER

SAMPLE RECEIVED CONDITION

Date samples received:	19-SEP-2022
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	60612487_4_1
Temperature of samples:	Chilled
Comments:	ALL OK
Mode of Delivery:	Courier

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.

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
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1366950

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/220919
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 19-SEP-2022
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N22/018480	0009_QC203_220913	SOIL

Lab Reg No.		N22/018480				
Date Sampled		13-SEP-2022				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	mg/kg	<0.002				NR70
PFPeA (2706-90-3)	mg/kg	<0.002				NR70
PFHxA (307-24-4)	mg/kg	<0.001				NR70
PFHpA (375-85-9)	mg/kg	<0.001				NR70
PFOA (335-67-1)	mg/kg	<0.001				NR70
PFNA (375-95-1)	mg/kg	<0.001				NR70
PFDA (335-76-2)	mg/kg	<0.001				NR70
PFUdA (2058-94-8)	mg/kg	<0.002				NR70
PFDoA (307-55-1)	mg/kg	<0.002				NR70
PFTrDA (72629-94-8)	mg/kg	<0.002				NR70
PFTeDA (376-06-7)	mg/kg	<0.002				NR70
PFHxDA (67905-19-5)	mg/kg	<0.002				NR70
PFODA (16517-11-6)	mg/kg	<0.005				NR70
FOUEA (70887-84-2)	mg/kg	<0.001				NR70
PFBS (375-73-5)	mg/kg	<0.001				NR70
PFPeS (2706-91-4)	mg/kg	<0.001				NR70
PFHxS (355-46-4)	mg/kg	<0.001				NR70
PFHpS (375-92-8)	mg/kg	<0.001				NR70
PFOS (1763-23-1)	mg/kg	0.0022				NR70
PFNS (68259-12-1)	mg/kg	<0.001				NR70
PFDS (335-77-3)	mg/kg	<0.001				NR70
PFOSA (754-91-6)	mg/kg	<0.001				NR70
N-MeFOSA (31506-32-8)	mg/kg	<0.002				NR70
N-EtFOSA (4151-50-2)	mg/kg	<0.002				NR70
N-MeFOSAA (2355-31-9)	mg/kg	<0.002				NR70
N-EtFOSAA(2991-50-6)	mg/kg	<0.002				NR70
N-MeFOSE (24448-09-7)	mg/kg	<0.005				NR70
N-EtFOSE (1691-99-2)	mg/kg	<0.005				NR70
4:2 FTS (757124-72-4)	mg/kg	<0.001				NR70
6:2 FTS (27619-97-2)	mg/kg	<0.001				NR70

REPORT OF ANALYSIS

Lab Reg No.		N22/018480				
Date Sampled		13-SEP-2022				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
8:2 FTS (39108-34-4)	mg/kg	<0.001				NR70
10:2 FTS (120226-60-0)	mg/kg	<0.002				NR70
8:2 diPAP (678-41-1)	mg/kg	<0.002				NR70
PFBA (Surrogate Recovery)	%	54				NR70
PFPeA (Surrogate Recovery)	%	53				NR70
PFHxA (Surrogate Recovery)	%	53				NR70
PFHpA (Surrogate Recovery)	%	53				NR70
PFOA (Surrogate Recovery)	%	56				NR70
PFNA (Surrogate Recovery)	%	55				NR70
PFDA (Surrogate Recovery)	%	56				NR70
PFUdA (Surrogate Recovery)	%	61				NR70
PFDoA (Surrogate Recovery)	%	65				NR70
PFTeDA (Surrogate Recovery)	%	69				NR70
PFHxDA (Surrogate Recovery)	%	60				NR70
FOUEA (Surrogate Recovery)	%	52				NR70
PFBS (Surrogate Recovery)	%	50				NR70
PFHxS (Surrogate Recovery)	%	53				NR70
PFOS (Surrogate Recovery)	%	55				NR70
PFOSA (Surrogate Recovery)	%	57				NR70
N-MeFOSA (Surrogate Recovery)	%	50				NR70
N-EtFOSA (Surrogate Recovery)	%	54				NR70
N-MeFOSAA (Surrogate Recovery)	%	64				NR70
N-EtFOSAA (Surrogate Recovery)	%	69				NR70
N-MeFOSE (Surrogate Recovery)	%	49				NR70
N-EtFOSE (Surrogate Recovery)	%	50				NR70
4:2 FTS (Surrogate Recovery)	%	43				NR70
6:2 FTS (Surrogate Recovery)	%	45				NR70
8:2 FTS (Surrogate Recovery)	%	57				NR70
8:2 diPAP (Surrogate Recovery)	%	94				NR70
Dates						
Date extracted		18-SEP-2022				
Date analysed		20-SEP-2022				

N22/018480
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], Analyst
Organics - NSW
Accreditation No. 198

28-SEP-2022

Lab Reg No.		N22/018480				
Date Sampled		13-SEP-2022				
	Units					Method
Trace Elements						
Total Solids	%	49.5				NT2_49
Dates						
Date extracted		21-SEP-2022				
Date analysed		23-SEP-2022				

[redacted] Analyst
Inorganics - NSW
Accreditation No. 198

28-SEP-2022

All results are expressed on a dry weight basis.

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/220919
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 19-SEP-2022
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N22/018477	0009_QC200_220912	WATER
N22/018478	0009_QC201_220912	WATER
N22/018479	0009_QC202_220913	WATER
N22/018481	0009_QC204_220913	WATER

Lab Reg No.			N22/018477	N22/018478	N22/018479	N22/018481	
Date Sampled			12-SEP-2022	12-SEP-2022	13-SEP-2022	13-SEP-2022	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
PFBA (375-22-4)		ug/L	<0.05	<0.05	<0.05	0.76	NR70
PFPeA (2706-90-3)		ug/L	0.062	0.069	<0.02	1.1	NR70
PFHxA (307-24-4)		ug/L	0.23	0.090	<0.01	4.7	NR70
PFHpA (375-85-9)		ug/L	0.028	0.036	<0.01	1.0	NR70
PFOA (335-67-1)		ug/L	<0.01	0.070	<0.01	1.7	NR70
PFNA (375-95-1)		ug/L	<0.01	<0.01	<0.01	0.048	NR70
PFDA (335-76-2)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFUdA (2058-94-8)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDoA (307-55-1)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFTrDA (72629-94-8)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFTeDA (376-06-7)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFHxDA (67905-19-5)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFODA (16517-11-6)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70
FOUEA (70887-84-2)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDS (335-77-3)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFPeS (2706-91-4)		ug/L	0.16	0.029	<0.01	1.4	NR70
PFHxS (355-46-4)		ug/L	1.1	0.30	<0.01	17	NR70
PFHpS (375-92-8)		ug/L	<0.01	0.054	<0.01	1.3	NR70
PFOS (1763-23-1)		ug/L	0.12	1.5	<0.02	39	NR70
PFNS (68259-12-1)		ug/L	<0.01	<0.01	<0.01	0.085	NR70
PFBS (375-73-5)		ug/L	0.13	0.026	<0.01	1.5	NR70
PFOSA (754-91-6)		ug/L	<0.01	<0.01	<0.01	0.041	NR70
N-MeFOSA (31506-32-8)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-EtFOSA (4151-50-2)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-MeFOSAA (2355-31-9)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-EtFOSAA(2991-50-6)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSE (24448-09-7)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70

REPORT OF ANALYSIS

Lab Reg No.			N22/018477	N22/018478	N22/018479	N22/018481	
Date Sampled			12-SEP-2022	12-SEP-2022	13-SEP-2022	13-SEP-2022	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
N-EtFOSE (1691-99-2)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70
4:2 FTS (757124-72-4)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
6:2 FTS (27619-97-2)		ug/L	0.014	0.029	<0.01	0.025	NR70
8:2 FTS (39108-34-4)		ug/L	<0.01	<0.01	<0.01	0.025	NR70
10:2 FTS (120226-60-0)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 diPAP (678-41-1)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFBA (Surrogate Recovery)		%	131	129	127	133	NR70
PFPeA (Surrogate Recovery)		%	165	172	123	141	NR70
PFHxA (Surrogate Recovery)		%	120	122	126	146	NR70
PFHpA (Surrogate Recovery)		%	123	122	125	126	NR70
PFOA (Surrogate Recovery)		%	129	125	124	143	NR70
PFNA (Surrogate Recovery)		%	113	118	119	146	NR70
PFDA (Surrogate Recovery)		%	121	120	118	128	NR70
PFUdA (Surrogate Recovery)		%	134	132	117	136	NR70
PFDoA (Surrogate Recovery)		%	138	131	121	132	NR70
PFTeDA (Surrogate Recovery)		%	114	119	114	126	NR70
PFHxDA (Surrogate Recovery)		%	143	135	122	151	NR70
FOUEA (Surrogate Recovery)		%	114	115	98	127	NR70
PFBS (Surrogate Recovery)		%	125	129	120	145	NR70
PFHxS (Surrogate Recovery)		%	139	130	120	148	NR70
PFOS (Surrogate Recovery)		%	123	158	119	146	NR70
PFOSA (Surrogate Recovery)		%	105	103	105	114	NR70
N-MeFOSA (Surrogate Recovery)		%	93	87	93	105	NR70
N-EtFOSA (Surrogate Recovery)		%	93	92	100	105	NR70
N-MeFOSAA (Surrogate Recovery)		%	156	135	112	132	NR70
N-EtFOSAA (Surrogate Recovery)		%	173	157	121	152	NR70
N-MeFOSE (Surrogate Recovery)		%	115	110	109	117	NR70
N-EtFOSE (Surrogate Recovery)		%	124	115	112	129	NR70
4:2 FTS (Surrogate Recovery)		%	172	191	106	167	NR70
6:2 FTS (Surrogate Recovery)		%	135	131	104	125	NR70
8:2 FTS (Surrogate Recovery)		%	127	127	105	119	NR70
8:2 diPAP (Surrogate Recovery)		%	161	167	121	163	NR70
Dates							
Date extracted			23-SEP-2022	23-SEP-2022	23-SEP-2022	23-SEP-2022	
Date analysed			23-SEP-2022	23-SEP-2022	23-SEP-2022	23-SEP-2022	

N22/018477
to
N22/018482

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.

Selected PFAS surrogate recoveries are biased due to matrix effects.ô
High PFAS surrogate recoveries accepted - results corrected for recovery.

[redacted], Analyst
Organics - NSW
Accreditation No. 198

28-SEP-2022

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/220919
	LEVEL 8	**Quote No.**	: QT-02018
	540 WICKHAM STREET	**Order No.**	: 60612487_4_1
		Date Received	: 19-SEP-2022
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0009_PFASOMP_20		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N22/018482	0009_QC205_220913	WATER

Lab Reg No.			N22/018482				
Date Sampled			13-SEP-2022				
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
PFBA (375-22-4)		ug/L	<0.05				NR70
PFPeA (2706-90-3)		ug/L	0.068				NR70
PFHxA (307-24-4)		ug/L	0.26				NR70
PFHpA (375-85-9)		ug/L	0.033				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	0.18				NR70
PFHxS (355-46-4)		ug/L	1.2				NR70
PFHpS (375-92-8)		ug/L	<0.01				NR70
PFOS (1763-23-1)		ug/L	0.11				NR70
PFNS (68259-12-1)		ug/L	<0.01				NR70
PFBS (375-73-5)		ug/L	0.15				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	0.015				NR70

REPORT OF ANALYSIS

Lab Reg No.			N22/018482				
Date Sampled			13-SEP-2022				
		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)		%	132				NR70
PFPeA (Surrogate Recovery)		%	164				NR70
PFHxA (Surrogate Recovery)		%	118				NR70
PFHpA (Surrogate Recovery)		%	124				NR70
PFOA (Surrogate Recovery)		%	126				NR70
PFNA (Surrogate Recovery)		%	118				NR70
PFDA (Surrogate Recovery)		%	119				NR70
PFUdA (Surrogate Recovery)		%	128				NR70
PFDoA (Surrogate Recovery)		%	126				NR70
PFTeDA (Surrogate Recovery)		%	118				NR70
PFHxDA (Surrogate Recovery)		%	127				NR70
FOUEA (Surrogate Recovery)		%	108				NR70
PFBS (Surrogate Recovery)		%	133				NR70
PFHxS (Surrogate Recovery)		%	139				NR70
PFOS (Surrogate Recovery)		%	126				NR70
PFOSA (Surrogate Recovery)		%	105				NR70
N-MeFOSA (Surrogate Recovery)		%	87				NR70
N-EtFOSA (Surrogate Recovery)		%	95				NR70
N-MeFOSAA (Surrogate Recovery)		%	130				NR70
N-EtFOSAA (Surrogate Recovery)		%	130				NR70
N-MeFOSE (Surrogate Recovery)		%	108				NR70
N-EtFOSE (Surrogate Recovery)		%	119				NR70
4:2 FTS (Surrogate Recovery)		%	167				NR70
6:2 FTS (Surrogate Recovery)		%	133				NR70
8:2 FTS (Surrogate Recovery)		%	120				NR70
8:2 diPAP (Surrogate Recovery)		%	143				NR70
Dates							
Date extracted			23-SEP-2022				
Date analysed			23-SEP-2022				

[redacted]

[redacted], Analyst
Organics - NSW
Accreditation No. 198

28-SEP-2022

REPORT OF ANALYSIS

This Report supersedes reports: *RN1366805* *RN1366949*

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

Appendix F

Equipment Calibration Certificates

Multi Parameter Water Meter

Instrument **YSI Quatro Pro Plus**
Serial No. **11K100830**

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.02	**NIST**	393113	pH 7.01
2. pH 4.00		pH 4.00	**NIST**	378672	pH 4.00
3. mV		236.5mV	**NIST**	377347/374426	236.5mV
4. EC		2760uS	**NIST**	382780	2761uS
6. D.O		0%	**NIST**	11171	0%
7. Temp	901	21.6°C	**NIST**	Testomini901	21.6°C

Calibrated by: [redacted]

Calibration date: **30-Aug-22**

Next calibration due: **28-Feb-23**

[redacted]

Oil / Water Interface Meter

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Instrument **Interface Meter (60M)**
Serial No. **312445**

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
		✓	
Tape Check	Cleaned	✓	
	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Calibrated by: [redacted]

Calibration date: **6/09/2022**

Next calibration due: **6/12/2022**

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP – HMAS CAIRNS	**Project Number:**	606F2487_4.1
Project Location:	HMAS CAIRNS	**Client:**	DEPT OF DEFENCE
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	AIRMET
Make and Model:	YSI Pro Plus.
Serial Number:	11K100830

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	11:10 12/9/22				
Parameter	Acidity FAILED		Conductivity	ORP	Dissolved Oxygen
Units	pH	pH	µS/cm	mV ~~ppm~~	% ~~ppm~~
Calibration Standard Concentration:	7.0	4.0	2760	218	100
Calibration Reading:	8.39	6.91	3018	218.4	94.6
Calibration Temperature:	29.0 BKT89	28.4	28.9	30.5	31.0

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	RETRY pH Calibration FOR SALINE WATER				
Parameter	Acidity FAILED		Conductivity	Dissolved Oxygen	
Units	pH	pH	mS/cm ~~µS/cm~~	ppm	ppm
Calibration Standard Concentration:	4.0	7.0	35		
Bump Test Reading:	6.56	8.50	34.75		
Bump Test Temperature:	28.8	29.4	29.7		

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Spoke to Deb (Airmet) regarding failed pH calibration. Advice to 2 point cal & force calibration if given the option.

ATTEMPT 3.

pH	4.0	7.0
Reading	5.29	7.40
Temp	29°C	31.9°C

Approval and Distribution

☐ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[redacted] — Fieldwork Staff Signature

14/9/22 — Date

Distribution: Project Central File

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP – ~~HMAS CNS~~	**Project Number:**	60612487-4.1
Project Location:	HMAS CAIRNS	**Client:**	DEPT OF DEFENCE
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	AIRMET
Make and Model:	YSI Pro Plus
Serial Number:	11K100830

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	0815 13/9/22				
Parameter	Acidity		Conductivity	ORP	Dissolved Oxygen
Units	pH	pH	~~mS/cm~~ ~~µS/cm~~	~~mV~~ ~~ppm~~	~~ppm~~ %
Calibration Standard Concentration:	4.0	7.01	35	233.3	100
Calibration Reading:	4.79	7.34	30.56	238.6	104.0
Calibration Temperature:	22.8	24.6	23.0	23	24.2

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☑ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[redacted]
Fieldwork Staff Signature

13/9/22
Date

Distribution: Project Central File

Prepared for
Department of Defence
ABN: 68 706 814 312

AECOM

Sampling Event Factual Report - April 2023

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

08-Sep-2023
Doc No. 60612487_RP93_20230908_2

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Sampling Event Factual Report - April 2023

PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation

Client: Department of Defence

ABN: 68 706 814 312

Prepared by

AECOM Australia Pty Ltd
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Table of Contents

List of Tables (in Text)

List of Figures (in Appendix A)

List of Tables (in Appendix B)

Abbreviations

Term	Description
AECOM	AECOM Australia Pty Ltd
ALS	Australian Laboratory Services
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure, as amended (2013)
DCMM	Defence Contamination Management Manual
DO	Dissolved oxygen
DoH	Department of Health
EC	Electrical conductivity
HEPA	Heads of Environmental Protection Agencies/Authorities
HMAS	His Majesty's Australian Ship
LOR	Limit of reporting
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPC	National Environment Protection Council
NHMRC	National Health and Medical Research Council
OMP	Ongoing Monitoring Plan
ORP	Oxidation-reduction potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonate
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance/Quality Control
QLD	Queensland
RAN	Royal Australian Navy
SAQP	Sampling and Analysis Quality Plan
SWL	Standing Water Level
WWII	World War II

Unit	Definition	Unit	Definition
°C	Degrees Celsius	mbtoc	metres below top of casing
L	Litre	mg	Milligrams
µS	Microsiemens	mm	Millimetre
kg	Kilogram	cm	Centimetre
m	Metre	mV	Millivolts
mAHD	metres Australian Height Datum	µg	Micrograms

1.0 Introduction

1.1 General

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) outlined in the *PFAS Management Area Plan (PMAP)* (Department of Defence, 2020) at His Majesty's Australian Ship (HMAS) Cairns and the Former World War II Royal Australian Navy (WWII RAN) Fuel Installation (the 'Site') located in Cairns, Queensland. For this report, 'on-Base' will refer to locations within the HMAS Cairns Management Area, and 'off-Base' will refer to sampling locations within the Former WWII RAN Fuel Installation Management Area. The HMAS Cairns Management Area comprises HMAS Cairns, the seabed area and the area situated down hydraulic gradient (east) of HMAS Cairns (including Trinity Inlet). The Former WWII RAN Fuel Installation Management Area includes Cairns Botanic Gardens, Centenary Lakes, Saltwater Creek and private residential properties along Greenslopes Street and Collins Avenue, as defined in the PMAP (Department of Defence, 2020).

The location of the Site and the Management Areas are shown in **Figure 1** in **Appendix A**. The OMP for HMAS Cairns and the Former WWII RAN Fuel Installation includes biannual groundwater, surface water and sediment sampling events in October 2020, April 2021, October 2021, April 2022, September 2022, April 2023, September 2023, and April 2024.

These sampling events include the following:

- High and low tide groundwater sampling of 15 monitoring wells on-Base at HMAS Cairns.
- Groundwater sampling of three monitoring wells off-Base within the Former WWII RAN Fuel Installation Management Area.
- Sediment sampling at six locations on-Base at HMAS Cairns with co-located surface water sampling when water is present.
- Sediment sampling at three locations off-Base within the Former WWII RAN Fuel Installation Management Area with co-located surface water sampling when water is present.

Following each sampling event, factual reports will be prepared. Annual interpretative reports will be prepared following the completion of each 12-month sampling period. This sampling event factual report has been prepared to report the results of the wet season sampling event completed in April 2023, specifically highlighting first-time detections and/or new exceedances of human health and ecological screening criteria for perfluorooctane sulfonate (PFOS), PFOS + Perfluorohexane sulfonate (PFHxS) and / or perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the *PFAS OMP Factual Report Guidance,* v0.2, May 2021 (Department of Defence, 2021).

1.2 Objectives

The objectives of the OMP program are to:

- Implement the OMP prepared as part of the PMAP.
- Collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration, and transport of PFAS at HMAS Cairns and the Former WWII RAN Fuel Installation.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PMAP.

The objective of this phase of works is to implement the scope of works for the April 2023 sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2022).

2.0 Scope of Work

The sampling event at HMAS Cairns and the Former WWII RAN Fuel Installation was completed in general accordance with the SAQP (AECOM, 2022). Deviations from the SAQP (AECOM, 2022) are presented in **Section 3.7**. In summary, the scope of works for this sampling event included:

- Obtaining permission to work in public spaces where some sampling locations are situated.
- Review of the SAQP prior to the monitoring event to ensure compliance with the following:
  - PFAS National Environmental Management Plan (NEMP) (Heads of Environmental Protection Agencies/Authorities [HEPA], 2020).
  - National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (ASC NEPM, 2013).
  - Defence Routine Water Quality Monitoring Manual (2018).
  - AS/NZ 5667:1998 Water quality – Sampling.
  - Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018).
  - Relevant State regulatory guidelines.
- Gauging of groundwater level in monitoring wells prior to collection of samples (refer to **Table 1** below, and **Figures 2A** and **2B** in **Appendix A** for specific locations).
- Collection of groundwater samples from 18 locations including 15 locations at HMAS Cairns at both high and low tides, and three locations at the Former WWII RAN Fuel Installation (refer to **Table 1** below, and **Figures 2A** and **2B** in **Appendix A** for specific locations).
- Collection of co-located surface water and sediment samples at eight locations including six locations at HMAS Cairns and two locations at the Former WWII RAN Fuel Installation (refer to **Table 2** and **Table 3** below, and **Figures 2A** and **2B** in **Appendix A** for specific locations). Surface water only was collected at one location at the Former WWII RAN Fuel Installation as the sediment at this location (SD101) had been covered over with imported materials.
- Collecting intra- and inter-laboratory duplicate samples at a rate of one in 10 primary samples, one rinsate sample per fieldwork day, and one trip blank per sample batch.
- Analysis of all samples for a suite of 28 PFAS analytes at the standard limit of reporting (LOR).
- Data management of all OMP field and laboratory data in the Defence ESdat database.
- Preparation of this Sampling Event Factual Report.

Table 1 Groundwater Sampling Locations

Locations	Monitoring Well ID
HMAS Cairns Management Area	MW001, MW002, MW003, MW004, MW005, MW007, MW009, MW011, MW013, MW014, MW015, MW016, MW017, MW018, MW019
Former WWII RAN Fuel Installation Management Area	MW031, MW035, MW036

Table 2 Surface Water Sampling Locations

Locations	Location ID
HMAS Cairns Management Area	SW030, SW031, SW032, SW033, SW034, SW035
Former WWII RAN Fuel Installation Management Area	SW036, SW100, SW101

Table 3 Sediment Sampling Locations

Locations	Location ID
HMAS Cairns Management Area	SD030, SD031, SD032, SD033, SD034, SD035
Former WWII RAN Fuel Installation Management Area	SD036, SD100, SD101*

* Analysis of SD101 was not completed in April 2023 as it was considered the material was not representative of the natural sediment at this location due to the presence of imported gravels.

3.0 Methodology

The methodology used for the April 2023 sampling event was in accordance with the SAQP (AECOM, 2022) as summarised in this section.

3.1 Groundwater Sampling Methodology

Table 4 Groundwater Sampling Methodology

Item	Details
Groundwater gauging	The depth to groundwater was measured in each monitoring well prior to the installation of HydraSleeves™ and immediately prior to collection of groundwater samples using an interface probe (IP).
Water quality parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and water quality observations were recorded for all groundwater samples. Equipment calibration certificates are provided in **Appendix F**.
Sampling methodology	Groundwater samples were collected from monitoring wells using no-purge methodology HydraSleeves™, which were installed within the screened interval of each well (based on a review of the well construction log) the morning of sampling (in operational areas with restricted hours) or day prior to the sampling round (as stated in **Table T1**, **Appendix B**). Once the first tidal sampling round was completed at HMAS Cairns, new HydraSleeves™ were deployed at the screened interval depth in preparation for the second tidal sampling round. New HydraSleeves™ were not deployed following the second tidal sampling round at HMAS Cairns or following the single sampling round at the Former WWII RAN Fuel Installation to avoid conflict with other monitoring programs. HydraSleeves™ were installed based on measured well depth. Review of the provided ESdat well screen interval information indicates that there are discrepancies between documented well screen interval and the actual well depth. Therefore, it appears that the HydraSleeves™ may have been installed outside of the documented screened interval. The SAQP will be amended to include provision for addition of a top weight for the HydraSleeve™ installed in shallow wells to enable the HydraSleeve™ to compress and be filled upon retrieval. This will enable a greater volume of water to be captured by the HydraSleeve™ and to ensure installation within the screened interval. Review of the data and previous results for MW004, MW005, MW011 and MW035 indicates results are within the same order of magnitude and water is of similar or comparable condition to previous rounds and therefore considered to be representative of groundwater conditions at these locations.

3.2 Surface Water Sampling Methodology

Table 5 Surface Water Sampling Methodology

Item	Details
Water quality parameters	Temperature, EC, DO, ORP, pH and observations of water quality were recorded for all surface water samples at the time of sampling.
Sampling methodology	Samples were collected from immediately below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a decontaminated, stainless steel sampling cup was lowered into the water and collected surface water was poured into a new, laboratory-supplied container with the cap immediately applied once the container was full.

3.3 Sediment Sampling Methodology

Table 6 Sediment Sampling Methodology

Item	Details
Sampling Collection Methodology	Samples representative of potentially deposited sediments were collected from within the water body (if possible) using a decontaminated steel trowel or a gloved hand. At each location, a new, laboratory supplied container was used for each sample with the cap immediately applied once the container was full.
Logging	Sediment characteristics were recorded for each sample.

3.4 Quality Assurance/ Quality Control and Analysis

The Quality Assurance/Quality Control (QA/QC) requirements and analysis completed for the OMP sampling event are summarised in **Table 7**, below.

Table 7 QAQC and Analysis for OMP

Item	Details
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits), trip blanks, and rinsate samples. Refer to **Appendix C** for assessment of QA/QC sample data.
Sample Analysis	All primary samples were submitted for analysis for the PFAS suite using the standard levels of detection. Australian Laboratory Services (ALS) Environmental Townsville, Queensland (QLD) was used as the primary laboratory. Eurofins, Melbourne, Victoria (VIC) and Brisbane, QLD was used as the secondary laboratory. ALS and Eurofins methods for the required analyses are certified by the National Association of Testing Authorities (NATA). Chain of Custody Forms are presented in **Appendix D**. Laboratory certificates are presented in **Appendix E**.

3.5 Adopted Screening Criteria

Adopted screening criteria references national guidance in the form of the PFAS NEMP, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset include the following:

- PFAS NEMP, (HEPA, 2020).
- Department of Health (DoH), 2019. *Health Based Guidance Values for PFAS for use in site investigations in Australia.* April 2017 [updated September 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 1999, Schedule B1*, as amended in 2013 (ASC NEPM, 2013).

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in **Table 8** below.

Table 8 Summary of Adopted Screening Criteria

Pathway	Compound	Criteria	Comment / Reference
Human Health Receptors			
Recreational use – surface water	PFOS + PFHxS	2 µg/L	The values are from the PFAS NEMP (HEPA, 2020). *All surface water results will be compared to these criteria.*
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater and marine (95% species protection values)	PFOS	0.13 µg/L	The values are from the PFAS NEMP (HEPA, 2020). The 95% level of protection has been applied for moderately disturbed ecosystems per the OMP. *All surface water and groundwater results will be compared to these criteria.*
	PFOA	220 µg/L	

There are no human health or ecological guideline values available for sediment.

3.6 Data Quality Objectives and Data Validation

The data quality objectives and data quality indicators adopted for these works are presented in the SAQP (AECOM, 2022).

Data validation assessment is provided in **Appendix C**.

Data validation procedures employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) (Defence, 2018 as amended 2021) Annex L requirements.

3.7 Deviations from the SAQP

Table 9 lists the deviations from the SAQP (AECOM, 2022) during this sampling event.

Table 9 Deviations from the SAQP during sampling event for April 2023

SAQP Requirement	Justification for SAQP Deviation	Impact on Dataset
Analysis of sediment sample at SD101	Following sample collection, it was observed that the sample was not representative of sediment, rather gravel material that had been placed at this location.	This location is no longer suitable for sampling as sediment at this location has been covered over with imported material.
HydraSleeves™ installed within screened interval	HydraSleeves™ were installed based on measured well depth. Review of the provided ESdat well screen interval information indicates that there are discrepancies between documented well screen interval and the actual well depth. Therefore it appears that the HydraSleeves™ may have been installed outside of the documented screened interval. The SAQP will be amended to include provision for addition of a top weight to shallow wells.	Review of the data and previous results for MW004, MW005, MW011 and MW035 indicates results are within the same order of magnitude and water is of similar or comparable condition to previous rounds and therefore considered to be representative of groundwater conditions at these locations.

4.0 Field Observations and Results

The April 2023 sampling event was completed between 3 April 2023 and 5 April 2023, commencing with deployment of HydraSleeves™ and gauging of all wells. The results are summarised in following sections.

Weather conditions during the sampling event were hot and partly cloudy during the sampling event (BOM, 2022a). A summary of the rainfall recorded from the closest weather station (Cairns Aero - Station Number: 31011) before and during the event includes:

- October 2022: 87 mm.
- November 2022: 37.8 mm.
- December 2022: 312 mm.
- January 2023: 393.6 mm.
- February 2023: 444.6 mm.
- March 2023: 416.4 mm.
- April 2023: 147.8 mm.

Construction activities were occurring on-Base during the sampling round however did not involve earthworks and is considered unlikely to influence concentrations of PFAS in groundwater and surface water or interpretation of these results.

4.1 Groundwater

4.1.1 Observations and Field Measurements

Table 10 Groundwater Observations and Field Measurements

Feature	Details
Access	All monitoring wells were accessible, and samples were collected from all locations.
Monitoring Well Network	Upon opening the gatic cover, MW013, MW014 and MW017 were observed to be flooded above the top of the casing. The well caps at these locations were appropriately secured and the water was removed at these locations prior to HydraSleeve™ deployment. The well caps were secured upon completion of sampling. The well cap was found to have been off upon arrival at MW015 however the gatic was secure. At monitoring well MW036, insufficient water was present for HydraSleeve™ deployment and a decontaminated steel bailer was used to collect this sample.
Tidal Summary	Tidal samples were collected on 4 April 2023 (low tide) and 5 April 2023 (high tide). The Bureau of Meteorology (BOM, 2022b) tidal summary for Cairns, located at (16°56'S, 145°47'E) was: • Low tide at 14:21, 4 April 2023 with a height of 0.96m. • High tide at 08:38, 5 April 2023 with a height of 2.93m.

Feature	Details
Depth to Groundwater	HMAS Cairns Depth to groundwater at low tide was between 0.0556 (MW001) and 3.166 (MW015) metres below top of casing (mbtoc) and groundwater elevations were between -0.651 (MW015) and 2.103 (MW09) metres Australian Height Datum (mAHD). Depth to groundwater at high tide was between 0.536 (MW009) and 2.024 (MW018) mbtoc and groundwater elevations were between 0.644 (MW018) and 2.123 (MW009) mAHD. Former WWII RAN Fuel Installation Depth to groundwater was between 0.787 (MW035) and 2.242 (MW031) mbtoc and groundwater elevations were between 1.380 (MW036) and 4.818 (MW031) mAHD. Groundwater gauging data are presented in **Table T1** in **Appendix B**.
Field Observations	Groundwater from four monitoring well locations at HMAS Cairns at low tide (MW004, MW013, MW014 and MW019) had a sulfurous odour. Groundwater from four monitoring well locations at HMAS Cairns at high tide (MW001, MW014, MW015 and MW019) had a sulfurous odour. Groundwater colour was noted to be clear, light yellow, orange, brown and grey/black. No other visible or olfactory indications of contamination were observed during the sampling of the monitoring wells. Field observations are presented **Table T1** in **Appendix B**.
Groundwater Flow Direction	Groundwater contours and inferred groundwater flow directions at HMAS Cairns at both high and low tide, and the Former WWII RAN Fuel Installation in April 2023 are shown on **Figure 3A** and **Figure 3B** in **Appendix A**. Groundwater is inferred to flow predominantly in an easterly direction at HMAS Cairns towards Trinity Inlet at both high and low tides. The inferred groundwater flow direction at the Former WWII RAN Fuel Installation is to the south-east towards Saltwater Creek.

Feature	Details
Water quality parameters	Groundwater quality parameters were measured prior to collecting groundwater samples. The readings are presented in **Table T1** in **Appendix B** and are summarised below. At HMAS Cairns: • DO results ranged between 0.02 mg/L (MW014) and 5.08 mg/L (MW017) at low tide, and between 0.63 mg/L (MW013) and 6.49 mg/L (MW017) at high tide indicating low to well oxygenated conditions. • EC ranged from 185.5 µS/cm (MW005) to 50,176 µS/cm (MW016) at low tide, and from 555 µS/cm (MW011) to 45,318 µS/cm (MW015) at high tide indicating fresh to saline conditions in groundwater. • pH ranged from 6.7 (MW019) to 7.78 (MW015) at low tide, and from 6.52 (MW019) to 7.61 (MW018) at high tide indicating neutral to slightly alkaline conditions. • ORP ranged from -93.5 mV (MW014) to 214.3 mV (MW015) at low tide, and from -79.7 mV (MW014) to 208.2 mV (MW017) at high tide, indicating moderately to strongly reducing conditions. • Temperature ranged from 29.2 °C (MW009) to 33.6 °C (MW005) at low tide, and from 27.4 °C (MW009) to 33.7 °C (MW003) at high tide. At the Former WWII RAN Fuel Installation: • DO results ranged between 2.71 mg/L (MW036) and 4.04 mg/L (MW031) indicating low oxygenated conditions. • EC ranged from 906 µS/cm (MW036) to 1,317 µS/cm (MW031) indicating fresh to brackish groundwater conditions. • pH ranged from 5.69 (MW031) to 6.13 (MW031) indicating slightly acidic to neutral conditions. • ORP ranged from 161.2 mV (MW036) to 341.8 mV (MW031) indicating mildly to moderately reducing conditions. • Temperature ranged from 26.3°C (MW036) to 27.5°C (MW031).

4.1.2 Analytical Results

All of the groundwater samples analysed during this event reported concentrations of PFAS above the laboratory LOR. The groundwater analytical results from this sampling event are presented in **Table T2** in **Appendix B**. A total of 25 samples from HMAS Cairns (collected during low and high tides) and two samples from the Former WWII RAN Fuel Installation exceeded the adopted ecological guideline values for PFOS.

Overall, PFAS concentrations between high and low tide sampling were generally within the same order of magnitude.

There were no first-time detections or new exceedances of guideline values detected in groundwater during this sampling event. New historical maximum concentrations were detected at MW004 (high tide for PFOS and Sum of PFHxS+PFOS), MW005 (high tide for PFOS, Sum of PFHxS+PFOS and Sum of PFAS) and at MW031 (for PFOS, Sum of PFHxS+PFOS). Historical groundwater results are presented in **Table T7**, **Appendix B**.

4.2 Surface Water

4.2.1 Observations and Field Measurements

Table 11 Surface Water Observations and Field Measurements

Feature	Details
Access	All surface water sampling locations were accessible, and samples were collected from all locations.
Field Observations	Surface water colour ranged from light olive to brown. No visual or olfactory indications of contamination were observed during the sampling of the surface water sampling locations. Field observations are presented in **Table T3** in **Appendix B**.
Water quality parameters	Surface water quality parameters were measured prior to collecting surface water samples at each location. The readings are presented in **Table T3** in **Appendix B** and are summarised below. At HMAS Cairns: • DO ranged from 5.19 mg/L (SW033) to 7.02 mg/L (SW031) indicating moderately oxygenated conditions. • EC ranged from 29,288 µS/cm (SW031) to 56,681 µS/cm (SW030) indicating saline conditions. • pH ranged from 7.17 (SW033) to 7.89 (SW030) indicating near neutral to slightly alkaline conditions. • ORP ranged from 228.9 mV (SW033) to 277.2 mV (SW031) indicating moderately reducing conditions. • Temperature ranged from 29.6°C (SW033) and 32.6°C (SW031). At the Former WWII RAN Fuel Installation: • DO ranged from 3.4 mg/L (SW101) to 5.6 mg/L (SW100) indicating slightly oxygenated conditions. • EC was recorded at SW101 at 1,427 µS/cm indicating freshwater conditions. EC was recorded at SW100 at 15,903 µS/cm and 37,040 µS/cm at SW036, indicating saline conditions. • pH ranged from 6.39 (SW101) to 7.16 (SW036) indicating slightly acidic to slightly alkaline. • ORP ranged from 239.0 mV (SW100) to 426.9 mV (SW036) indicating mildly to moderately reducing conditions. • Temperature ranged from 27.3°C (SW101) and 30°C (SW036).

4.2.2 Analytical Results

Of the nine surface water samples collected during this event, four samples adjacent to HMAS Cairns reported concentrations of PFAS above the laboratory LOR. The surface water analytical results from this sampling event are presented in **Table T4** in **Appendix B**. All four detects of PFAS reported concentrations that also exceeded the adopted ecological guideline values for PFOS. There were no first-time detections, new exceedances of guideline values or new historical maximums in the surface water samples from HMAS Cairns.

There were no first-time detections, new exceedances of guideline values or new historical maximums recorded in surface water samples collected from the Former WWII RAN Fuel Installation Management Area with all results reported below the laboratory LOR. Historical surface water results presented in **Table T8**, **Appendix B**.

4.3 Sediment

4.3.1 Observations and Field Measurements

Table 12 Sediment Observations and Field Measurements

Feature	Details
Access	All sediment sampling locations were accessible, and samples were collected from all locations. SD101 was not analysed as the materials present were recently imported and not representative of the natural conditions of the sediment in the waterway.
Field Observations	No visible or olfactory indications of contamination were observed during the sampling of the sediment locations. Sediment logging data are presented in **Table T5** in **Appendix B**.

4.3.2 Analytical Results

All eight sediment samples collected reported concentrations of PFOS, PFOA or PFOS+PFHxS above the laboratory LOR. The sediment analytical results from this sampling event are presented in **Table T6** in **Appendix B**.

No new detections were reported in the sediment samples. New historical maximum concentrations of PFOS and PFOS+PFHxS were detected as follows:

- SD033 (PFOS 0.0008 mg/kg; PFOS+PFHxS 0.0008 mg/kg).
- SD100 (PFOS 0.0010 mg/kg; PFOS+PFHxS 0.0010 mg/kg).

Historical sediment results are presented in **Table T9**, **Appendix B**.

5.0 Summary and Next Sampling Event

5.1 Summary of Monitoring Event

A groundwater, surface water and sediment monitoring event was completed at HMAS Cairns and the Former WWII RAN Fuel Installation between 3 April and 5 April 2023.

The program included sampling of 18 groundwater monitoring wells including 15 wells at HMAS Cairns at both high and low tides and three wells at the Former WWII RAN Fuel Installation, and collection of co-located surface water and sediment samples at nine locations including six locations at HMAS Cairns and three locations at the Former WWII RAN Fuel Installation. One sediment sample at SD101 was collected but not analysed as stated in **Section 3.7**.

Table 13 summarises the findings of the April 2023 sampling event and the recommended actions.

Table 13 Summary of Sampling Event

Item	Comment	Recommended Actions
Groundwater: Access to sampling locations, monitoring well network condition and installation of HydraSleeves™	All of the 18 monitoring well locations were accessible. All wells were sampled, and field quality parameters were recorded.	Ongoing monitoring in accordance with the OMP.
	Upon opening the gatic cover, MW013, MW014 and MW017 were observed to be flooded above the top of the casing. The well caps at these locations were appropriately secured and the water was removed at these locations prior to HydraSleeve™ deployment. The well caps were secured upon completion of sampling. The well cap was found to have been off upon arrival at MW015 however the gatic was secure. The well cap was secured upon completion of sampling. At monitoring well MW036, insufficient water was present for HydraSleeve™ deployment and a decontaminated steel bailer was used to collect these samples.	Ensure well caps are secure.
	HydraSleeves™ were installed outside of documented screened interval at MW004, MW005, MW011 and MW035.	SAQP will be amended to include provision for addition of a top weight to shallow wells.
Sediment/Surface Water: Access to sampling locations.	All nine co-located surface water and sediment sample locations were accessible. All locations were sampled and field parameters recorded. Laboratory analysis of SD101 was not conducted as the material was not deemed to be representative of the natural material in the waterway.	Remove sediment sampling at SD101 from the SAQP due to the presence of imported materials. Ongoing monitoring in accordance with the OMP.

Item	Comment	Recommended Actions
Analytical Results	PFAS were detected above laboratory LOR in all 33 groundwater samples. PFAS were detected above laboratory LOR in four of the nine surface water samples. PFAS were detected above laboratory LOR in all eight sediment samples.	Ongoing monitoring in accordance with the OMP.
First-time detections of PFOS, PFOA or PFOS+PFHxS	No first-time detections of PFOS, PFOA or PFHxS above the laboratory limit of reporting were recorded in any of the groundwater, surface water or sediment samples collected.	Ongoing monitoring in accordance with the OMP.
New exceedances of screening criteria for PFOS, PFOA or PFOS+PFHxS	No new exceedances of the HEPA (2020) recreational use guidelines or the 95% species protection ecological guidelines (HEPA, 2020) were detected in groundwater samples or surface water samples.	Ongoing monitoring in accordance with the OMP.
Historical maximum concentrations of PFOS, PFOA or PFOS+PFHxS	New historical maximum concentrations of PFOS, PFOA or PFOS+PFHxS were detected in samples MW004, MW005, MW031, SD033, SD034 and SD100.	Ongoing monitoring in accordance with the OMP.

5.2 Upcoming Sampling Events

The next biannual sampling event is scheduled for September 2023.

5.3 Upcoming Annual Interpretive Report

The next annual interpretive report is scheduled for January 2024.

6.0 References

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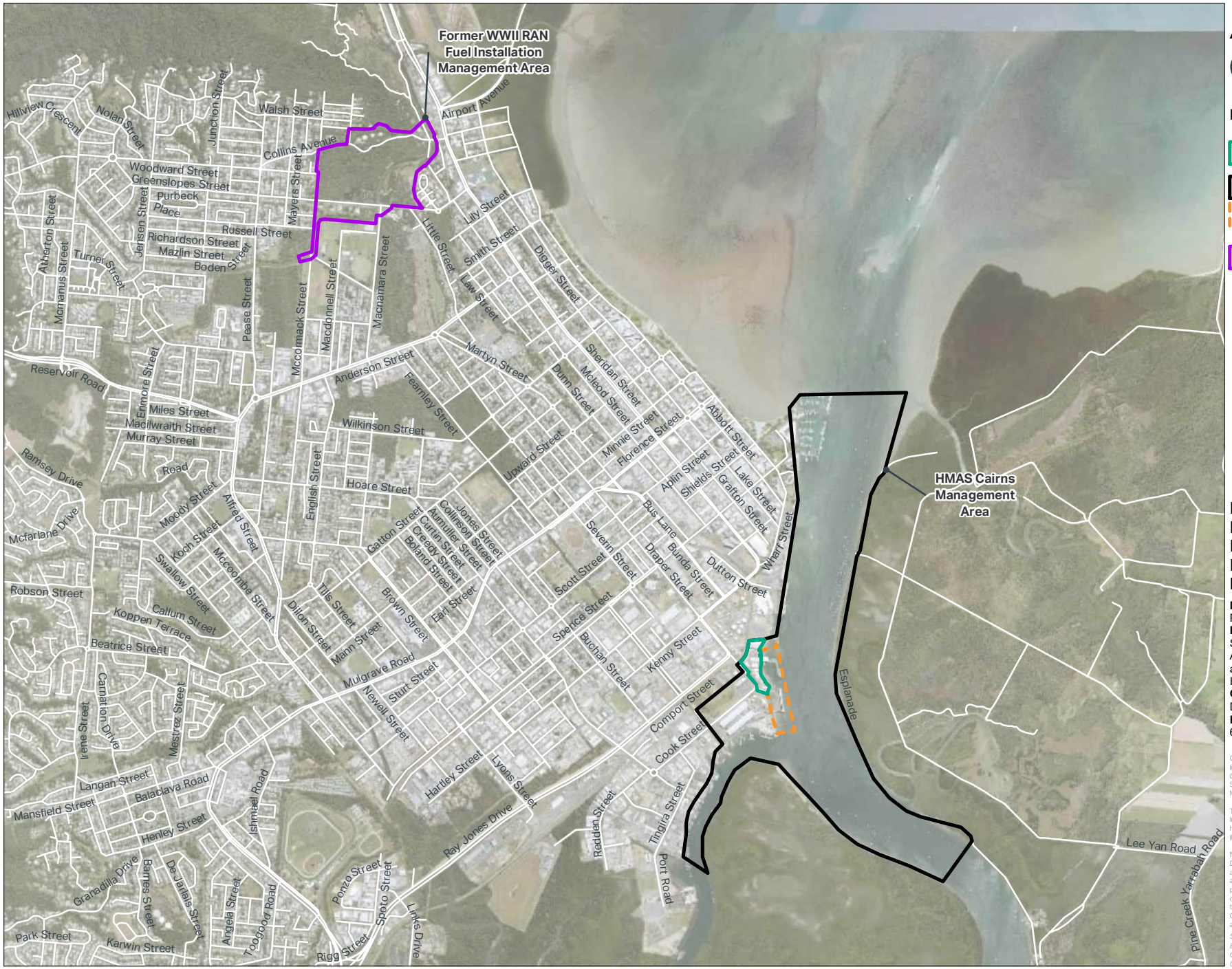
Appendix A

Figures

Appendix A Figures



AECOM

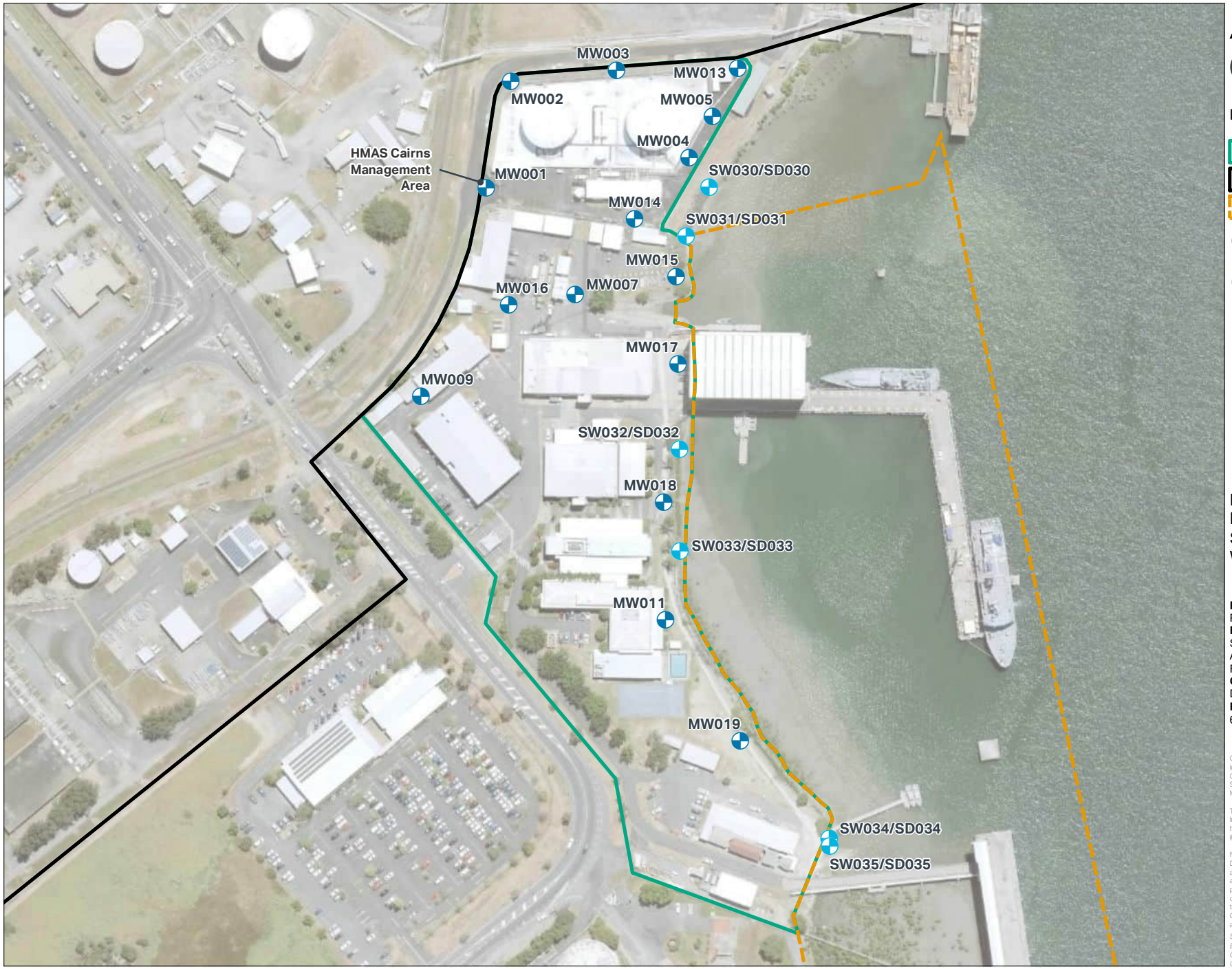
Legend

- HMAS Cairns Property Boundary
- Management Area
- Seabed Area
- Former WWII RAN Fuel Installation Management Area

FIGURE 1:
HMAS CAIRNS AND FORMER WWII RAN FUEL INSTALLATION LOCATION PLAN

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2023 - PFAS OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 30 60 m

Legend

- HMAS Cairns
- Management Area
- Seabed Area
- Groundwater Monitoring Location
- Combined Surface and Sediment Location

FIGURE 2A: HMAS CAIRNS - SAMPLE LOCATIONS WET SEASON

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2023 – OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Surface Water and Sediment Location

FIGURE 2B:
FORMER WWII RAN FUEL INSTALLATION – SAMPLE LOCATIONS WET SEASON

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2023 – PFAS OMP - HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Service Layer Credits:
spatial-img.information.qld.gov.au/arcgis/rest/services

AECOM

N

0 30 60 m

Legend

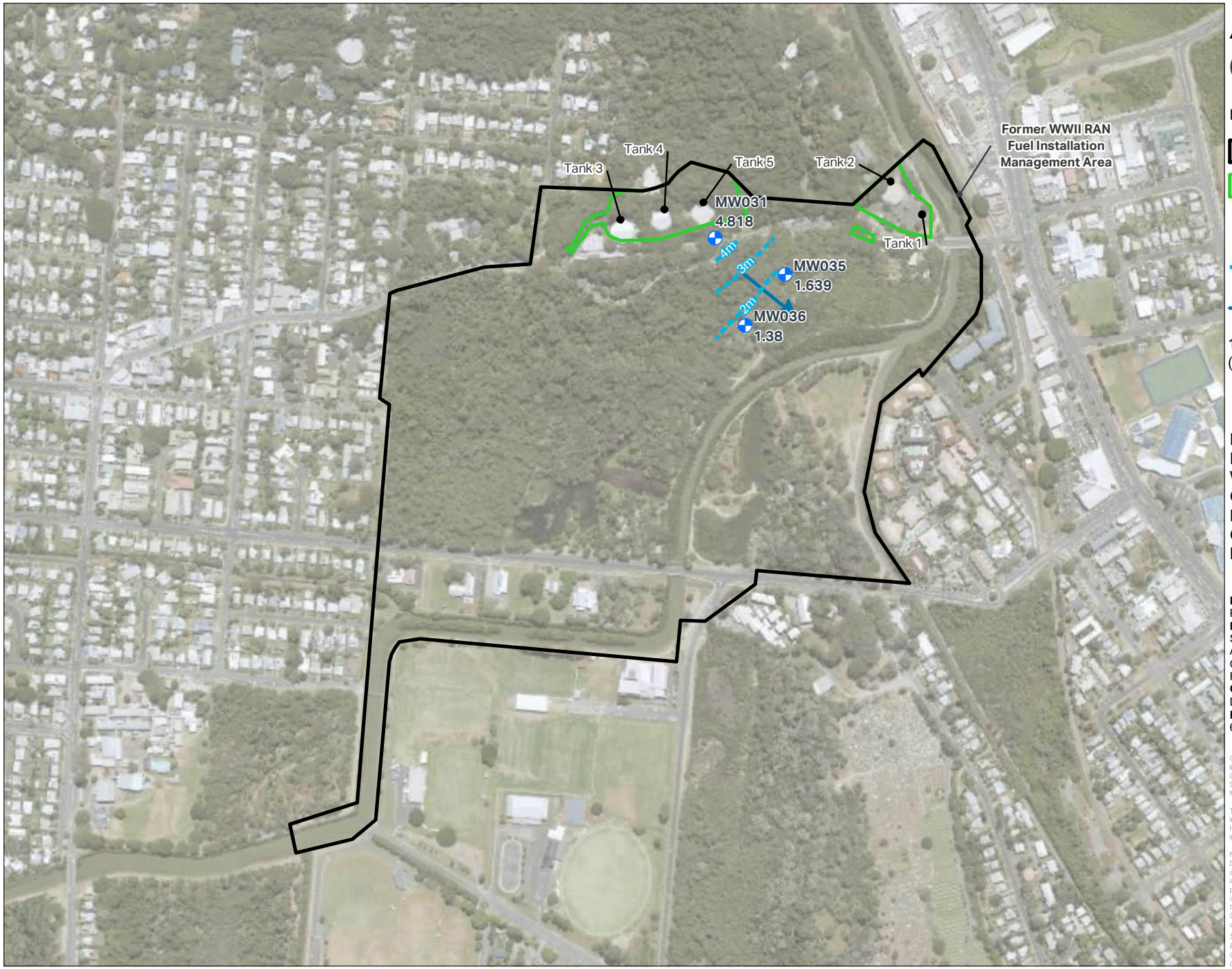
- HMAS Cairns
- Management Area
- Seabed Area
- Inferred Groundwater Flow Direction
- Groundwater Contours at High Tide (mAHD)
- Groundwater Contours at Low Tide (mAHD)
- Groundwater Monitoring Location

1.102 Low Tide Groundwater Elevation (mAHD)
0.247 High tide Groundwater Elevation (mAHD)

FIGURE 3A: HMAS CAIRNS - WET SEASON - GROUNDWATER ELEVATION AND INFERRED GROUNDWATER FLOW DIRECTION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2023 – OMP HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User



AECOM

N

0 75 150 m

Legend

- Management Area
- WWII RAN Fuel Installation
- Groundwater Monitoring Location
- Groundwater Contours (mAHD)
- Inferred Groundwater Flow Direction

1.639 Groundwater Elevation (mAHD)

FIGURE 3B: FORMER WWII RAN FUEL - WET SEASON - GROUNDWATER ELEVATION AND INFERRED GROUNDWATER FLOW DIRECTION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report, April 2023 – PFAS OMP - HMAS Cairns and Former WWII RAN Fuel Installation,
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612487

Sources:
Base Data: (c) 2020 (ESRI, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User

Appendix B

Tables

Appendix B Tables

Table T1: Groundwater Gauging and Water Quality Parameter Results

Property ID	Location ID	HydraSleeve Deployment Date	HydraSleeve Deployment Time	Screen Interval (mbgl)	Hydrasleeve Deployment Collar Depth* (mbtoc)	Sample Date	Sample Time	Well Depth (mbtoc)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Condition of Gatic	DO (mg/L)	EC (µS/cm)	pH	Redox (mV)	Corrected Redox* (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method	Comment
HMAS Cairns Low Tide																								
0009	MW001	04/04/2023	09:37	2.5 – 5.5	4.04	04/04/2023	15:36	5.34	0.571	2.494	1.923	Good	2.66	16,275	7.08	-100.7	93.3	33.4	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW002	04/04/2023	09:44	1.5 – 4.5	2.93	04/04/2023	15:26	4.23	0.852	2.564	1.712	Good	2.2	6456	6.75	-108.5	85.5	32.1	Low	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW003	04/04/2023	10:06	2.5 – 5.5	3.62	04/04/2023	15:15	4.92	0.902	2.542	1.64	Good	2.09	29,162	6.86	-108.1	85.9	32.7	Low	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW004	04/04/2023	09:35	2.0 – 4.0	2.59	04/04/2023	14:31	3.89	2.076	2.543	0.467	Good	1.4	37,115	7.12	-275.6	-81.6	31.1	Low	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve	
0009	MW005	04/04/2023	09:50	2.0 – 4.0	2.29	04/04/2023	14:51	3.59	2.153	2.548	0.395	Good	4.09	185.5	7.44	-143.3	50.7	33.6	Medium	Light Brown	No odour	No sheen	HydraSleeve	
0009	MW007	04/04/2023	08:19	1.5 – 4.0	2.32	04/04/2023	15:06	3.62	1.011	2.602	1.591	Good	0.17	6604	7.2	-92.6	101.4	33.5	Medium	Light Yellow / Brown	No odour	No sheen	HydraSleeve	
0009	MW009	04/04/2023	07:47	1.5 – 4.5	3.11	04/04/2023	15:24	4.41	0.556	2.659	2.103	Good	0.63	4562	6.87	-38.1	155.9	29.2	Medium	Orange / Brown	No odour	No sheen	HydraSleeve	
0009	MW011	04/04/2023	07:35	2.0 – 3.0	1.64	04/04/2023	16:14	2.94	1.495	2.376	0.881	Good	2.27	1576	7.11	-157.4	36.6	30.0	Low	Light Yellow	No odour	No sheen	HydraSleeve	
0009	MW013	04/04/2023	10:00	2.0 – 5.0	3.68	04/04/2023	15:02	4.98	2.046	2.437	0.391	Good	2.5	7175	7.41	-193.5	0.5	32.5	Low	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve	J cap loose, water to TOC, sediment on IP
0009	MW014	04/04/2023	08:43	2.0 – 5.0	3.72	04/04/2023	13:46	5.02	1.357	2.395	1.038	Good	0.02	32,322	7.27	-287.5	-93.5	31.1	Clear	Black / Grey	Rotten egg smell (sulfurous)	No sheen	HydraSleeve	Water above TOC, water removed prior to opening
0009	MW015	04/04/2023	08:49	2.0 – 5.0	3.7	04/04/2023	14:36	5	3.166	2.515	-0.651	Good	3.39	42,904	7.78	20.3	214.3	31.1	Medium	Light Brown	No odour	No sheen	HydraSleeve	Well cap off on arrival, gatic secure
0009	MW016	04/04/2023	08:02	2.0 – 5.0	3.72	04/04/2023	15:06	5.02	0.784	2.702	1.918	Good	0.48	50,176	7.15	-8.1	185.9	34.2	Low	Light Yellow / Brown	No odour	No sheen	HydraSleeve	
0009	MW017	04/04/2023	08:25	2.0 – 5.0	3.64	04/04/2023	16:40	4.94	2.88	2.498	-0.382	Good	5.08	42,795	6.99	-24.3	169.7	30.7	Low	Light Yellow	No odour	No sheen	HydraSleeve	Flooded above TOC, water removed prior to opening
0009	MW018	04/04/2023	10:00	2.0 – 5.0	3.62	04/04/2023	16:33	4.92	2.138	2.668	0.53	Good	2.8	3775	7.32	-96.9	97.1	30.7	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW019	04/04/2023	07:12	2.0 – 5.0	3.72	04/04/2023	16:07	5.02	1.09	1.913	0.823	Good	1.66	33,481	6.7	-274.3	-80.3	29.6	Low	Light Yellow	Rotten egg smell (sulfurous)	No sheen	HydraSleeve	
HMAS Cairns High Tide																								
0009	MW001	3/04/2023	15:35	2.5 – 5.5	4.04	04/04/2023	09:37	5.34	0.581	2.494	1.913	Good	2.85	25,726	7.28	-197.6	-3.6	32.7	Clear	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve	
0009	MW002	3/04/2023	15:40	1.5 – 4.5	2.93	04/04/2023	09:44	4.23	0.868	2.564	1.696	Good	2.35	6495	6.79	-106.7	87.3	33.5	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW003	3/04/2023	15:16	2.5 – 5.5	3.62	04/04/2023	10:06	4.92	0.928	2.542	1.614	Good	1.75	30,664	6.89	-105.0	89.0	33.7	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW004	3/04/2023	15:34	2.0 – 4.0	2.59	04/04/2023	09:35	3.89	1.576	2.543	0.967	Good	2.26	16,748	7.36	-147.6	46.4	31.6	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW005	3/04/2023	15:42	2.0 – 4.0	2.29	04/04/2023	09:50	3.59	1.652	2.548	0.896	Good	2.53	6501	7.48	-5.8	188.2	32.4	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW007	3/04/2023	16:22	1.5 – 4.0	2.32	04/04/2023	08:19	3.62	0.971	2.602	1.631	Good	2.5	6030	7.05	-131.6	62.4	31.6	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW009	3/04/2023	16:37	1.5 – 4.5	3.11	04/04/2023	07:47	4.41	0.536	2.659	2.123	Good	3.55	2867	6.69	-65.0	129.0	27.4	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW011	3/04/2023	16:50	2.0 – 3.0	1.64	04/04/2023	07:35	2.94	1.433	2.376	0.943	Good	4.66	555	6.96	-130.4	63.6	28.4	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW013	3/04/2023	15:49	2.0 – 5.0	3.68	04/04/2023	10:00	4.98	1.562	2.437	0.875	Good	0.63	5530	7.58	-155.5	38.5	32.7	Low	Clear	No odour	No sheen	HydraSleeve	J cap loose, water to TOC, sediment on IP
0009	MW014	3/04/2023	16:08	2.0 – 5.0	3.72	04/04/2023	08:43	5.02	1.338	2.395	1.057	Good	0.93	36,278	7	-273.7	-79.7	28.8	Low	Light Yellow / Brown	Rotten egg smell (sulfurous)	No sheen	HydraSleeve	Water above TOC, water removed prior to opening
0009	MW015	3/04/2023	16:05	2.0 – 5.0	3.7	04/04/2023	08:49	5	1.406	2.515	1.109	Good	5.52	45,318	7.34	-111.6	82.4	29.4	-	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve	Well cap off on arrival, gatic secure
0009	MW016	3/04/2023	16:34	2.0 – 5.0	3.72	04/04/2023	08:02	5.02	0.78	2.702	1.922	Good	3.31	26,600	6.86	-24.8	169.2	31.6	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW017	3/04/2023	16:30	2.0 – 5.0	3.64	04/04/2023	08:25	4.94	1.402	2.498	1.096	Good	6.49	33,732	7.21	14.2	208.2	30.4	Clear	Clear	No odour	No sheen	HydraSleeve	Flooded above TOC, water removed prior to opening
0009	MW018	3/04/2023	16:44	2.0 – 5.0	3.62	04/04/2023	10:00	4.92	2.024	2.668	0.644	Good	3.4	4498	7.61	-103.3	90.7	31.3	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW019	3/04/2023	16:51	2.0 – 5.0	3.72	04/04/2023	07:12	5.02	1.046	1.913	0.867	Good	2.27	23,978	6.52	-229.9	-35.9	28.3	Medium	Yellow	Rotten egg smell (sulfurous)	No sheen	HydraSleeve	
Former WWII RAN Fuel Installation																								
0009	MW031	4/04/2023	11:52	2.5 – 4.5	4.06	05/04/2023	10:43	5.36	2.242	7.06	4.818	Good	4.04	1317	6.13	147.8	341.8	27.5	Clear	Clear	No odour	No sheen	HydraSleeve	
0009	MW035	4/04/2023	11:45	1.0 – 2.0	1.44	05/04/2023	10:56	2.74	0.787	2.426	1.639	Good	3.69	1099	6.03	138.0	332.0	26.5	Clear	Clear	No odour	No sheen	HydraSleeve	Sediment on IP
0009	MW036	-	-	0.7 – 1.7	-	05/04/2023	11:05	2.05	1.498	2.878	1.38	Good	2.71	906	5.69	-32.8	161.2	26.3	Medium	Yellow / Brown	No odour	No sheen	Bailer	No HS deployed, insuffcient water

*HydraSleeves were installed with bottom weight touching the bottom of the well, HydraSleeve installation depth was claculated based on HydraSleeve length of 1.3 m full length and 0.3 m if installed with a top weight.

mbtoc	metres below top of casing
mAHD	metres above Australian Height Datum
DO	Dissolved Oxygen
EC	Electrical Conductivity
Redox	Oxidation Reduction Potential (applied correction values)
Temp	Temperature
mg/L	milligrams per litre
µS/cm	microsiemens per centimetre
mV	millivolt
°C	degrees Celcius
-	no data collected

*Oxidation-reduction potential measured in millivolts (mV) and corrected values calculated by the addition of an offset voltage of 194 mV (for reference electrode Ag/AgCl).

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Table T2: Groundwater Analytical Results

Project Name: PFAS HMAS Cairns
Sampling Event Factual Report
April 2023

Location ID	Sample ID	Date	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)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
PFAS NEMP 2020 Freshwater and Interim Marine 95%																														**0.13**	**220**		
HMAS Cairns																																	
MW001	0009_MW001_HT_230404	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.10	0.10
	0009_MW001_LT_230404	4/04/2023	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.10	<0.01	0.15	0.22
MW002	0009_MW002_HT_230404	5/04/2023	<0.24	<0.24	<0.24	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	1.44	<1.2	<0.24	<0.24	<0.24	0.76	1.52	4.50	18.1	1.20	1.54	<0.61	<0.24	<0.24	<0.24	**75.8**	1.91	93.9	107
	0009_MW002_LT_230404	4/04/2023	<0.23	<0.23	<0.23	<0.23	<0.59	<0.23	<0.59	<0.23	<0.59	<0.23	<0.59	1.64	<1.2	<0.23	<0.23	<0.23	0.84	1.67	4.77	18.1	1.17	1.55	<0.59	<0.23	<0.23	<0.23	**70.2**	1.88	88.3	102
MW003	0009_MW003_HT_230404	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.02	<0.05	<0.02	<0.05	1.13	0.3	<0.02	<0.02	<0.02	0.35	0.49	2.53	9.24	0.59	1.25	<0.05	<0.02	<0.02	<0.02	**7.08**	0.72	16.3	23.7
	0009_MW003_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.02	<0.05	<0.02	<0.05	1.12	0.3	<0.02	<0.02	<0.02	0.36	0.62	2.58	9.55	0.61	1.30	<0.05	<0.02	<0.02	0.02	**9.14**	0.81	18.7	26.4
MW004	0009_MW004_HT_230404	5/04/2023	<0.05	<0.05	0.06	<0.05	<0.06	<0.02	<0.06	0.18	<0.06	<0.02	<0.06	0.62	0.3	0.04	<0.02	<0.02	0.52	0.72	1.36	6.26	0.71	0.60	<0.06	<0.02	<0.02	0.05	**39.6**	0.86	45.9	51.9
	0009_MW004_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	0.11	<0.06	<0.02	<0.06	0.47	0.2	0.03	<0.02	<0.02	0.40	0.46	1.08	4.98	0.56	0.49	<0.06	<0.02	<0.02	0.05	**22.9**	0.63	27.9	32.4
MW005	0009_MW005_HT_230404	5/04/2023	<0.10	<0.10	<0.10	<0.10	<0.24	<0.10	<0.24	<0.10	<0.24	<0.10	<0.24	0.65	<0.5	<0.10	<0.10	<0.10	0.45	0.93	1.53	8.08	1.04	0.53	<0.24	<0.10	<0.10	0.12	**60.7**	1.04	68.8	75.1
	0009_MW005_LT_230404	4/04/2023	<0.09	<0.09	<0.09	<0.09	<0.23	<0.09	<0.23	<0.09	<0.23	<0.09	<0.23	0.58	<0.4	<0.09	<0.09	<0.09	0.45	0.80	1.44	8.02	0.97	0.61	<0.23	<0.09	<0.09	0.14	**55.4**	0.90	63.4	69.3
MW007	0009_MW007_HT_230404	4/04/2023	<0.24	<0.24	<0.24	<0.24	<0.59	<0.24	<0.59	<0.24	<0.59	<0.24	<0.59	0.42	<1.2	<0.24	<0.24	<0.24	<0.24	0.47	0.90	4.24	0.28	0.50	<0.59	<0.24	<0.24	<0.24	**80.4**	0.50	84.6	87.7
	0009_MW007_LT_230404	4/04/2023	<0.24	<0.24	<0.24	<0.24	<0.60	<0.24	<0.60	<0.24	<0.60	<0.24	<0.60	0.48	<1.2	<0.24	<0.24	<0.24	<0.24	0.41	1.07	4.75	0.36	0.70	<0.60	<0.24	<0.24	<0.24	**62.4**	0.51	67.2	70.7
MW009	0009_MW009_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.17	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.15**	<0.01	0.32	0.34
	0009_MW009_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.17	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.16**	0.01	0.33	0.36
MW011	0009_MW011_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.10	0.01	0.10	0.11
	0009_MW011_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	0.06	0.14	0.20
MW013	0009_MW013_HT_230404	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	0.02	0.06	0.34	0.04	0.03	<0.05	<0.02	<0.02	0.07	**1.87**	0.03	2.21	2.48
	0009_MW013_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	0.02	0.02	0.07	0.30	0.04	0.02	<0.05	<0.02	<0.02	0.08	**1.63**	0.03	1.93	2.26
MW014	0009_MW014_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	0.17	<0.12	<0.05	<0.12	0.93	0.4	<0.05	<0.05	<0.05	0.43	0.81	3.48	14.0	0.77	0.73	<0.12	<0.05	<0.05	<0.05	**52.8**	0.85	66.8	75.4
	0009_MW014_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	0.28	<0.12	<0.05	<0.12	0.70	0.3	<0.05	<0.05	<0.05	0.37	0.79	2.88	11.0	0.62	0.62	<0.12	<0.05	<0.05	<0.05	**73.9**	0.79	84.9	92.2
MW015	0009_MW015_HT_230404	4/04/2023	<0.05	0.12	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.12	0.37	0.08	0.02	<0.05	<0.02	<0.02	<0.02	**1.42**	0.04	1.79	2.20
	0009_MW015_LT_230404	4/04/2023	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.11	0.32	0.08	<0.02	<0.05	<0.02	<0.02	<0.02	**1.39**	0.03	1.71	2.03
MW016	0009_MW016_HT_230404	4/04/2023	<0.05	0.14	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.20	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.29	2.20	0.09	0.26	<0.05	<0.02	<0.02	<0.02	**0.24**	0.02	2.44	3.48
	0009_MW017_LT_230404	4/04/2023	<0.05	0.11	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.25	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.36	2.65	0.09	0.31	<0.05	<0.02	<0.02	<0.02	**0.21**	0.02	2.86	4.06
MW017	0009_MW017_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.02	0.02	0.10	0.40	0.05	0.04	<0.05	<0.02	<0.02	<0.02	**1.14**	0.04	1.54	1.85
	0009_MW017_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.30	0.03	0.03	<0.05	<0.02	<0.02	<0.02	**1.34**	0.02	1.64	1.79
MW018	0009_MW018_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
	0009_MW018_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
MW019	0009_MW019_HT_230404	4/04/2023	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.08	0.19	0.19	0.77	0.15	0.07	<0.05	<0.02	<0.02	<0.02	**6.68**	0.18	7.45	8.42
	0009_MW019_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	0.07	0.16	0.16	0.64	0.14	0.06	<0.05	<0.02	<0.02	<0.02	**4.76**	0.15	5.40	6.19
Former WWII RAN Fuel Installation																																	
MW031	0009_MW031_230405	5/04/2023	<0.05	0.11	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.44**	<0.01	0.52	0.63
MW035	0009_MW035_230405	5/04/2023	<0.05	0.18	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	0.02	<0.05	<0.02	<0.02	<0.02	0.12	<0.01	0.20	0.45
MW036	0009_MW036_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.22	<0.02	0.04	<0.05	<0.02	<0.02	<0.02	**0.28**	<0.01	0.50	0.62

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than
NEMP is National Environmental Management Plan

Denotes first time detection above LOR of PFOS + PFHxS or PFOA
Denotes new exceedance of ecological or human health guideline values

Table T3: Surface Water Quality Parameters

Property ID	Sample ID	Sample Date	Sample Time	DO (mg/L)	EC (uS/cm)	pH	Redox (mV)	Corrected Redox* (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Comments
HMAS Cairns														
0009	SW030	05/04/2023	13:17	6.64	56,681	7.78	82.5	276.5	32.3	Low	Light Olive Brown 2.5Y 5/4	No odour	No sheen	Tidal water body. Sample collected at low tide.
0009	SW031	05/04/2023	13:32	7.02	29,288	7.86	83.2	277.2	32.6	Medium	Light Olive Brown 2.5Y 5/4	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW032	05/04/2023	16:54	5.93	55,515	7.69	71.6	265.6	31.5	Low	Light Olive Brown 2.5Y 5/4	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW033	05/04/2023	17:16	5.19	34,712	7.17	34.9	228.9	29.6	Medium	Light Olive Brown 2.5Y 5/4	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW034	05/04/2023	14:10	5.27	39,017	7.19	75.5	269.5	30.8	Low	Brown 7.5YR 4/3	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW035	05/04/2023	14:28	5.24	39,699	7.19	74.1	268.1	30.7	Low	Brown 7.5YR 4/3	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
Former WWII RAN Fuel Installation														
0009	SW036	05/04/2023	10:17	5.16	37,040	7.16	232.9	426.9	30	Medium	Light Olive Brown 2.5Y 5/4	No odour	No sheen	Tidal water body (Saltwater Creek). Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW100	05/04/2023	11:39	5.6	15,903	6.89	45.0	239.0	29.3	Medium	Brown 7.5YR 4/3	No odour	No sheen	Tidal water body (Saltwater Creek). Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW101	05/04/2023	11:21	3.4	1427	6.39	49.1	243.1	27.3	Low	Light Olive Brown 2.5Y 5/4	No odour	No sheen	Pond in Botanical Gardens. Sample collected with sampling pole and stainless steel cup below the surface of the water

DO	Dissolved Oxygen
EC	Electrical Conductivity
Redox	Oxidation Reduction Potential (applied correction values)
Temp	Temperature
mg/L	milligrams per litre
µs/cm	microsiemens per centimetre
mV	millivolt
°C	degrees Celcius

*Oxidation-reduction potential measured in millivolts (mV) and corrected values calculated by the addition of an offset voltage of 194 mV (for reference electrode Ag/AgCl).

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Table T4: Surface Water Analytical Results

Project Name: PFAS HMAS Cairns
Sampling Event Factual Report
April 2023

Location ID	Sample ID	Sample Date	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)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.02	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01
HEPA (2020) PFAS Recreational Water																														*10*	*2*	
HEPA (2020) Freshwater and Interim Marine 95%																														**0.13**	**220**		
HMAS Cairns																																	
SW030	0009_SW030_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.26**	<0.01	0.33	0.33
SW031	0009_SW031_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	<0.01	0.17	0.17
SW032	0009_SW032_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW033	0009_SW033_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
SW034	0009_SW034_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	<0.01	0.21	0.21
SW035	0009_SW035_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	<0.01	0.20	0.20
Former WWII RAN Fuel Installation																																	
SW036	0009_SW036_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW100	0009_SW100_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW101	0009_SW101_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01

LOR is limit of reporting
µg/L is micrograms per litre
< denotes concentration is less than
HEPA is Heads of Environment Protection Agency
Denotes first time detection above LOR of PFOS + PFHxS, PFOS or PFOA
Denotes new exceedance of ecological or human health guideline values

Table T5: Sediment Observation Results

Property ID	Location ID	Sample Date	Sample Time	Sample Description	Odour	Sheen	Sample Depth
HMAS Cairns							
0009	SD030	05/04/2023	13:15	Silty SAND, loose, brown, subangular, fine grained, saturated	No odour	No sheen	0.1 m
0009	SD031	05/04/2023	13:30	Silty SAND, very loose, brown, subangular, fine grained, saturated	No odour	No sheen	0.1 m
0009	SD032	05/04/2023	16:50	Silty CLAY, very soft, brown, medium plasticity with fine grained, subangular sand, saturated	No odour	No sheen	0.1 m
0009	SD033	05/04/2023	17:00	Silty CLAY, very soft, brown/black, medium plasticity with fine grained, subangular sand, saturated	No odour	No sheen	0.1 m
0009	SD034	05/04/2023	14:08	Silty CLAY, very soft, brown, medium plasticity with fine grained, subangular sand, saturated	No odour	No sheen	0.1 m
0009	SD035	05/04/2023	14:24	Silty CLAY, very soft, brown, medium plasticity with fine grained, subangular sand, saturated	No odour	No sheen	0.1 m
Former WWII RAN Fuel Installation							
0009	SD036	05/04/2023	10:00	Silty CLAY, very soft, brown, medium plasticity, saturated	No odour	No sheen	0.1 m
0009	SD100	05/04/2023	11:40	Silty CLAY, very soft, brown, medium plasticity, saturated	No odour	No sheen	0.1 m
0009	SD101	05/04/2023	11:20	Sandy GRAVEL, Loose, grey, fine to coarse, angular to subangular grained. Sand.	No odour	No sheen	0.1 m

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Table T6: Sediment Analytical Results

Project Name: PFAS HMAS Cairns
Sampling Event Factual Report
April 2023

Location ID	Sample ID	Date	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)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
Units			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			0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HMAS Cairns																																	
SD030	0009_SD030_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0034	<0.0002	0.0036	0.0036
SD031	0009_SD031_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0003	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0046	<0.0002	0.0049	0.0049
SD032	0009_SD032_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0014	<0.0002	0.0014	0.0014
SD033	0009_SD033_230405	5/04/2023	<0.0005	0.0607	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0008	<0.0002	0.0008	0.0615
SD034	0009_SD034_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0015	<0.0002	0.0015	0.0015
SD035	0009_SD035_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0009	<0.0002	0.0009	0.0009
Former WWII RAN Fuel Installation																																	
SD036	0009_SD036_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0009
SD100	0009_SD100_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0010	0.0003	0.0010	0.0013

LOR is limit of reporting
mg/kg is milligrams per kilogram
"<" denotes concentration less than

Denotes first time detection above LOR of PFOS + PFHxS or PFOA
Concentrations reported at the LOR have not been highlighted.

Table T7: Historical Groundwater Results

Location ID	Field ID	Sample Date	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)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.005	0.001	0.001	0.005	0.005	0.005	0.005	0.005	0.005	0.005	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	0.0001	0.001	0.001	0.005
PFAS NEMP 2020 Freshwater and Interim Marine 95%																												**0.13**	**220**		
HMAS Cairns																															
MW001	MW01_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	<0.05	<0.01	<0.01	<0.01	0.042	0.031	0.29	0.71	0.038	0.11	<0.01	<0.01	<0.01	<0.01	0.025	0.067	0.735	1.529
	MW01_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.066	0.027	<0.001	<0.001	<0.001	0.023	0.039	0.16	0.37	0.027	0.054	<0.001	<0.001	<0.001	<0.001	0.022	0.035	0.392	0.873
	MW01_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.045	0.011	<0.001	<0.001	<0.001	0.013	0.025	0.058	0.25	0.014	0.032	<0.001	<0.001	<0.001	<0.001	0.038	0.019	0.288	0.555
	MW01_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.049	0.02	<0.001	<0.001	<0.001	0.016	0.006	0.1	0.33	0.021	0.046	<0.001	<0.001	<0.001	<0.001	0.1	0.016	0.43	0.734
	0009_MW001_HT_200930	30/09/2020	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	0.04	0.02	0.24	0.73	0.04	0.09	<0.05	<0.02	<0.02	<0.02	**0.16**	0.05	0.89	1.56
	0009_MW001_LT_200930	30/09/2020	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.53	0.1	<0.02	<0.02	<0.02	0.11	0.08	0.76	2.02	0.15	0.42	<0.05	<0.02	<0.02	<0.02	**0.26**	0.17	2.28	4.66
	0009_MW001_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.13	0.32	0.03	0.05	<0.05	<0.02	<0.02	<0.02	**0.23**	0.03	0.55	0.88
	0009_MW001_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.11	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.22	0.54	0.04	0.10	<0.05	<0.02	<0.02	<0.02	0.09	0.04	0.63	1.17
	0009_MW001_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.13	0.32	0.02	0.04	<0.05	<0.02	<0.02	<0.02	0.08	0.02	0.40	0.67
	0009_MW001_LT_211028	28/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.17	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.36**	0.02	0.53	0.67
	0009_MW001_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.09	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.12	<0.01	0.21	0.26
	0009_MW001_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	0.23	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	<0.06	<0.02	0.23	0.37
	0009_MW001_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.11	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.15	0.21
	0009_MW001_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.07	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.11	0.16
	0009_MW001_LT_230404	4/04/2023	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.10	<0.01	0.15	0.22
	0009_MW001_HT_230404	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.10	0.10
MW002	MW02_HIGH_190522	22/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	3.2	1.4	<0.1	<0.1	<0.1	1.9	2.2	14	36	2.4	3	<0.1	<0.1	<0.1	<0.1	**46**	4.1	82	-
	MW02_LOW_190523	23/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	3.2	1.4	<0.1	<0.1	<0.1	1.6	1.4	12	32	2	2.7	<0.1	<0.1	<0.1	<0.1	**41**	3.8	73	-
	MW02_LOW_20190618	18/06/2019	<0.001	0.046	0.02	<0.001	<0.005	<0.005	<0.005	0.052	<0.005	<0.005	<0.005	3.2	1.4	0.013	0.009	<0.001	1.8	2.4	11	31	2.4	3.3	<0.001	<0.001	<0.001	0.067	**49**	3.8	80	112.407
	MW02_LOW_20190618_TOPA	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	3.5	2.3	0.02	0.02	<0.01	2.4	2.1	37	31	5.7	3.3	<0.01	<0.01	<0.01	0.07	**55**	3.7	86	148.32
	MW02_HIGH_20190619	19/06/2019	<0.001	0.064	0.024	<0.001	<0.005	<0.005	<0.005	0.056	<0.005	<0.005	<0.005	3.6	1.4	0.013	0.006	<0.001	1.9	1.9	11	26	1.1	2.4	<0.001	<0.001	<0.001	0.062	**53**	3.8	79	108.825
	0009_MW002_HT_200930	30/09/2020	<0.32	<0.32	<0.32	<0.32	<0.81	<0.32	<0.81	<0.32	<0.81	<0.32	<0.81	3.73	<1.6	<0.32	<0.32	<0.32	1.49	2.95	10.6	32.2	2.24	3.18	<0.81	<0.32	<0.32	<0.32	**77.5**	3.63	110	138
	0009_MW002_LT_200930	30/09/2020	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	2.60	<2.5	<0.50	<0.50	<0.50	1.50	2.35	9.35	29.2	1.65	2.50	<1.25	<0.50	<0.50	<0.50	**66.0**	3.35	95.2	118
	0009_MW002_LT_210408	8/04/2021	<0.37	<0.37	<0.37	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	1.59	<1.8	<0.37	<0.37	<0.37	1.07	2.11	6.55	18.1	1.37	1.59	<0.92	<0.37	<0.37	<0.37	**85.1**	2.40	103	120
	0009_MW002_HT_210409	9/04/2021	<0.38	<0.38	<0.38	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	1.34	<1.9	<0.38	<0.38	<0.38	1.03	1.80	6.04	14.1	1.38	1.45	<0.96	<0.38	<0.38	<0.38	**78.6**	2.25	92.7	108
	0009_MW002_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.07	<0.05	<0.02	<0.05	2.48	1.1	<0.02	<0.02	<0.02	1.52	4.54	10.2	34.0	1.82	3.36	<0.05	<0.02	<0.02	0.06	**70.0**	3.57	104	133
	0009_MW002_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.13	<0.05	<0.02	<0.05	2.44	1.0	<0.02	0.12	<0.02	1.66	4.80	9.94	29.7	1.98	2.45	<0.05	<0.02	<0.02	0.06	**84.6**	3.38	114	142
	0009_MW002_LT_220404	4/04/2022	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.50	<0.20	<0.50	<0.20	<0.50	2.04	<1.0	<0.20	<0.20	<0.20	1.30	2.56	8.66	25.9	1.60	2.04	<0.50	<0.20	<0.20	<0.20	**83.6**	2.96	110	131
	0009_MW002_HT_220405	5/04/2022	<0.48	<0.48	<0.48	<0.48	<1.19	<0.48	<1.19	<0.48	<1.19	<0.48	<1.19	2.57	<2.4	<0.48	<0.48	<0.48	1.28	2.62	8.05	29.3	1.62	2.48	<1.19	<0.48	<0.48	<0.48	**68.1**	3.14	97.4	119
	0009_MW002_LT_220912	12/09/2022	<0.08	<0.08	<0.08	<0.08	<0.21	<0.08	<0.21	<0.08	<0.21	<0.08	<0.21	1.77	0.5	<0.08	<0.08	<0.08	1.20	2.03	7.03	21.6	1.40	1.83	<0.21	<0.08	<0.08	<0.08	**44.7**	2.59	66.3	84.6
	0009_MW002_HT_220913	13/09/2022	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	2.07	0.5	<0.10	<0.10	<0.10	1.48	2.24	7.53	24.1	1.68	2.20	<0.25	<0.10	<0.10	<0.10	**55.4**	3.12	79.5	100
	0009_MW002_LT_230404	4/04/2023	<0.23	<0.23	<0.23	<0.23	<0.59	<0.23	<0.59	<0.23	<0.59	<0.23	<0.59	1.64	<1.2	<0.23	<0.23	<0.23	0.84	1.67	4.77	18.1	1.17	1.55	<0.59	<0.23	<0.23	<0.23	**70.2**	1.88	88.3	102
	0009_MW002_HT_230404	5/04/2023	<0.24	<0.24	<0.24	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	1.44	<1.2	<0.24	<0.24	<0.24	0.76	1.52	4.50	18.1	1.20	1.54	<0.61	<0.24	<0.24	<0.24	**75.8**	1.91	93.9	107
MW003	MW03_HIGH_190522	22/05/2019	<0.001	<0.005	0.002	<0.001	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	<0.005	0.21	0.09	0.008	<0.001	<0.001	0.11	0.24	0.54	2.4	0.18	0.42	<0.001	<0.001	0.001	0.021	**7.8**	0.23	10.2	12.453
	MW03_LOW_190523	23/05/2019	<0.001	0.007	0.002	<0.001	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.16	0.083	0.008	<0.001	<0.001	0.1	0.35	0.59	2.1	0.13	0.4	<0.001	<0.001	0.001	0.019	**5.4**	0.24	7.5	9.8
	MW03_LOW_20190618	18/06/2019	<0.001	0.011	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.9	0.27	0.003	<0.001	<0.001	0.3	0.57	2.5	8.8	0.42	1	<0.001	<0.001	<0.001	0.012	**2**	0.61	10.8	17.906
	MW03_HIGH_20190619	19/06/2019	<0.001	0.012	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1.1	0.28	0.003	<0.001	<0.001	0.33	0.6	3	9.4	0.81	1	<0.001	<0.001	<0.001	0.014	**1.9**	0.62	11.3	19.629
	0009_MW003_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.33	<0.2	<0.03	<0.03	<0.03	0.11	0.15	0.75	3.16	0.21	0.31	<0.08	<0.03	<0.03	<0.03	**5.58**	0.24	8.74	10.8
	0009_MW003_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.36	<0.2	<0.03	<0.03	<0.03	0.12	0.18	0.85	3.59	0.22	0.35	<0.08	<0.03	<0.03	<0.03	**6.62**	0.29	10.2	12.6
	0009_MW003_LT_210408	8/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.69	0.2	<0.02	<0.02	<0.02	0.25	0.24	1.79	5.43	0.41	0.60	<0.05	<0.02	<0.02	0.02	**4.45**	0.46	9.88	14.6
	0009_MW003_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.94	0.3	<0.02	0.02	<0.02	0.33	0.32	2.58	6.59	0.53	0.86	<0.05	<0.02	<0.02	<0.02	**4.84**	0.64	11.4	18.0
	0009_MW003_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.03	0.4	<0.02	<0.02	<0.02	0.39	0.57	3.60	9.05	0.61	1.18	<0.05	<0.02	<0.02	<0.02	**3.34**	0.76	12.4	20.9
	0009_MW003_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.11	0.4	<0.02	<0.02	<0.02	0.45	0.64	3.89	9.65	0.68	1.30	<0.05	<0.02	<0.02	<0.02	**3.34**	0.78	13.0	22.2
	0009_MW003_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.02	0.3	<0.02	<0.02	<0.02	0.38	0.49	3.15	8.43	0.60	1.01	<0.05	<0.02	<0.02	<0.02	**4.65**	0.81	13.1	20.8
	0009_MW003_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	1.14	0.2	<0.05	<0.05	<0.05	0.39	0.43	2.97	9.29	0.64	1.25	<0.12	<0.05	<0.05	<0.05	**3.89**	0.78	13.2	21.0
	0009_MW003_LT_220012	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	0.07	<0.12	<0.05	<0.12	0.48	<0.2	<0.05	<0.05	<0.05	0.27	0.55	1.64	6.90	0.33	0.50	<0.12	<0.05	<0.05	<0.05	**26.7**	0.77	33.6	38.2
	0009_MW003_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	0.06	<0.06	<0.02	<0.06	0.49	<0.1	<0.02	<0.02	<0.02	0.32	0.59	1.47	7.59	0.38	0.55	<0.06	<0.02	<0.02	0.04	**22.6**	0.85	30.2	34.9
	0009_MW003_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.02	<0.05	<0.02	<0.05	1.12	0.3	<0.02	<0.02	<0.02	0.36	0.62	2.58	9.55	0.61	1.30	<0.05	<0.02	<0.02	0.02	**9.14**	0.81	18.7	26.4
	0009_MW003_HT_230404	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.02	<0.05	<0.02	<0.05	1.13	0.3	<0.02	<0.02	<0.02	0.35	0.49	2.53	9.24	0.59	1.25	<0.05	<0.02	<0.02	<0.02	**7.08**	0.72	16.3	23.7
MW004	MW04_HIGH_190522	22/05/2019	<0.001	0.006	0.015	<0.001	<0.005	<0.005	<0.005	0.034	<0.005	<0.005	<0.005	0.4	0.22	0.01	<0.001	<0.001	0.28	0.44	1	3.5	0.54	0.81	<0.001	<0.001	<0.001	0.018	**9.5**	0.47	13	17.483
	MW04_LOW_190523	23/05/2019	<0.001	0.005	0.012	<0.001	<0.005	<0.005	<0.005	0.045	<0.005	<0.005	<0.005	0.41	0.25	0.008	<0.001	<0.001	0.34	0.93	1.2	3.7	0.5	0.89	<0.001	<0.001	<0.001	0.022	**8.5**	0.65	12.2	17.782
	MW04_LOW_20190618	18/06/2019	<0.001	0.008	0.011	<0.001	<0.005	<0.005	<0.005	0.05	<0.005	<0.005	<0.005	0.41	0.23	0.01	<0.001	<0.001	0.32	0.41	1.2	4.9	0.44	0.57	<0.001	<0.001	0.001	0.017	**11**	0.56	15.9	20.497
	MW04_HIGH_20190619	19/06/2019	<0.001	0.006	0.007	<0.001	<0.005	<0.005	<0.005	0.046	<0.005	<0.005	<0.005	0.44	0.26	0.007	<0.001	<0.001	0.35	0.45	1.4	5	0.53	0.66	<0.001	<0.001	<0.001	0.015	**7.7**	0.56	12.7	17.721
	0009_MW004_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.58	0.3	<0.03	<0.03	<0.03	0.37	0.37	1.35	5.22	0.66	0.52	<0.08	<0.03	<0.03	<0.03	**10.6**	0.72	15.8	20.7
	0009_MW004_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.48	0.2	<0.03	<0.03	<0.03	0.29	0.30	1.09	4.20	0.56	0.43	<0.08	<0.03	<0.03	<0.03	**8.24**	0.56	12.4	16.4
	0009_MW004_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	0.66	<0.9	<0.18	<0.18	<0.18	0.53	0.59	1.67	7.01	0.81	0.52	<0.46	<0.18	<0.18	<0.18	**27.0**	1.16	34.0	40.0
	0009_MW004_HT_210409	9/04/2021	<0.19	<0.19	<0.19	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	0.90	<0.9	<0.19	<0.19	<0.19	0.73	0.92	2.56	7.93	1.27	0.73	<0.47	<0.19	<0.19	<0.19	**31.5**	1.51	39.4	48.0
	0009_MW004_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.08	<0.05	<0.02	<0.05	0.43	0.3	0.02	<0.02	<0.02	0.36	0.29	1.31	3.80	0.52	0.41	<0.05	<0.02	<0.02	<0.02	**8.62**	0.41	12.4	16.6
	0009_MW004_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.08	<0.05	<0.02	<0.05	0.44	0.3	0.02	0.04	<0.02	0.37	0.37	1.32	4.25	0.51	0.36	<0.05	<0.02	<0.02	<0.02	**11.0**	0.56	15.2	19.6
	0009_MW004_LT_220404	4/04/2022	<0.05	0.06	<0.05	<0.05	<0.06	<0.02	<0.06	0.12	<0.06	<0.02	<0.06	0.40	0.1	<0.02	<0.02	<0.02	0.31	0.38	0.92	3.93	0.44	0.36	<0.06	<0.02	<0.02	<0.02	**22.8**	0.62	26.7	30.4
	0009_MW004_HT_220405	5/04/2022	<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	0.44	<1.2	<0.25	<0.25	<0.25	<0.25	0.27	1.06	4.06	0.40	0.35	<0.62	<0.25	<0.25	<0.25	**20.1**	0.54	24.2	27.2
	0009_MW004_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	0.09	<0.06	<0.02	<0.06	0.39	0.1	<0.02	<0.02	<0.02	0.34	0.45	1.10	3.71	0.46	0.32	<0.06	<0.02	<0.02	<0.02	**20.9**	0.72	24.6	28.6
	0009_MW004_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	0.13	<0.06	<0.02	<0.06	0.39	0.1	<0.02	<0.02	<0.02	0.38	0.50	1.00	4.48	0.53	0.38	<0.06	<0.02	<0.02	0.03	**27.7**	0.75	32.2	36.4
	0009_MW004_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	0.11	<0.06	<0.02	<0.06	0.47	0.2	0.03	<0.02	<0.02	0.40	0.46	1.08	4.98	0.56	0.49	<0.06	<0.02	<0.02	0.05	**22.9**	0.63	27.9	32.4
	0009_MW004_HT_230404	5/04/2023	<0.05	<0.05	0.06	<0.05	<0.06	<0.02	<0.06	0.18	<0.06	<0.02	<0.06	0.62	0.3	0.04	<0.02	<0.02	0.52	0.72	1.36	6.26	0.71	0.60	<0.06	<0.02	<0.02	0.05	**39.6**	0.86	45.9	51.9
MW005	MW05_HIGH_190522	22/05/2019	<0.001	0.011	0.011	<0.001	<0.005	<0.005	<0.005	0.027	<0.005	<0.005	<0.005	0.32	0.22	0.012	0.004	<0.001	0.26	0.8	1.1	3.8	0.61	0.78	<0.001	<0.001	0.003	0.05	**23**	0.62	26.8	31.888
	MW05_LOW_190523	23/05/2019	<0.001	0.011	0.022	<0.001	<0.005	<0.005	<0.005	0.043	<0.005	<0.005	<0.005	0.31	0.19	0.026	0.005	<0.001	0.3	0.59	1.2	3.8	0.5	0.72	<0.001	<0.001	0.006	0.056	**31**	0.67	34.8	-
	MW05_LOW_20190618	18/06/2019	<0.001	0.009	0.007	<0.001	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	0.25	0.15	0.009	0.003	<0.001	0.21	0.58	0.97	4.1	0.42	0.4	<0.001	<0.001	0.002	0.035	**18**	0.48	22.1	25.983
	MW05_HIGH_20190619	19/06/2019	<0.001	0.009	0.005	<0.001	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	0.26	0.14	0.008	0.002	<0.001	0.19	0.56	0.92	3.6	0.4	0.41	<0.001	<0.001	0.002	0.033	**14**	0.43	17.6	21.317
	0009_MW005_HT_200930	30/09/2020	<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	0.42	<0.3	<0.06	<0.06	<0.06	0.24	0.45	1.03	5.10	0.79	0.40	<0.16	<0.06	<0.06	0.06	**24.4**	0.58	29.5	33.5
	0009_MW005_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.39	0.2	<0.03	<0.03	<0.03	0.22	0.35	0.87	4.30	0.62	0.36	<0.08	<0.03	<0.03	0.06	**20.7**	0.52	25.0	28.6
	0009_MW005_LT_210408	8/04/2021	<0.08	<0.08	<0.08	<0.08	<0.19

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Table T7: Historical Groundwater Results

Project Name: PFAS HMAS Cairns
Sampling Event Factual Report
April 2023

		Units	4:2 Fluorotelomer sulfonic acid (4:2 FTS) µg/L	6:2 Fluorotelomer sulfonic acid (6:2 FTS) µg/L	8:2 Fluorotelomer sulfonic acid (8:2 FTS) µg/L	10:2 Fluorotelomer sulfonic acid (10:2 FTS) µg/L	N-Methyl perfluorooctane sulfonamide (MeFOSA) µg/L	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) µg/L	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE) µg/L	Perfluorooctane sulfonamide (FOSA) µg/L	N-Ethyl perfluorooctane sulfonamide (EtFOSA) µg/L	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) µg/L	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) µg/L	Perfluorobutane sulfonic acid (PFBS) µg/L	Perfluorobutanoic acid (PFBA) µg/L	Perfluorodecanoic acid (PFDA) µg/L	Perfluorodecane sulfonic acid (PFDS) µg/L	Perfluorododecanoic acid (PFDoDA) µg/L	Perfluoroheptanoic acid (PFHpA) µg/L	Perfluoroheptane sulfonic acid (PFHpS) µg/L	Perfluorohexanoic acid (PFHxA) µg/L	Perfluorohexane sulfonic acid (PFHxS) µg/L	Perfluoropentanoic acid (PFPeA) µg/L	Perfluoropentane sulfonic acid (PFPeS) µg/L	Perfluorotetradecanoic acid (PFTeDA) µg/L	Perfluorotridecanoic acid (PFTrDA) µg/L	Perfluoroundecanoic acid (PFUnDA) µg/L	Perfluorononanoic acid (PFNA) µg/L	Perfluorooctane sulfonic acid (PFOS) µg/L	Perfluorooctanoic acid (PFOA) µg/L	Sum of PFHxS and PFOS µg/L	Sum of PFAS µg/L
MW007	MW07_HIGH_190522	22/05/2019	<0.001	0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.19	0.079	<0.001	<0.001	<0.001	0.079	0.28	0.53	2	0.14	0.42	<0.001	<0.001	<0.001	0.003	**30**	0.24	32	34.092
	MW07_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	0.23	**0.1**	0.003	0.003	<0.001	**0.1**	0.65	0.7	2.3	0.14	0.58	<0.001	<0.001	<0.001	0.004	**36**	0.34	38.3	41.818
	MW07_LOW_20190618	18/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.86	0.31	<0.1	<0.1	<0.1	0.35	0.84	2.2	9.9	0.48	1.1	0.21	<0.1	<0.1	<0.1	**110**	0.99	119.9	127.49
	MW07_HIGH_20190619	19/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.65	0.24	<0.1	<0.1	<0.1	0.3	0.74	2	7.8	0.36	0.93	<0.1	<0.1	<0.1	<0.1	**88**	0.95	95.8	102.16
	0009_MW007_HT_200930	30/09/2020	<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	0.28	<0.3	<0.06	<0.06	<0.06	0.11	0.28	0.76	3.28	0.24	0.35	<0.16	<0.06	<0.06	<0.06	**42.2**	0.33	45.5	47.8
	0009_MW007_LT_200930	30/09/2020	<0.16	<0.16	<0.16	<0.16	<0.41	<0.16	<0.41	<0.16	<0.41	<0.16	<0.41	0.39	<0.8	<0.16	<0.16	<0.16	<0.16	0.32	1.02	4.14	0.29	0.44	<0.41	<0.16	<0.16	<0.16	**51.1**	0.37	55.2	58.1
	0009_MW007_LT_210408	8/04/2021	<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	0.19	<1.0	<0.19	<0.19	<0.19	<0.19	0.34	0.71	2.58	0.23	0.29	<0.48	<0.19	<0.19	<0.19	**35.0**	0.38	37.6	39.7
	0009_MW007_HT_210409	9/04/2021	<0.24	<0.24	<0.24	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	0.39	<1.2	<0.24	<0.24	<0.24	<0.32	0.36	1.29	4.27	0.34	0.66	<0.61	<0.24	<0.24	<0.24	**45.5**	0.58	49.8	53.4
	0009_MW007_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.03	<0.05	<0.02	<0.05	0.62	0.3	<0.02	<0.02	<0.02	0.27	0.82	1.87	6.70	0.41	0.77	<0.05	<0.02	<0.02	<0.02	**94.6**	0.85	101	107
	0009_MW007_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.04	<0.05	<0.02	<0.05	0.66	0.3	<0.02	0.03	<0.02	0.31	0.99	1.98	7.66	0.44	0.70	<0.05	<0.02	<0.02	<0.02	**92.7**	0.92	100	107
	0009_MW007_LT_220404	4/04/2022	<0.10	<0.10	<0.10	<0.10	<0.24	<0.10	<0.24	<0.10	<0.24	<0.10	<0.24	0.43	<0.5	<0.10	<0.10	<0.10	0.20	0.53	1.20	5.09	0.33	0.52	<0.24	<0.10	<0.10	<0.10	**86.4**	0.63	91.5	95.3
	0009_MW007_HT_220405	5/04/2022	<0.46	<0.46	<0.46	<0.46	<1.16	<0.46	<1.16	<0.46	<1.16	<0.46	<1.16	<0.46	<2.3	<0.46	<0.46	<0.46	<0.46	<0.46	0.98	4.74	<0.46	0.46	<1.16	<0.46	<0.46	<0.46	**68.2**	<0.46	72.9	74.4
	0009_MW007_LT_220912	12/09/2022	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	0.50	<0.5	<0.10	<0.10	<0.10	0.18	0.64	1.42	5.45	0.24	0.68	<0.25	<0.10	<0.10	<0.10	**81.2**	0.70	86.6	91.0
	0009_MW007_HT_220913	13/09/2022	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	0.59	<0.5	<0.10	<0.10	<0.10	0.26	0.62	1.59	5.98	0.36	0.74	<0.25	<0.10	<0.10	<0.10	**92.4**	0.83	98.4	103
	0009_MW007_LT_230404	4/04/2023	<0.24	<0.24	<0.24	<0.24	<0.59	<0.24	<0.59	<0.24	<0.59	<0.24	<0.59	0.42	<1.2	<0.24	<0.24	<0.24	<0.24	0.47	0.90	4.24	0.28	0.50	<0.59	<0.24	<0.24	<0.24	**80.4**	0.50	84.6	87.7
	0009_MW007_LT_230404	4/04/2023	<0.24	<0.24	<0.24	<0.24	<0.60	<0.24	<0.60	<0.24	<0.60	<0.24	<0.60	0.48	<1.2	<0.24	<0.24	<0.24	<0.24	0.41	1.07	4.75	0.36	0.70	<0.60	<0.24	<0.24	<0.24	**62.4**	0.51	67.2	70.7
MW009	MW09_LOW_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.2	0.064	<0.01	<0.01	<0.01	0.15	0.023	0.98	1.8	0.08	0.33	<0.01	<0.01	<0.01	<0.01	**0.19**	0.1	1.99	3.968
	MW09_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	0.065	<0.01	<0.01	<0.01	0.16	0.031	0.93	2	0.091	0.34	<0.01	<0.01	<0.01	<0.01	**0.32**	0.12	2.32	4.319
	MW09_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	<0.001	0.003	0.002	0.021	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	0.071	0.002	0.092	0.104
	MW09_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.005	<0.001	<0.001	<0.001	0.001	0.003	0.005	0.056	0.002	0.003	<0.001	<0.001	<0.001	<0.001	0.093	0.002	0.149	0.168
	0009_MW009_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.12	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.27**	<0.01	0.39	0.39
	0009_MW009_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.16	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.25**	<0.01	0.41	0.43
	0009_MW009_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.10	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.10	<0.01	0.20	0.20
	0009_MW009_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.18**	<0.01	0.26	0.26
	0009_MW009_HT_211027	27/10/2021	<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.10	0.62	<0.02	0.04	<0.05	<0.02	<0.02	<0.02	**0.23**	0.04	0.85	1.17
	0009_MW009_LT_211028	28/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.09	0.43	0.02	0.04	<0.05	<0.02	<0.02	<0.02	**0.21**	0.03	0.64	0.94
	0009_MW009_211208	8/12/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.03	0.04	0.13	0.86	<0.04	0.07	<0.05	<0.02	<0.02	<0.02	**0.28**	0.05	1.14	1.53
	0009_MW009_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.20	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.10	0.01	0.30	0.38
	0009_MW009_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.22	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.12	0.01	**0.34**	0.40
	0009_MW009_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.30	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	0.12	0.02	0.42	0.54
	0009_MW009_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.35	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	**0.13**	0.01	0.48	0.58
	0009_MW009_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.17	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.15**	<0.01	0.32	0.34
	0009_MW009_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.17	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.16**	0.01	0.33	0.36
MW011	MW11_HIGH_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.019	<0.01	0.021	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	0.12	0.078	0.27
	MW11_LOW_190524	24/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	0.003	<0.001	<0.001	0.015	0.004	0.026	0.005	0.008	<0.001	<0.001	<0.001	<0.001	0.005	0.048	0.13	0.053	0.244
	MW11_LOW_20190619	19/06/2019	<0.001	0.006	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	0.006	0.004	<0.001	<0.001	0.042	0.007	0.025	0.022	0.017	0.003	<0.001	<0.001	<0.001	0.019	0.12	0.32	0.142	0.593
	MW11_HIGH_20190620	20/06/2019	<0.001	0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	0.007	0.006	<0.001	<0.001	0.048	0.009	0.03	0.036	0.013	0.004	<0.001	<0.001	<0.001	0.021	**0.17**	0.3	0.206	0.652
	0009_MW011_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.07	<0.02	0.06	0.05	0.04	<0.02	<0.05	<0.02	<0.02	0.03	**0.35**	0.36	0.40	0.96
	0009_MW011_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.07	<0.02	0.06	0.07	0.04	<0.02	<0.05	<0.02	<0.02	0.03	**0.34**	0.38	0.41	0.99
	0009_MW011_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	0.07	0.14	0.27
	0009_MW011_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.04	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**0.23**	0.18	0.23	0.52
	0009_MW011_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.03	0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	0.11	0.04	0.21
	0009_MW011_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.03	0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	0.11	0.05	0.21
	0009_MW011_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.04	0.01	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**0.21**	0.15	0.22	0.48
	0009_MW011_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.09	<0.02	0.05	0.02	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**0.15**	0.26	0.17	0.60
	0009_MW011_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.07	0.03	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	**0.18**	0.21	0.21	0.59
	0009_MW011_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.10	0.01	0.10	0.11
	0009_MW011_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	0.06	0.14	0.20
MW013	MW13_HIGH_190522	22/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.047	0.033	0.003	<0.001	<0.001	0.041	0.059	0.14	0.87	0.083	0.086	<0.001	<0.001	0.002	0.13	**4.1**	0.084	4.97	5.708
	MW13_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.042	0.032	0.003	<0.001	<0.001	0.034	0.072	0.14	0.79	0.061	0.072	<0.001	<0.001	0.001	0.11	**2.3**	0.071	3.09	3.778
	MW13_LOW_20190618	18/06/2019	<0.001	0.006	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.064	0.038	0.002	<0.001	<0.001	0.055	0.065	0.17	1.1	0.086	0.098	<0.001	<0.001	<0.001	0.11	**1.7**	0.085	2.8	3.619
	MW13_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.059	0.039	0.002	<0.001	<0.001	0.058	0.085	0.18	1.6	0.083	0.1	<0.001	<0.001	<0.001	0.15	**2.4**	0.089	4	4.885
	MW13_HIGH_20190619_TOPA	19/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.2	<0.01	<0.01	<0.01	0.08	0.08	1.3	1.2	0.15	0.10	<0.01	<0.01	<0.01	0.16	**3.4**	0.14	4.6	6.71
	0009_MW013_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.11	<0.2	<0.05	<0.05	<0.05	0.05	<0.05	0.27	1.10	0.08	0.09	<0.12	<0.05	<0.05	0.09	**2.27**	0.09	3.37	4.15
	0009_MW013_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.09	<0.2	<0.05	<0.05	<0.05	0.05	0.06	0.25	1.21	0.10	0.09	<0.12	<0.05	<0.05	0.11	**3.06**	0.11	4.27	5.13
	0009_MW013_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.05	0.06	0.17	0.97	0.10	0.08	<0.05	<0.02	<0.02	0.24	**3.58**	0.09	4.55	5.40
	0009_MW013_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.05	0.05	0.15	0.55	0.07	0.05	<0.05	<0.02	<0.02	0.08	**2.49**	0.08	3.04	3.63
	0009_MW013_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.16	<0.1	<0.02	<0.02	<0.02	0.12	0.14	0.51	2.00	0.21	0.18	<0.05	<0.02	<0.02	0.10	**4.16**	0.21	6.16	7.79
	0009_MW013_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.13	<0.1	<0.02	<0.02	<0.02	0.09	0.10	0.38	1.55	0.16	0.12	<0.05	<0.02	<0.02	0.10	**4.19**	0.16	5.74	6.98
	0009_MW013_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	0.04	0.05	0.16	0.79	0.07	0.06	<0.05	<0.02	<0.02	0.13	**2.68**	0.07	3.47	4.11
	0009_MW013_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.05	0.05	0.20	0.88	0.08	0.07	<0.05	<0.02	<0.02	0.15	**2.33**	0.09	3.21	3.97
	0009_MW013_LT_220912	12/09/2022	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.08	<0.1	<0.02	<0.02	<0.02	0.04	0.03	0.22	0.64	0.07	0.07	<0.05	<0.02	<0.02	0.05	**1.75**	0.06	2.39	3.07
	0009_MW013_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	0.02	0.03	0.10	0.48	0.05	0.03	<0.05	<0.02	<0.02	0.14	**1.95**	0.04	2.43	2.86
	0009_MW013_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	0.02	0.02	0.07	0.30	0.04	0.02	<0.05	<0.02	<0.02	0.08	**1.63**	0.03	1.93	2.26
	0009_MW013_LT_230404	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	0.02	0.06	0.34	0.04	0.03	<0.05	<0.02	<0.02	0.07	**1.87**	0.03	2.21	2.48
MW014	MW14_HIGH_190522	22/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.16	<0.1	<0.1	<0.1	0.45	0.51	<0.1	<0.1	<0.1	0.61	0.59	4.3	11	1.1	0.53	<0.1	<0.1	<0.1	<0.1	**77**	1.3	88	-
	MW14_LOW_190523	23/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	0.24	<0.1	0.38	0.54	<0.1	<0.1	<0.1	0.34	0.66	3.6	8.9	0.6	0.44	<0.1	<0.1	<0.1	<0.1	**65**	1.1	73.9	-
	MW14_LOW_20190618	18/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.4	0.25	<0.1	<0.1	<0.1	0.35	0.61	2.6	9.7	0.32	0.38	0.018	<0.1	<0.1	<0.1	**86**	0.76	95.7	101.768
	MW14_LOW_20190618_TOPA	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.58	0.83	0.04	0.05	<0.01	1.0	1.5	54	18	2.4	1.1	<0.01	<0.01	0.01	0.08	**120**	2.8	138	202.46
	MW14_HIGH_20190619	19/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.27	<0.1	<0.1	<0.1	0.34	0.22	<0.1	<0.1	<0.1	0.33	0.6	2.7	8.8	0.42	0.38	0.016	<0.1	<0.1	<0.1	**84**	0.69	92.8	98.916
	0009_MW014_HT_200930	30/09/2020	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	3.80	7.90	<0.50	<0.50	<1.25	<0.50	<0.50	<0.50	**120**	0.85	128	132
	0009_MW014_LT_200930	30/09/2020	<0.25	<0.25	<0.25	<0.25	<0.63	<0.25	<0.63	0.35	<0.63	<0.25	<0.63	0.30	<1.2	<0.25	<0.25	<0.25	0.35	0.43	3.92	7.31	0.48	0.33	<0.63	<0.25	<0.25	<0.25	**101**	0.93	108	115
	0009_MW014_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	0.69	<0.9	<0.18	<0.18	<0.18	0.46	0.69	3.03	11.5	0.64	0.51	<0.46	<0.18	<0.18	<0.18	**48.5**	0.91	60.0	66

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Table T7: Historical Groundwater Results

Project Name: PFAS HMAS Cairns
Sampling Event Factual Report
April 2023

			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)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW015	MW15_HIGH_190522	22/05/2019	<0.001	0.009	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.012	<0.001	<0.001	<0.001	0.012	0.014	0.069	0.22	0.028	0.016	<0.001	<0.001	<0.001	0.002	**2.1**	0.022	2.32	2.515
	MW15_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.016	0.016	<0.001	<0.001	<0.001	0.018	0.029	0.095	0.33	0.036	0.029	<0.001	<0.001	<0.001	0.003	**3**	0.034	3.33	-
	MW15_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.012	0.014	<0.001	<0.001	<0.001	0.013	0.016	0.096	0.25	0.034	0.016	<0.001	<0.001	<0.001	0.001	**1**	0.021	1.25	1.473
	MW15_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.014	0.015	<0.001	<0.001	<0.001	0.017	0.02	0.097	0.28	0.035	0.019	<0.001	<0.001	<0.001	0.002	**1.7**	0.024	1.98	2.249
	0009_MW015_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	0.35	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	**1.74**	<0.05	2.09	2.25
	0009_MW015_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.21	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	**1.17**	<0.02	1.38	1.46
	0009_MW015_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.21	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**1.44**	0.02	1.65	1.78
	0009_MW015_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.10	0.27	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	**2.52**	0.03	2.79	2.98
	0009_MW015_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.18	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**1.43**	0.01	1.61	1.66
	0009_MW015_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.23	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.97**	0.01	1.20	1.25
	0009_MW015_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.24	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	**1.79**	0.02	2.03	2.14
	0009_MW015_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.28	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	**3.04**	0.03	3.32	3.47
	0009_MW015_LT_220912	12/09/2022	<0.05	0.16	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.11	0.22	0.05	<0.02	<0.05	<0.02	<0.02	<0.02	**1.80**	0.02	2.02	2.38
	0009_MW015_LT_220913	13/09/2022	<0.05	0.10	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.03	0.03	0.16	0.40	0.08	0.02	<0.05	<0.02	<0.02	<0.02	**3.38**	0.05	3.78	4.25
	0009_MW015_HT_230404	4/04/2023	<0.05	0.12	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.12	0.37	0.08	0.02	<0.05	<0.02	<0.02	<0.02	**1.42**	0.04	1.79	2.20
	0009_MW015_LT_230404	4/04/2023	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.11	0.32	0.08	<0.02	<0.05	<0.02	<0.02	<0.02	**1.39**	0.03	1.71	2.03
MW016	MW16_LOW_190521	21/05/2019	<0.001	0.058	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.17	0.049	<0.001	<0.001	<0.001	0.033	0.11	0.34	1.5	0.098	0.27	<0.001	<0.001	<0.001	0.002	**1.6**	0.075	3.1	4.355
	MW16_HIGH_190522	22/05/2019	<0.001	0.048	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.2	0.054	<0.001	<0.001	<0.001	0.036	0.1	0.41	1.4	0.11	0.36	<0.001	<0.001	<0.001	0.002	**1.6**	0.067	3	4.447
	MW16_LOW_20190618	18/06/2019	<0.001	0.017	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.18	0.047	<0.001	<0.001	<0.001	0.029	0.035	0.4	1.1	0.12	0.23	<0.001	<0.001	<0.001	<0.001	**0.57**	0.027	1.67	2.825
	MW16_HIGH_20190619	19/06/2019	<0.001	0.02	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.19	0.051	<0.001	<0.001	<0.001	0.033	0.042	0.42	1.3	0.089	0.23	<0.001	<0.001	<0.001	<0.001	**0.53**	0.024	1.83	3.009
	0009_MW016_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.35	<0.2	<0.05	<0.05	<0.05	0.07	<0.05	0.69	3.20	0.11	0.45	<0.12	<0.05	<0.05	<0.05	0.07	<0.05	3.27	4.94
	0009_MW016_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.36	<0.2	<0.05	<0.05	<0.05	0.07	<0.05	0.67	3.08	<0.05	0.44	<0.12	<0.05	<0.05	<0.05	0.10	<0.05	3.18	4.72
	0009_MW016_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.31	<0.1	<0.02	<0.02	<0.02	0.08	<0.02	0.58	2.59	0.16	0.38	<0.05	<0.02	<0.02	<0.02	**0.15**	0.02	2.74	4.27
	0009_MW016_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.20	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.42	1.72	0.09	0.34	<0.05	<0.02	<0.02	<0.02	**0.22**	0.01	1.94	3.05
	0009_MW016_HT_211027	27/10/2021	<0.05	0.18	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.15	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.32	1.08	0.08	0.18	<0.05	<0.02	<0.02	<0.02	**0.27**	<0.01	1.35	2.29
	0009_MW016_LT_211028	28/10/2021	<0.05	0.24	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.29	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.48	2.03	0.10	0.23	<0.05	<0.02	<0.02	<0.02	**0.16**	0.01	2.19	3.59
	0009_MW016_211208	8/12/2021	<0.05	0.12	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.27	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.46	1.75	0.09	0.33	<0.05	<0.02	<0.02	<0.02	**0.15**	<0.02	1.90	3.23
	0009_MW016_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.25	1.19	0.06	0.19	<0.05	<0.02	<0.02	<0.02	**0.18**	<0.01	1.37	2.03
	0009_MW016_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.23	1.10	0.05	0.16	<0.05	<0.02	<0.02	<0.02	**0.15**	<0.01	1.25	1.83
	0009_MW016_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.20	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.38	1.80	0.08	0.26	<0.05	<0.02	<0.02	<0.02	**0.14**	<0.01	1.94	2.90
	0009_MW016_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	0.20	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.38	2.05	0.08	0.28	<0.05	<0.02	<0.02	<0.02	0.11	0.01	2.16	3.17
	0009_MW016_LT_230404	4/04/2023	<0.05	0.14	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.20	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.29	2.20	0.09	0.26	<0.05	<0.02	<0.02	<0.02	**0.24**	0.02	2.44	3.48
	0009_MW016_LT_230404	4/04/2023	<0.05	0.11	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.25	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.36	2.65	0.09	0.31	<0.05	<0.02	<0.02	<0.02	**0.21**	0.02	2.86	4.06
MW017	MW17_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.014	<0.05	<0.01	<0.01	<0.01	0.014	0.013	0.056	0.22	0.026	0.026	<0.01	<0.01	<0.01	<0.01	**1.1**	0.033	1.32	1.516
	MW17_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.019	0.014	<0.001	<0.001	<0.001	0.016	0.026	0.064	0.31	0.025	0.035	<0.001	<0.001	<0.001	0.001	**1**	0.03	1.31	1.54
	MW17_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.008	<0.001	<0.001	<0.001	0.008	0.007	0.037	0.16	0.018	0.017	<0.001	<0.001	<0.001	<0.001	**0.38**	0.013	0.54	0.659
	MW17_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.034	0.019	<0.001	<0.001	<0.001	0.021	0.03	0.094	0.5	0.034	0.051	<0.001	<0.001	<0.001	0.002	**1.3**	0.041	1.8	2.126
	0009_MW017_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.31	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	**1.13**	0.03	1.44	1.58
	0009_MW017_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.21	<0.02	0.02	<0.05	<0.02	<0.02	<0.02	**0.87**	0.02	1.08	1.17
	0009_MW017_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.34	0.03	0.04	<0.05	<0.02	<0.02	<0.02	**1.67**	0.03	2.01	2.22
	0009_MW017_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.23	0.02	0.02	<0.05	<0.02	<0.02	<0.02	**0.97**	0.02	1.20	1.31
	0009_MW017_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.02	0.04	0.12	0.64	0.04	0.07	<0.05	<0.02	<0.02	<0.02	**2.08**	0.06	2.72	3.11
	0009_MW017_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	0.03	0.08	0.45	0.02	0.03	<0.05	<0.02	<0.02	<0.02	**2.25**	0.04	2.70	2.93
	0009_MW017_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.03	0.03
	0009_MW017_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.38	0.03	0.03	<0.05	<0.02	<0.02	<0.02	**1.44**	0.03	1.82	2.01
	0009_MW017_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.20	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**1.02**	0.01	1.22	1.27
	0009_MW017_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.19	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.81**	0.01	1.00	1.04
	0009_MW017_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.02	0.02	0.10	0.40	0.05	0.04	<0.05	<0.02	<0.02	<0.02	**1.14**	0.04	1.54	1.85
	0009_MW017_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.30	0.03	0.03	<0.05	<0.02	<0.02	<0.02	**1.34**	0.02	1.64	1.79
MW018	MW18_LOW_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.013	0.016	0.025	0.059
	MW18_HIGH_190522	22/05/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	0.003	0.001	0.004	0.014	0.003	0.001	<0.001	<0.001	<0.001	<0.001	0.068	0.012	0.082	0.107
	MW18_LOW_20190619	19/06/2019	<0.001	0.007	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	0.002	<0.001	0.003	0.005	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.013	0.011	0.018	0.046
	MW18_HIGH_20190620	20/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	0.002	<0.001	0.003	0.005	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.012	0.009	0.017	0.036
	0009_MW018_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.08	<0.01	0.08	0.08
	0009_MW018_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_MW018_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_MW018_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_MW018_HT_211027	27/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.09
	0009_MW018_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_MW018_211208	8/12/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.03	<0.01	<0.01	<0.01
	0009_MW018_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_MW018_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_MW018_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.03	0.03
	0009_MW018_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
	0009_MW018_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
MW019	MW19_HIGH_190521	21/05/2019	<0.001	0.078	0.002	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.081	0.055	<0.001	<0.001	<0.001	0.18	0.34	0.41	1.1	0.29	0.16	<0.001	<0.001	<0.001	0.017	**5.4**	0.38	6.5	8.513
	MW19_LOW_190524	24/05/2019	<0.001	0.11	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.076	0.053	<0.001	<0.001	<0.001	0.17	0.36	0.39	1.2	0.28	0.14	<0.001	<0.001	<0.001	0.021	**8.3**	0.38	9.5	11.503
	MW19_LOW_20190619	19/06/2019	<0.001	0.047	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.034	0.03	<0.001	<0.001	<0.001	0.071	0.1	0.18	0.55	0.12	0.046	<0.001	<0.001	<0.001	0.006	**1.7**	0.11	2.25	3.004
	MW19_HIGH_20190620	20/06/2019	<0.001	0.036	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.035	0.03	<0.001	<0.001	<0.001	0.065	0.093	0.18	0.54	0.13	0.052	<0.001	<0.001	<0.001	0.006	**1.2**	0.1	1.74	2.477
	MW19_HIGH_20190620_TOPA	20/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.04	<0.2	<0.01	<0.01	<0.01	0.09	0.10	1.2	0.56	0.25	0.06	<0.01	<0.01	<0.01	<0.01	**2.1**	0.14	2.66	4.54
	0009_MW019_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.06	<0.2	<0.05	<0.05	<0.05	<0.05	0.09	0.20	0.55	0.07	<0.05	<0.12	<0.05	<0.05	<0.05	**3.16**	0.12	3.71	4.25
	0009_MW019_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.07	<0.2	<0.05	<0.05	<0.05	0.06	0.14	0.24	0.63	0.06	<0.05	<0.12	<0.05	<0.05	<0.05	**4.82**	0.18	5.45	6.20
	0009_MW019_LT_210408	8/04/2021	<0.10	0.31	<0.10	<0.10	<0.24	<0.10	<0.24	<0.10	<0.24	<0.10	<0.24	<0.10	<0.5	<0.10	<0.10	<0.10

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Table T7: Historical Groundwater Results

Project Name: PFAS HMAS Cairns
Sampling Event Factual Report
April 2023

			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)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Former WWII RAN Fuel Installation																																	
MW031	MW31_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.005	0.001	<0.001	<0.001	<0.001	0.001	0.011	0.035	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	**0.31**	0.002	0.345	0.366
	MW31_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	<0.001	0.002	0.006	0.026	0.003	0.003	<0.001	<0.001	<0.001	<0.001	**0.32**	0.001	0.346	0.363
	MW31_20190618_TOPA	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.23**	<0.01	0.26	0.3
	0009_MW031_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.26**	<0.01	0.31	0.31
	0009_MW031_210408	8/04/2021	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.24**	<0.01	0.30	0.37
	0009_MW031_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.12	<0.01	0.14	0.14
	0009_MW031_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.33**	<0.01	0.42	0.42
	0009_MW031_220913	13/09/2022	<0.05	0.48	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.22**	<0.01	0.26	0.74
	0009_MW031_230405	5/04/2023	<0.05	0.11	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.44**	<0.01	0.52	0.63
MW035	CRC_MW01_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.2	0.035	<0.001	<0.001	<0.001	<0.001	0.004	0.027	0.054	0.8	0.02	0.32	<0.001	<0.001	<0.001	<0.001	0.097	0.009	0.897	1.626
	CRC_MW01_190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.19	0.046	<0.001	<0.001	<0.001	<0.001	0.003	0.025	0.078	0.67	0.017	0.2	<0.001	<0.001	<0.001	<0.001	**0.34**	0.01	1.01	1.679
	CRC_MW01_190618_TOPA	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.09	0.78	0.02	0.22	<0.01	<0.01	<0.01	<0.01	**0.26**	0.02	1.04	1.68
	0009_MW035_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.10	0.10
	0009_MW035_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.14	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.50	<0.02	0.16	<0.05	<0.02	<0.02	<0.02	**0.13**	<0.01	0.63	0.96
	0009_MW035_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_MW035_220405	5/04/2022	<0.05	0.15	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.13	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.42	<0.02	0.10	<0.05	<0.02	<0.02	<0.02	**0.20**	<0.01	0.62	1.00
	0009_MW035_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.18	<0.02	0.04	<0.05	<0.02	<0.02	<0.02	0.08	<0.01	0.26	0.36
	0009_MW035_230405	5/04/2023	<0.05	0.18	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	0.02	<0.05	<0.02	<0.02	<0.02	0.12	<0.01	0.20	0.45
MW036	CRC_MW02_190526	26/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.017	<0.001	<0.001	<0.001	<0.001	0.004	0.008	0.044	0.21	0.018	0.036	<0.001	<0.001	<0.001	<0.001	**0.16**	0.01	0.37	0.557
	CRC_MW02_190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.027	0.01	<0.001	<0.001	<0.001	<0.001	0.002	0.008	0.044	0.17	0.011	0.031	<0.001	<0.001	<0.001	<0.001	**0.28**	0.008	0.45	0.601
	0009_MW036_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.11	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.29**	<0.01	0.40	0.40
	0009_MW036_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.25	<0.02	0.06	<0.05	<0.02	<0.02	<0.02	**0.29**	0.01	0.54	0.71
	0009_MW036_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.17	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	**0.22**	<0.01	0.39	0.51
	0009_MW036_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.12	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.22**	<0.01	0.34	0.36
	0009_MW036_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.22	<0.02	0.04	<0.05	<0.02	<0.02	<0.02	**0.28**	<0.01	0.50	0.62

Environmental Standards
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%

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Table T8: Historical Surface Water Results

Project Name: PFAS HMAS Cairns
Sampling Event Factual Report
April 2023

		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)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.005	0.001	0.001	0.005	0.005	0.005	0.005	0.005	0.005	0.005	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	0.0001	0.001	0.001	0.005
HEPA (2020) Freshwater 95% and Interim Marine 95%																												**0.13**	**220**		
HEPA (2020) PFAS Recreational Water																													*10*	*2*	
Location Code	**Field ID**	**Date**																													
HMAS Cairns																															
SW030	0009_SW022_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.06	0.30	0.02	0.03	<0.05	<0.02	<0.02	<0.02	**1.24**	0.04	1.54	1.74
	0009_SW030_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.15**	<0.01	0.20	0.20
	0009_SW030_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_SW030_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_SW030_220422	22/04/2022	<0.001	<0.005	0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.014	0.006	<0.001	0.008	<0.001	0.008	0.021	0.049	0.25	0.011	0.017	<0.001	<0.001	<0.001	0.001	**1.4**	0.019	1.65	1.828
	0009_SW030_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.05	0.08	0.14	0.76	0.05	0.06	<0.05	<0.02	<0.02	<0.02	**2.29**	0.09	*3.05*	3.59
	0009_SW030_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.07**	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.26**	<0.01	0.33	0.33
SW031	0009_SW023_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_SW031_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW031_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_SW031_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW031_220422	21/04/2022	<0.001	0.069	0.025	0.002	<0.005	<0.005	<0.005	0.009	<0.005	<0.005	<0.005	0.008	<0.005	0.001	0.020	<0.001	0.005	0.023	0.057	0.15	0.010	0.013	<0.001	<0.001	<0.001	0.002	**2.0**	0.012	*2.15*	2.446
	0009_SW031_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	0.06	<0.02	0.06	0.06
	0009_SW031_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	<0.01	0.17	0.17
SW032	HCSW01_190404	4/04/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.004	0.007	<0.001	<0.001	<0.001	0.006	0.006	0.018	0.084	0.008	0.008	<0.001	<0.001	<0.001	<0.001	**0.38**	0.014	0.464	0.535
	0009_SW021_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW032_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.01	0.04	0.04
	0009_SW032_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW032_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW032_22913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW032_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW033	HCSW04_190404	4/04/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	0.003	<0.001	<0.001	0.003	<0.001	0.004	0.006	0.004	<0.001	<0.001	<0.001	<0.001	0.001	0.025	0.007	0.031	0.053
	HCSW05_190404	4/04/2019	<0.001	0.005	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.004	0.007	<0.001	<0.001	<0.001	0.008	0.003	0.023	0.084	0.018	0.006	<0.001	<0.001	0.002	0.005	**0.25**	0.009	0.334	0.427
	0009_SW024_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW033_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.01	0.03	0.03
	0009_SW033_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW033_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW033_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW033_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
SW034	HCSW06_190404	4/04/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.005	<0.001	<0.001	<0.001	0.003	0.001	0.01	0.033	0.01	0.002	<0.001	<0.001	<0.001	0.002	0.094	0.004	0.127	0.162
	HCSW5_190617	17/06/2019	<0.001	0.007	0.002	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	0.012	<0.001	<0.001	<0.001	0.012	0.005	0.038	0.064	<0.05	0.006	0.016	<0.001	<0.001	0.003	**0.28**	0.012	0.344	0.462
	HCSW5_190617_TOPA	17/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.02	<0.01	0.11	0.08	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	**0.25**	0.01	0.33	0.51
	0009_SW025_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_SW034_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.09	<0.01	0.12	0.12
	0009_SW034_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW034_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_SW034_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	0009_SW034_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	<0.01	0.21	0.21
SW035	HCSW6_190617	17/06/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	0.008	<0.001	<0.001	<0.001	0.009	0.001	0.031	0.053	<0.05	0.004	<0.001	<0.001	<0.001	0.003	**0.16**	0.008	0.213	0.281
	HCSW6_190617_TOPA	17/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	0.01	<0.01	0.08	0.06	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	**0.20**	0.01	0.26	0.39
	0009_SW026_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
	0009_SW035_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.05	<0.01	0.05	0.05
	0009_SW035_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW035_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.07	<0.01	0.11	0.11
	0009_SW035_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.01	0.02	0.02
	0009_SW035_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.14**	<0.01	0.20	0.20
Former WWII RAN Fuel Installation																																
SW036	SW08_190513	13/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<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	0.003	0.001	0.004	0.006
	SW08_190618	18/06/2019	<0.001	<0.005	0.013	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	0.002	<0.001	<0.001	<0.001	<0.001	0.0057	0.001	0.0077	0.0257
	SW08_190618_TOPA	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	0.01	<0.01	0.01	<0.1
	BIO05_200303	3/03/2020	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.01	<0.01	0.0087	<0.01	0.0107	0.0157
	0009_SW008_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW036_210408	8/04/2021	<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	0.08
	0009_SW036_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW036_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW036_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW036_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW100	SW20_190912	12/09/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0037	<0.001	0.0057	0.0057
	0009_SW020_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW100_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW100_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_SW100_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
	0009_SW100_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW100_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
SW101	SW17_190912	12/09/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0034	0.001	0.0054	0.0064
	BIO07_200305	5/03/2020	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	0.01	<0.001	<0.001	<0.001	<0.001	0.0078	0.002	0.0088	0.0218
	0009_SW017_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW101_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW101_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.01	<0.01	0.01	0.01
	0009_SW101_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
	0009_SW101_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01

Table T9: Historical Sediment Results

Location ID	Sample ID	Date	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)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexanoic acid (PFHxA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentanoic acid (PFPeA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Sum of PFHxS and PFOS	Sum of PFAS
Units			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			0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HMAS Cairns																																
SD030	0009_SD020_200930	30/09/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0026	<0.0002	0.0030	0.0030
	0009_SD030_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0115	<0.0002	0.0121	0.0129
	0009_SD030_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0047	<0.0002	0.0047	0.0050
	0009_SD030_220404	4/04/2022	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0010	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0076	<0.0002	0.0076	0.0094
	0009_SD030_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0039	<0.0002	0.0046	0.0046
	0009_SD030_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0034	<0.0002	0.0036	0.0036
SD031	0009_SD021_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0010	<0.0002	0.0010	0.0010
	0009_SD031_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0024	<0.0002	0.0024	0.0027
	0009_SD031_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0020	<0.0002	0.0020	0.0020
	0009_SD031_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0243	<0.0002	0.0247	0.0250
	0009_SD031_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0046	<0.0002	0.0049	0.0049
	0009_SD031_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0046	<0.0002	0.0049	0.0049
SD032	0009_SD019_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD032_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0024	<0.0002	0.0024	0.0024
	0009_SD032_211028	28/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003
	0009_SD032_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0010	<0.0002	0.0010	0.0010
	0009_SD032_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0014	<0.0002	0.0014	0.0014
	0009_SD032_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0014	<0.0002	0.0014	0.0014
SD033	0009_SD022_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	0009_SD033_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	0009_SD033_211028	28/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	0009_SD033_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD033_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0004	<0.0002	0.0004	0.0004
	0009_SD033_230405	5/04/2023	<0.0005	0.0607	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0008	<0.0002	0.0008	0.0615
SD034	0009_SD023_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD034_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0010	<0.0002	0.0012	0.0012
	0009_SD034_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD034_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0020	0.0002	0.0020	0.0022
	0009_SD034_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0005	<0.0002	0.0005	0.0005
	0009_SD034_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0015	<0.0002	0.0015	0.0015
SD035	0009_SD024_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0007	<0.0002	0.0007	0.0007
	0009_SD035_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0009	<0.0002	0.0009	0.0009
	0009_SD035_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0007	<0.0002	0.0007	0.0007
	0009_SD035_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0016	<0.0002	0.0016	0.0018
	0009_SD035_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0019	<0.0002	0.0019	0.0019
	0009_SD035_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0009	<0.0002	0.0009	0.0009
Former WWII RAN Fuel Installation																																
SD036	0009_SD008_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD036_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD036_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0006	0.0002	0.0006	0.0008
	0009_SD036_211208	8/12/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0009
	0009_SD036_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0008	0.0003	0.0008	0.0011
	0009_SD036_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0002	<0.0002	0.0002	0.0002
	0009_SD036_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0009
SD100	0009_SD100_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD100_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0003	<0.0002	0.0003	0.0003
	0009_SD100_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0006	<0.0002	0.0006	0.0006
	0009_SD100_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0009
	0009_SD100_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0007	0.0002	0.0007	0.0011
	0009_SD100_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0010	0.0003	0.0010	0.0013
SD101	0009_SD101_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD101_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD101_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD101_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	0009_SD101_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0020	<0.0002	<0.0005	<0.0004	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0004	<0.0002	<0.0002	<0.0002

Appendix C

Analytical Data Validation

DATA VALIDATION REPORT

Project No.:	60612487	**Validation by:** NB	**Date:** 4/5/2023
Client:	Department of Defence		
Site:	HMAS Cairns (0009)		
Matrix type:	Groundwater, surface water, sediment	**Data verified by:** CJ	**Date:** 15/5/2023
No. of primary samples:	15 groundwater (samples replicated on both high and low tide) 3 groundwater (no tidal replication) 9 surface waters 8 sediments (SD101 was placed on hold)		
Laboratory:	ALS (Townsville), Eurofins (Melbourne and Brisbane)	**Project Manager:** CJ	
Lab reference:	ET2301883, 979474		
Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication on data interpretation and therefore decision-making on the project. The data are considered appropriate for use to meet the project objectives.		

Field QA/QC

Sampling personnel	Sampling was conducted by AECOM personnel from 4-5 April 2023.
Sampling Methodology	Groundwater samples were collected using appropriate methods as identified within the main body of the report. Hydrasleeves were installed in the well for a minimum of 24 hours prior to collection for the first sampling round and then collected at shorter sampling intervals between tides. Surface water and sediment samples were collected using appropriate methods as outline in the SAQP (AECOM, 2022).
Chain of Custody (COC)	COC documents completed as per AECOM procedures.
Rinsate Blank	Four rinsate blank samples were collected at a frequency of one per day of sampling. Rinsate blanks were collected for each sample matrix from equipment including an interface probe, surface water sampling cup and trowel. Concentrations of all analytes tested were reported below the LOR for rinsate samples.
Trip Blanks	One trip blank sample was submitted to the laboratory per batch of primary samples delivered to the laboratory. Concentrations were reported below the LOR for all analytes tested in the trip blank.
Eskies to Laboratory	A total of two coolers of samples in one delivery were submitted to ALS. One cooler was submitted to Eurofins.
Frequency of field QC	Field duplicates (inter-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected at the following frequencies: • One intra laboratory duplicate and one inter laboratory duplicates (Triplicates) for the sediment sample assessment (12.5%) • One intra laboratory duplicate and one inter laboratory duplicates (Triplicates) for the surface water sample assessment (11.1%) • Four intra laboratory duplicate and four inter laboratory duplicates (Triplicates) for the groundwater sample assessment (12.1%) The target frequency of 10% for field duplicates and triplicates was achieved for all matrices.
Handling and preservation	Primary, duplicate and triplicate samples were received preserved and chilled at the laboratory. Sample receipt temperature was recorded at 16.0°C and an attempt to chill was evident with ice present.

	All samples were received at the laboratory in appropriate sample containers with no sample container / preservation non-compliances noted.
Equipment Calibration	Calibration of the water quality meter was conducted each day before sampling, see **Appendix F**.

Laboratory QA/QC	
Tests requested/reported	Samples were analysed and reported as requested on the COC.
Holding time compliance	Samples were extracted and analysed within recommended holding times.
Laboratory Accreditation	The laboratory analysis was conducted by ALS Environmental Pty Ltd (Brisbane) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate samples were analysed at the Eurofins (Melbourne and Sydney), also NATA accredited laboratories.
Frequency of laboratory QC	The laboratory reported sufficient frequency of quality control samples to assess whether the results were reported to an acceptable accuracy and precision, except for the frequency of laboratory duplicates and matrix spikes which was lower than the expected 10% and 5% respectively (actual rate of 5.26% and 3.51%, respectively) in batch ET2301883.
Method Blank	No method blank value outliers were reported.
Laboratory duplicate RPDs	Laboratory duplicate Relative Percentage Differences (RPD) were within control limits.
Laboratory control spike (LCS) recovery	All LCS recoveries were reported within acceptable limits, except for PFBS in Soil in ET2301883 which reported a recovery of 146% which was greater than the upper control limit (72-128%) indicating that sample results for PFBS may be reported higher than actual concentrations in those samples and the results should be interpreted with caution.
Matrix spike recovery	All matrix spike (MS) recoveries were within control limits, except for: • PFBS in Soil in ET2301883 which reported a recovery of 148% which was greater than the upper control limit (72-128%) indicating that sample results for PFBS in soils within this batch may be reported higher than actual concentrations in those samples and the results should be interpreted with caution. • PFOS in Water in ET2301883 – matrix spike recovery not determined, background level was greater than or equal to 4 x spike level indicating that the concentration of PFAS within the sample was higher than the spiked concentration.
Surrogate spike recovery	No surrogate recovery outliers were reported.

QA/QC Data Evaluation	
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted.
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.
Limits of reporting	Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted screening levels.
Field duplicate RPDs	Field duplicate RPDs were reported within control limits for the analysis completed at the locations sampled.
Field triplicate RPDs	Field triplicate RPDs were reported within control limits for all sample sets with the exception of the following: • Perfluoropentane sulfonic acid (PFPeS) in 0009_MW016_HT_230404 and 0009_QC200_230404 with an RPD of 89%. • Perfluorobutane sulfonic acid (PFBS) in 0009_MW004_LT_230404 and 0009_QC202_230404 with an RPD of 69%. • Perfluoroheptane sulfonic acid (PFHpS) in 0009_MW004_LT_230404 and 0009_QC202_230404 with an RPD of 39% • PFPeS in 0009_MW004_LT_230404 and 0009_QC202_230404 with an RPD of 88%. • Perfluorooctanoic Acid (PFOA) in 0009_MW004_LT_230404 and 0009_QC202_230404 with an RPD of 31%. • PFBS in 0009_MW003_HT_230404 and 0009_QC201_230404 with an RPD of 94%. • Perfluorohexane sulfonic acid (PFHxS) in 0009_MW003_HT_230404 and 0009_QC201_230404 with an RPD of 35%. • PFPeS in 0009_MW003_HT_230404 and 0009_QC201_230404 with an RPD of 50% • Perfluorooctane sulfonic acid (PFOS) in 0009_MW003_HT_230404 and 0009_QC201_230404 with an RPD of 38% • PFOA in 0009_MW003_HT_230404 and 0009_QC201_230404 with an RPD of 42% Triplicate concentrations were within the same order of magnitude compared to the concentrations in the primary sample and this is not considered to impact interpretation of results. The variability between the primary and triplicate results is inferred to be the result of slight differences in analytical methods employed by the two laboratories. This is demonstrated through the laboratory duplicate results all being within acceptable limits.

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Table C1: Groundwater RPDs

Project Name: PFAS HMAS Cairns
Sampling Event Factual Report
April 2023

Lab Report Number			ET2301883	ET2301883		979474		ET2301883	ET2301883		979474		ET2301883	ET2301883
Field ID			0009_MW016_HT_230404	0009_QC100_230404		0009_QC200_230404		0009_MW004_LT_230404	0009_QC102_230404		0009_QC202_230404		0009_MW018_LT_230404	0009_QC103_230404
Date /Time			4/04/2023 8:09	4/04/2023 8:10	RPD	4/04/2023	RPD	4/04/2023 14:37	4/04/2023 14:37	RPD	4/04/2023	RPD	4/04/2023 16:36	4/04/2023 16:41
ChemName	Unit	EQL												
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	0.14	0.15	7	0.1	33	<0.05	<0.05	0	<0.05	0	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	0.02	0	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.06	<0.06	0	<0.05	0	<0.05	<0.05
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.01	-	-	-	0.04	-	-	-	-	0.11	-	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.05	0	<0.02	<0.02	0	<0.05	0	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.06	<0.06	0	<0.05	0	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	0	<0.05	0	0.11	0.13	17	0.05	75	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.06	<0.06	0	<0.05	0	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.05	0	<0.02	<0.02	0	<0.05	0	<0.02	<0.02
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.06	<0.06	0	<0.05	0	<0.05	<0.05
Perfluorononane sulfonate (PFNS)	µg/L	0.01	-	-	-	<0.01	-	-	-	-	0.03	-	-	-
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	0.20	0.22	10	0.1	67	0.47	0.53	12	0.23	69	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.1	<0.1	0	0.07	0	0.2	0.2	0	0.22	10	<0.1	<0.1
Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	0.03	0.02	40	0.02	40	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	0.04	0.04	0	0.04	0	0.40	0.38	5	0.3	29	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	0.46	0.52	12	0.31	39	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	0.29	0.28	4	0.31	7	1.08	1.05	3	1.1	2	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	2.20	2.16	2	1.7	26	4.98	4.93	1	3.9	24	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	µg/L	0.01	0.09	0.08	12	0.05	57	0.56	0.54	4	0.45	22	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	0.26	0.27	4	0.1	89	0.49	0.49	0	0.19	88	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	<0.05	<0.05	0	<0.01	0	<0.06	<0.06	0	<0.01	0	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	0.05	0.05	0	0.04	22	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.24	0.24	0	0.23	4	22.9	23.9	4	23	0	0.02	0.02
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.02	0.01	67	0.02	0	0.63	0.64	2	0.46	31	<0.01	<0.01

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 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
NC = not calculated due to value below EQL

Table C1: Groundwater RPDs

Lab Report Number		979474		ET2301883	ET2301883		979474		
Field ID		0009_QC203_230404		0009_MW003_HT_230404	0009_QC101_230404		0009_QC201_230404		
Date /Time	RPD	4/04/2023	RPD	5/04/2023 9:55	5/04/2023 9:55	RPD	4/04/2023	RPD	
ChemName	Unit	EQL							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	0	<0.01	0	<0.05	<0.05	0	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.01	0	<0.01	0	<0.05	<0.05	0	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01	0	<0.01	0	<0.05	<0.05	0	<0.01	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.01	-	<0.01	-	-	-	-	0.31	-
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	0	<0.05	0	<0.02	<0.02	0	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	0	<0.05	0	0.02	<0.02	0	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	0	<0.05	0	<0.02	<0.02	0	<0.05	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0
Perfluorononane sulfonate (PFNS)	µg/L	0.01	-	<0.01	-	-	-	-	0.03	-
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	0	<0.01	0	1.13	1.13	0	0.41	**94**
Perfluorobutanoic acid (PFBA)	µg/L	0.05	0	<0.05	0	0.3	0.3	0	0.28	7
Perfluorodecanoic acid (PFDA)	µg/L	0.01	0	<0.01	0	<0.02	<0.02	0	<0.01	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.01	0	<0.01	0	<0.02	<0.02	0	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	0	<0.01	0	<0.02	<0.02	0	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	0	<0.01	0	0.35	0.34	3	0.36	3
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	0	<0.01	0	0.49	0.49	0	0.38	25
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	0	<0.01	0	2.53	2.56	1	2.4	5
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0	<0.01	0	9.24	8.84	4	6.5	**35**
Perfluoropentanoic acid (PFPeA)	µg/L	0.01	0	<0.01	0	0.59	0.60	2	0.46	25
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	0	<0.01	0	1.25	1.19	5	0.75	**50**
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	0	<0.01	0	<0.05	<0.05	0	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	0	<0.01	0	<0.02	<0.02	0	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	0	<0.01	0	<0.02	<0.02	0	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	0.01	0	<0.01	0	<0.02	<0.02	0	0.02	0
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0	0.01	67	7.08	8.01	12	4.8	**38**
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0	<0.01	0	0.72	0.69	4	0.47	**42**

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 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
NC = not calculated due to value below EQL

Table C2: Surface Water RPDs

Lab Report Number			ET2301883	ET2301883		979474	
Field ID			0009_SW100_230405	0009_QC104_230405		0009_QC204_230405	
Date /Time			5/04/2023 11:50	5/04/2023 11:50	RPD	5/04/2023	RPD
ChemName	Unit	EQL					
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.01	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	0
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.01	-	-	-	<0.01	-
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	0	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.05	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	0
Perfluorononane sulfonate (PFNS)	µg/L	0.01	-	-	-	<0.01	-
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	0	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.1	<0.1	0	<0.05	0
Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.01	<0.02	<0.02	0	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	0	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	0	<0.01	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	0	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	<0.05	<0.05	0	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	0	<0.01	0
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 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
NC = not calculated due to value below EQL

Table C3: Sediment RPDs

	Lab Report Number	ET2301883	ET2301883	RPD	979474	RPD
	Field ID	0009_SD100_230405	0009_QC105_230405		0009_QC205_230405	
	Date /Time	5/04/2023 11:50	5/04/2023 11:50		5/04/2023	
ChemName	Unit	EQL				
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005	<0.0005	0	<0.005	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	mg/kg	0.0005	<0.0005	0	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005	<0.0005	0	<0.005	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005	<0.0005	0	<0.005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005	<0.0005	0	<0.005	0
Perfluoropropanesulfonic acid (PFPrS)	mg/kg	0.005	-	-	<0.005	-
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	0	<0.01	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005	<0.0005	0	<0.005	0
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002	<0.0002	0	<0.005	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005	<0.0005	0	<0.005	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	0	<0.01	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005	<0.0005	0	<0.005	0
Perfluorononane sulfonate (PFNS)	mg/kg	0.005	-	-	<0.005	-
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluorobutanoic acid (PFBA)	mg/kg	0.001	<0.001	0	<0.005	0
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005	<0.0005	0	<0.005	0
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluorononanoic acid (PFNA)	mg/kg	0.0002	<0.0002	0	<0.005	0
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002	0.0010	11	<0.005	0
Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002	0.0003	40	<0.005	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 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

NC = not calculated due to value below EQL

Table C4: Rinsate Analytical Results

	Lab Report Number	ET2301883	ET2301883	ET2301883	ET2301883	
	Field ID	0009_QC300_230404	0009_QC301_230405	0009_QC302_230405	0009_QC303_230405	
	Date /Time	4/04/2023 16:58	5/04/2023 17:33	5/04/2023 17:34	5/04/2023 17:35	
	Sample Type	Rinsate - Interface Probe	Rinsate - Interface Probe	Rinsate - Trowel	Rinsate - Surface Water Cup	
ChemName	Unit	EQL				
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<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	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<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	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01

Table C5: Trip Blank Analytical Results

Lab Report Number	ET2301883
Field ID	0009_QC500_230406
Date /Time	6/04/2023 17:09
Sample Type	Trip Blank

ChemName	Unit	EQL	
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01

Appendix D

Chain of Custody Forms

Environmental Division
Townsville
Work Order Reference
ET2301883

Telephone : +61 7 4773 0000

Custody Document for Submissions via ALS Compass App

Project: QLD_0009_PFASsMP_23 **Client:** AECOM **Project Manager:** [redacted]

Phone: (

ALS Compass COC Reference: 50542 **# Samples:** **Sampler:** [redacted]

Phone: (

Turnaround Requirements: Standard 5 DAYS. 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?		°C	

Custody:

Relinquis[redacted]	Received by:	Relinquished by:	Received by:
Date / Time: 11/4/23 08:48	Date / Time: 11/4/23 8:50am	Date / Time:	Date / Time: 12/4/23 8:00

CHAIN OF CUSTODY

ALS COC#: **50542** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0009_MW019_HT_230404		04/04/2023 07:15 AM	WATER	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol for lab QC
002	0009_MW011_HT_230404		04/04/2023 07:40 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
003	0009_MW009_HT_230404		04/04/2023 07:56 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
004	0009_MW016_HT_230404		04/04/2023 08:09 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
005	0009_QC100_230404		04/04/2023 08:10 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
006	0009_MW007_HT_230404		04/04/2023 08:22 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
007	0009_MW017_HT_230404		04/04/2023 08:25 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
008	0009_MW015_HT_230404		04/04/2023 08:40 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
009	0009_MW014_HT_230404		04/04/2023 08:41 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

COC#: **50542** *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVE[redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TI[redacted] 8:00 12/4/23

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	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0009_MW005_HT_230404		05/04/2023 09:46 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
011	0009_MW004_HT_230404		05/04/2023 09:38 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
012	0009_MW013_HT_230404		05/04/2023 09:56 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
013	0009_MW001_HT_230404		05/04/2023 09:37 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
014	0009_MW002_HT_230404		05/04/2023 09:44 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
015	0009_MW003_HT_230404		05/04/2023 09:55 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
016	0009_QC101_230404		05/04/2023 09:55 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
017	0009_MW018_HT_230404		04/04/2023 10:00 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
018	0009_MW014_LT_230404		04/04/2023 01:35 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

ALS COC#: 50542 ALS Laboratory: ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 12/4/23 8:00

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER [redacted]
PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0009_MW015_LT_230404		04/04/2023 01:50 PM	WATER	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol for lab WC
020	0009_MW007_LT_230404		04/04/2023 02:45 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
021	0009_MW017_LT_230404		04/04/2023 03:12 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
022	0009_MW009_LT_230404		04/04/2023 03:24 PM	WATER	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol for lab QC
023	0009_MW003_LT_230404		04/04/2023 03:13 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
024	0009_MW001_LT_230404		04/04/2023 03:35 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
025	0009_MW019_LT_230404		04/04/2023 04:11 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
026	0009_MW011_LT_230404		04/04/2023 04:21 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
027	0009_MW018_LT_230404		04/04/2023 04:36 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

(ALS) COC#: **50542** *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: [redacted] 12/4/23 8:06

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	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0009_QC103_230404		04/04/2023 04:41 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
029	0009_MW017_LT_230404		04/04/2023 04:40 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
030	0009_MW002_LT_230404		04/04/2023 03:24 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
031	0009_MW005_LT_230404		04/04/2023 02:48 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
032	0009_MW013_LT_230404		04/04/2023 03:01 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
033	0009_MW004_LT_230404		04/04/2023 02:37 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
034	0009_QC102_230404		04/04/2023 02:37 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
035	0009_QC300_230404		04/04/2023 04:58 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
036	0009_SW036_230405		05/04/2023 10:13 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

ALS COC#: 50542 ALS Laboratory: ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 12/04/23 8:00

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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 DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0009_SD036_230405		05/04/2023 10:13 AM	SOIL	ALS: 1 Non ALS: 0	No	Partial 1/4			
038	0009_MW031_230405		05/04/2023 10:46 AM	WATER	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol for lab we
039	0009_MW035_230405		05/04/2023 11:01 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
040	0009_MW036_230405		05/04/2023 11:10 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
041	0009_SD101_230405		05/04/2023 11:18 AM	SOIL	ALS: 1 Non ALS: 0	No	Partial 1/4			
042	0009_SW101_230405		05/04/2023 11:20 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
043	0009_SW100_230405		05/04/2023 11:50 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
044	0009_SD100_230405		05/04/2023 11:50 AM	SOIL	ALS: 1 Non ALS: 0	No	Partial 1/4			
045	0009_QC104_230405		05/04/2023 11:50 AM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

(ALS) COC#: 50542 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: [redacted] 12/4/23 8:00

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER [redacted]
PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

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	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0009_QC105_230405		05/04/2023 11:50 AM	SOIL	ALS: 1 Non ALS: 0	No	Partial 1/4			
047	0009_SW030_230405		05/04/2023 01:15 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
048	0009_SD030_230405		05/04/2023 01:16 PM	SOIL	ALS: 1 Non ALS: 0	No	Partial 1/4			
049	0009_SW031_230405		05/04/2023 01:32 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
050	0009_SD031_230405		05/04/2023 01:32 PM	SOIL	ALS: 1 Non ALS: 0	No	Partial 1/4			
051	0009_SD034_230405		05/04/2023 02:12 PM	SOIL	ALS: 1 Non ALS: 0	No	Partial 1/4			
052	0009_SW034_230405		05/04/2023 02:13 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
053	0009_SD035_230405		05/04/2023 02:25 PM	SOIL	ALS: 1 Non ALS: 0	No	Partial 1/4			
054	0009_SW035_230405		05/04/2023 02:26 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

ALS COC#: **50542** *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIV[redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 12/4/23 8:00

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	Sediments SEDIMENT	Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0009_SD032_230405		05/04/2023 04:53 PM	SOIL	ALS: 1 Non ALS: 0	No	Partial 1/4			
056	0009_SW032_230405		05/04/2023 04:54 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
057	0009_SD033_230405		05/04/2023 05:15 PM	SOIL	ALS: 1 Non ALS: 0	No	Partial 1/4			
058	0009_SW033_230405		05/04/2023 05:16 PM	WATER	ALS: 4 Non ALS: 0	No		Partial 1/4		Extra vol for lab QC
059	0009_QC301_230405		05/04/2023 05:33 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
060	0009_QC302_230405		05/04/2023 05:34 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
061	0009_QC303_230405		05/04/2023 05:35 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		
062	0009_QC500_230406		06/04/2023 05:09 PM	WATER	ALS: 2 Non ALS: 0	No		Partial 1/4		

CHAIN OF CUSTODY

(ALS) COC#: 50542 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED B[redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 12/4/23 8:00

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

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	PARTIAL ANALYSIS GROUP NAME	MATRIX	SELECTED ANALYSIS NAME
001	0009_MW019_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
002	0009_MW011_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
003	0009_MW009_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
004	0009_MW016_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
005	0009_QC100_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
006	0009_MW007_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
007	0009_MW017_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
008	0009_MW015_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
009	0009_MW014_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
010	0009_MW005_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
011	0009_MW004_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
012	0009_MW013_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
013	0009_MW001_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
014	0009_MW002_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
015	0009_MW003_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

ALS COC#: **50542** *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 12/4/23 Y.O.E

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:

016	0009_QC101_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
017	0009_MW018_HT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
018	0009_MW014_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
019	0009_MW015_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
020	0009_MW007_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
021	0009_MW017_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
022	0009_MW009_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
023	0009_MW003_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
024	0009_MW001_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
025	0009_MW019_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
026	0009_MW011_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
027	0009_MW018_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
028	0009_QC103_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
029	0009_MW017_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
030	0009_MW002_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
031	0009_MW005_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

ALS COC#: 50542 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 12/4/23 8:00

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:

032	0009_MW0[illegible]	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
033	0009_MW004_LT_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
034	0009_QC102_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
035	0009_QC300_230404	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
036	0009_SW036_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
037	0009_SD036_230405	Sediments SEDIMENT	SOIL	- EP231X (solids) PFAS - Full Suite (28 analytes)
038	0009_MW031_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
039	0009_MW035_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
040	0009_MW036_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
041	0009_SD101_230405	Sediments SEDIMENT	SOIL	- EP231X (solids) PFAS - Full Suite (28 analytes)
042	0009_SW101_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
043	0009_SW100_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
044	0009_SD100_230405	Sediments SEDIMENT	SOIL	- EP231X (solids) PFAS - Full Suite (28 analytes)
045	0009_QC104_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
046	0009_QC105_230405	Sediments SEDIMENT	SOIL	- EP231X (solids) PFAS - Full Suite (28 analytes)
047	0009_SW030_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

ALS COC#: 50542 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED B[redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 12/4/23 8:00

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:

048	0009_SD[redacted]		SOIL	- EP231X (solids) PFAS - Full Suite (28 analytes)
049	0009_SW031_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
050	0009_SD031_230405	Sediments SEDIMENT	SOIL	- EP231X (solids) PFAS - Full Suite (28 analytes)
051	0009_SD034_230405	Sediments SEDIMENT	SOIL	- EP231X (solids) PFAS - Full Suite (28 analytes)
052	0009_SW034_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
053	0009_SD035_230405	Sediments SEDIMENT	SOIL	- EP231X (solids) PFAS - Full Suite (28 analytes)
054	0009_SW035_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
055	0009_SD032_230405	Sediments SEDIMENT	SOIL	- EP231X (solids) PFAS - Full Suite (28 analytes)
056	0009_SW032_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
057	0009_SD033_230405	Sediments SEDIMENT	SOIL	- EP231X (solids) PFAS - Full Suite (28 analytes)
058	0009_SW033_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
059	0009_QC301_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
060	0009_QC302_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
061	0009_QC303_230405	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)
062	0009_QC500_230406	Waters WATER	WATER	- EP231X PFAS - Full Suite (28 analytes)

CHAIN OF CUSTODY

(ALS) COC#: 50542 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 12/04/23 8:00

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	SAMP [redacted]		VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0009_MW019_HT_230404	HDPE (no PTFE)	20 mL	00350821031554	Grey	No	
001	0009_MW019_HT_230404	HDPE (no PTFE)	20 mL	00350821031584	Grey	No	
001	0009_MW019_HT_230404	HDPE (no PTFE)	20 mL	00350821031360	Grey	No	
001	0009_MW019_HT_230404	HDPE (no PTFE)	20 mL	00350821031467	Grey	No	
002	0009_MW011_HT_230404	HDPE (no PTFE)	20 mL	00350821011975	Grey	No	
002	0009_MW011_HT_230404	HDPE (no PTFE)	20 mL	00350821011971	Grey	No	
003	0009_MW009_HT_230404	HDPE (no PTFE)	20 mL	00350821031289	Grey	No	
003	0009_MW009_HT_230404	HDPE (no PTFE)	20 mL	00350821031518	Grey	No	
004	0009_MW016_HT_230404	HDPE (no PTFE)	20 mL	00350821031263	Grey	No	
004	0009_MW016_HT_230404	HDPE (no PTFE)	20 mL	00350821011996	Grey	No	
005	0009_QC100_230404	HDPE (no PTFE)	20 mL	00350821031581	Grey	No	
005	0009_QC100_230404	HDPE (no PTFE)	20 mL	00350821031221	Grey	No	
006	0009_MW007_HT_230404	HDPE (no PTFE)	20 mL	00350821031473	Grey	No	
006	0009_MW007_HT_230404	HDPE (no PTFE)	20 mL	00350821031399	Grey	No	
007	0009_MW017_HT_230404	HDPE (no PTFE)	20 mL	00350821031623	Grey	No	
007	0009_MW017_HT_230404	HDPE (no PTFE)	20 mL	00350821031695	Grey	No	
008	0009_MW015_HT_230404	HDPE (no PTFE)	20 mL	00350821031525	Grey	No	
008	0009_MW015_HT_230404	HDPE (no PTFE)	20 mL	00350821011933	Grey	No	
009	0009_MW014_HT_230404	HDPE (no PTFE)	20 mL	00350821031416	Grey	No	
009	0009_MW014_HT_230404	HDPE (no PTFE)	20 mL	00350821031491	Grey	No	
010	0009_MW005_HT_230404	HDPE (no PTFE)	20 mL	00350821031273	Grey	No	
010	0009_MW005_HT_230404	HDPE (no PTFE)	20 mL	00350821031376	Grey	No	
011	0009_MW004_HT_230404	HDPE (no PTFE)	20 mL	00350821031293	Grey	No	
011	0009_MW004_HT_230404	HDPE (no PTFE)	20 mL	00350821011927	Grey	No	
012	0009_MW013_HT_230404	HDPE (no PTFE)	20 mL	00350821031331	Grey	No	
012	0009_MW013_HT_230404	HDPE (no PTFE)	20 mL	00350821031453	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 50542 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED B[redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 12/4/23 8:00

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES 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:

013	0009_MW0[redacted]		20 mL	00350821031556	Grey	No	
013	0009_MW001_HT_230404	HDPE (no PTFE)	20 mL	00350821031582	Grey	No	
014	0009_MW002_HT_230404	HDPE (no PTFE)	20 mL	00350821031369	Grey	No	
014	0009_MW002_HT_230404	HDPE (no PTFE)	20 mL	00350821031596	Grey	No	
015	0009_MW003_HT_230404	HDPE (no PTFE)	20 mL	00350821031537	Grey	No	
015	0009_MW003_HT_230404	HDPE (no PTFE)	20 mL	00350821031260	Grey	No	
016	0009_QC101_230404	HDPE (no PTFE)	20 mL	00350821011936	Grey	No	
016	0009_QC101_230404	HDPE (no PTFE)	20 mL	00350821011989	Grey	No	
017	0009_MW018_HT_230404	HDPE (no PTFE)	20 mL	00350821031607	Grey	No	
017	0009_MW018_HT_230404	HDPE (no PTFE)	20 mL	00350821031523	Grey	No	
018	0009_MW014_LT_230404	HDPE (no PTFE)	20 mL	00350821031632	Grey	No	
018	0009_MW014_LT_230404	HDPE (no PTFE)	20 mL	00350821031443	Grey	No	
019	0009_MW015_LT_230404	HDPE (no PTFE)	20 mL	00350821031274	Grey	No	
019	0009_MW015_LT_230404	HDPE (no PTFE)	20 mL	00350821031425	Grey	No	
019	0009_MW015_LT_230404	HDPE (no PTFE)	20 mL	00350821031213	Grey	No	
019	0009_MW015_LT_230404	HDPE (no PTFE)	20 mL	00350821031712	Grey	No	
020	0009_MW007_LT_230404	HDPE (no PTFE)	20 mL	00350821031337	Grey	No	
020	0009_MW007_LT_230404	HDPE (no PTFE)	20 mL	00350821031608	Grey	No	
021	0009_MW017_LT_230404	HDPE (no PTFE)	20 mL	00350821031574	Grey	No	
021	0009_MW017_LT_230404	HDPE (no PTFE)	20 mL	00350821031601	Grey	No	
022	0009_MW009_LT_230404	HDPE (no PTFE)	20 mL	00350821031205	Grey	No	
022	0009_MW009_LT_230404	HDPE (no PTFE)	20 mL	00350821031298	Grey	No	
022	0009_MW009_LT_230404	HDPE (no PTFE)	20 mL	00350821031640	Grey	No	
022	0009_MW009_LT_230404	HDPE (no PTFE)	20 mL	00350821031313	Grey	No	
023	0009_MW003_LT_230404	HDPE (no PTFE)	20 mL	00350821031397	Grey	No	
023	0009_MW003_LT_230404	HDPE (no PTFE)	20 mL	00350821031667	Grey	No	
024	0009_MW001_LT_230404	HDPE (no PTFE)	20 mL	00350821031266	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: **50542** *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 12/4/23 8:00

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:

024	0009_MW001_LT_230404	HDPE (no PTFE)	20 mL	00350821011969	Grey	No	
025	0009_MW019_LT_230404	HDPE (no PTFE)	20 mL	00350821031580	Grey	No	
025	0009_MW019_LT_230404	HDPE (no PTFE)	20 mL	00350821031662	Grey	No	
026	0009_MW011_LT_230404	HDPE (no PTFE)	20 mL	00350821031208	Grey	No	
026	0009_MW011_LT_230404	HDPE (no PTFE)	20 mL	00350821031658	Grey	No	
027	0009_MW018_LT_230404	HDPE (no PTFE)	20 mL	00350821011950	Grey	No	
027	0009_MW018_LT_230404	HDPE (no PTFE)	20 mL	00350821031563	Grey	No	
028	0009_QC103_230404	HDPE (no PTFE)	20 mL	00350821031393	Grey	No	
028	0009_QC103_230404	HDPE (no PTFE)	20 mL	00350821031706	Grey	No	
029	0009_MW017_LT_230404	HDPE (no PTFE)	20 mL	00350821031696	Grey	No	
029	0009_MW017_LT_230404	HDPE (no PTFE)	20 mL	00350821031527	Grey	No	
030	0009_MW002_LT_230404	HDPE (no PTFE)	20 mL	00350821011964	Grey	No	
030	0009_MW002_LT_230404	HDPE (no PTFE)	20 mL	00350821031371	Grey	No	
031	0009_MW005_LT_230404	HDPE (no PTFE)	20 mL	00350821031672	Grey	No	
031	0009_MW005_LT_230404	HDPE (no PTFE)	20 mL	00350821031291	Grey	No	
032	0009_MW013_LT_230404	HDPE (no PTFE)	20 mL	00350821031686	Grey	No	
032	0009_MW013_LT_230404	HDPE (no PTFE)	20 mL	00350821011984	Grey	No	
033	0009_MW004_LT_230404	HDPE (no PTFE)	20 mL	00350821031348	Grey	No	
033	0009_MW004_LT_230404	HDPE (no PTFE)	20 mL	00350821031343	Grey	No	
034	0009_QC102_230404	HDPE (no PTFE)	20 mL	00350821031612	Grey	No	
034	0009_QC102_230404	HDPE (no PTFE)	20 mL	00350821031405	Grey	No	
035	0009_QC300_230404	HDPE (no PTFE)	20 mL	00350821011914	Grey	No	
035	0009_QC300_230404	HDPE (no PTFE)	20 mL	00350821031262	Grey	No	
036	0009_SW036_230405	HDPE (no PTFE)	20 mL	00350821031673	Grey	No	
036	0009_SW036_230405	HDPE (no PTFE)	20 mL	00350821011953	Grey	No	
037	0009_SD036_230405	HDPE Soil Jar	200 mL	00620719044275	Grey	No	
038	0009_MW031_230405	HDPE (no PTFE)	20 mL	00350821031663	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 50542 *ALS Laboratory:* ET Townsville

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIV[redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 12/4/23 8:00

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

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: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

038	0009_MW[redacted]		20 mL	00350821011926	Grey	No	
038	0009_MW031_230405	HDPE (no PTFE)	20 mL	00350821031268	Grey	No	
038	0009_MW031_230405	HDPE (no PTFE)	20 mL	00350821011945	Grey	No	
039	0009_MW035_230405	HDPE (no PTFE)	20 mL	00350821011988	Grey	No	
039	0009_MW035_230405	HDPE (no PTFE)	20 mL	00350821031572	Grey	No	
040	0009_MW036_230405	HDPE (no PTFE)	20 mL	00350821031292	Grey	No	
040	0009_MW036_230405	HDPE (no PTFE)	20 mL	00350821031544	Grey	No	
041	0009_SD101_230405	HDPE Soil Jar	200 mL	00621019076447	Grey	No	
042	0009_SW101_230405	HDPE (no PTFE)	20 mL	00350821011915	Grey	No	
042	0009_SW101_230405	HDPE (no PTFE)	20 mL	00350821031598	Grey	No	
043	0009_SW100_230405	HDPE (no PTFE)	20 mL	00350821031520	Grey	No	
043	0009_SW100_230405	HDPE (no PTFE)	20 mL	00350821031404	Grey	No	
044	0009_SD100_230405	HDPE Soil Jar	200 mL	00621019076383	Grey	No	
045	0009_QC104_230405	HDPE (no PTFE)	20 mL	00350821011948	Grey	No	
045	0009_QC104_230405	HDPE (no PTFE)	20 mL	00350821031471	Grey	No	
046	0009_QC105_230405	HDPE Soil Jar	200 mL	00621019076329	Grey	No	
047	0009_SW030_230405	HDPE (no PTFE)	20 mL	00350821031488	Grey	No	
047	0009_SW030_230405	HDPE (no PTFE)	20 mL	00350821031551	Grey	No	
048	0009_SD030_230405	HDPE Soil Jar	200 mL	00621019076367	Grey	No	
049	0009_SW031_230405	HDPE (no PTFE)	20 mL	00350821031687	Grey	No	
049	0009_SW031_230405	HDPE (no PTFE)	20 mL	00350821031705	Grey	No	
050	0009_SD031_230405	HDPE Soil Jar	200 mL	00621019076345	Grey	No	
051	0009_SD034_230405	HDPE Soil Jar	200 mL	00621019076335	Grey	No	
052	0009_SW034_230405	HDPE (no PTFE)	20 mL	00350821011952	Grey	No	
052	0009_SW034_230405	HDPE (no PTFE)	20 mL	00350821031317	Grey	No	
053	0009_SD035_230405	HDPE Soil Jar	200 mL	00621019076409	Grey	No	
054	0009_SW035_230405	HDPE (no PTFE)	20 mL	00350821031685	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 50542 *ALS Laboratory:* ET Townsville

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: QLD_0009_PFASOMP_23

SITE: QLD_0009

ORDER NO: 60612487_4.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: TV/007/21 v2 - Compass / ET2021AECOMAU0001

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: [redacted] 12/4/23 8:00

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:

054	0009_SW[redacted]		20 mL	00350821031214	Grey	No	
055	0009_SD032_230405	HDPE Soil Jar	200 mL	00621019076330	Grey	No	
056	0009_SW032_230405	HDPE (no PTFE)	20 mL	00350522022203	Grey	No	
056	0009_SW032_230405	HDPE (no PTFE)	20 mL	00350522021946	Grey	No	
057	0009_SD033_230405	HDPE Soil Jar	200 mL	00621019076378	Grey	No	
058	0009_SW033_230405	HDPE (no PTFE)	20 mL	00350522021936	Grey	No	
058	0009_SW033_230405	HDPE (no PTFE)	20 mL	00350522022104	Grey	No	
058	0009_SW033_230405	HDPE (no PTFE)	20 mL	00350522022078	Grey	No	
058	0009_SW033_230405	HDPE (no PTFE)	20 mL	00350522021993	Grey	No	
059	0009_QC301_230405	HDPE (no PTFE)	20 mL	00350821031412	Grey	No	
059	0009_QC301_230405	HDPE (no PTFE)	20 mL	00350821031605	Grey	No	
060	0009_QC302_230405	HDPE (no PTFE)	20 mL	00350821031485	Grey	No	
060	0009_QC302_230405	HDPE (no PTFE)	20 mL	00350821031503	Grey	No	
061	0009_QC303_230405	HDPE (no PTFE)	20 mL	00350522052803	Grey	No	
061	0009_QC303_230405	HDPE (no PTFE)	20 mL	00350522052986	Grey	No	
062	0009_QC500_230406	HDPE (no PTFE)	20 mL	00350621064457	Grey	No	
062	0009_QC500_230406	HDPE (no PTFE)	20 mL	00350621064423	Grey	No	

Total Bottle Count: ALS: 124, Non ALS: 0

ANZ

FQM - Generic Chain of Custody Form

AECOM

Q4AN(EV)-007-FM1

CONSULTANT: AECOM	ADDRESS: Townsville	SAMPLER: [redacted]	**Destination Laboratory**
PROJECT MANAGER (PM): [redacted]	SITE: QLD_0009	MOBILE:	PHONE:
PROJECT NUMBER & TASK CODE: QLD_0009_PFASOMP_23	P.O. NO.: 60612487_4.1	EMAIL REPORT TO: [redacted]	EUROFINS Brisbane
RESULTS REQUIRED (Date): 5 days	QUOTE NO.:		
RESULTS FORMAT: Esdat		ANALYSIS REQUIRED (Note: Suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		PFAS Extended Suite - 30 - Standard LOR													HOLD	Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles															
	0009_QC200_230404	W	4/04/23	8:00	2 x P	2	x														
	0009_QC201_230404	W	4/04/23	9:55	2 x P	2	x														
	0009_QC202_230404	W	4/04/23	14:37	2 x P	2	x														
	0009_QC203_230404	W	4/04/23	16:30	2 x P	2	x														
	0009_QC204_230405	W	5/04/23	11:50	2 x P	2	x														
	0009_QC205_230405	S	5/04/23	11:50	1 x Jar	1	x														

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: [redacted]	Date: 2-45pm.	Name:	Date:	Name:	Date:	Con' Note No:
Of:	Time: 11/4/23	Of:	Time:	Of:	Time:	Transport Co:

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. **Soil Container Codes**: Jar = Unpreserved glass jar

Appendix E

Laboratory Analytical Certificates and QA/QC Reports

CERTIFICATE OF ANALYSIS

Work Order	: **ET2301883**	Page	: 1 of 29
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_23	Date Samples Received	: 12-Apr-2023 08:00
Order number	: 60612487_4.1	Date Analysis Commenced	: 13-Apr-2023
C-O-C number	: 50542	Issue Date	: 08-May-2023 11:01
Sampler	: [redacted]		
Site	: QLD_0009		
Quote number	: TV/007/21 v2 - Compass		
No. of samples received	: 62		
No. of samples analysed	: 61		

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]		

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.
- $$ conducted by ALS Townsville, NATA accreditation no. 825, (Site no. 23472 for Chemical Testing and Site no. 23313 for Biological Testing)
- EP231X PFAS: Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.
- Amendment (08/05/2023):This report has been amended following the change of sample ID for sample 21 as per client email. All results are as per previous report.
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- EP231X PFAS: The LOR of PFDS for sample ‘0009_SD031_230405’ (ET2301883-050) has been raised due to matrix interference.
- EP231X PFAS: The high laboratory control standard recovery for PFBS is deemed acceptable as associated sample analyte results are less than the limit of reporting.
- EP231X PFAS: The high matrix spike recovery for PFBS for sample ‘EB2309023-044’ is deemed acceptable as associated sample analyte results are less than the limit of reporting.
- 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.
- 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: SOIL (Matrix: SOIL)				Sample ID	0009_SD036_230405	0009_SD100_230405	0009_QC105_230405	0009_SD030_230405	0009_SD031_230405
				Sampling date / time	05-Apr-2023 10:13	05-Apr-2023 11:50	05-Apr-2023 11:50	05-Apr-2023 13:16	05-Apr-2023 13:32
Compound	CAS Number	LOR	Unit		ET2301883-037	ET2301883-044	ET2301883-046	ET2301883-048	ET2301883-050
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**48.5**	**53.6**	**55.3**	**34.8**	**59.9**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0002**	**0.0003**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0007**	**0.0010**	**0.0009**	**0.0034**	**0.0046**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0003
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		**0.0002**	**0.0003**	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD036_230405	0009_SD100_230405	0009_QC105_230405	0009_SD030_230405	0009_SD031_230405
				Sampling date / time	05-Apr-2023 10:13	05-Apr-2023 11:50	05-Apr-2023 11:50	05-Apr-2023 13:16	05-Apr-2023 13:32
Compound	CAS Number	LOR	Unit		ET2301883-037	ET2301883-044	ET2301883-046	ET2301883-048	ET2301883-050
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0009**	**0.0013**	**0.0009**	**0.0036**	**0.0049**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0007**	**0.0010**	**0.0009**	**0.0036**	**0.0049**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0009**	**0.0013**	**0.0009**	**0.0036**	**0.0049**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**114**	**112**	**116**	**127**	**129**
13C8-PFOA	----	0.0002	%		**94.0**	**93.0**	**89.5**	**91.0**	**96.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD034_230405	0009_SD035_230405	0009_SD032_230405	0009_SD033_230405	----
				Sampling date / time	05-Apr-2023 14:12	05-Apr-2023 14:25	05-Apr-2023 16:53	05-Apr-2023 17:15	----
Compound	CAS Number	LOR	Unit		ET2301883-051	ET2301883-053	ET2301883-055	ET2301883-057	--------
					Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**42.9**	**42.6**	**54.4**	**55.2**	**----**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0015**	**0.0009**	**0.0014**	**0.0008**	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0009_SD034_230405	0009_SD035_230405	0009_SD032_230405	0009_SD033_230405	----
				Sampling date / time	05-Apr-2023 14:12	05-Apr-2023 14:25	05-Apr-2023 16:53	05-Apr-2023 17:15	----
Compound	CAS Number	LOR	Unit		ET2301883-051	ET2301883-053	ET2301883-055	ET2301883-057	--------
					Result	Result	Result	Result	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	**0.0607**	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0015**	**0.0009**	**0.0014**	**0.0615**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0015**	**0.0009**	**0.0014**	**0.0008**	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0015**	**0.0009**	**0.0014**	**0.0615**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**112**	**127**	**89.5**	**84.5**	----
13C8-PFOA	----	0.0002	%		**88.0**	**95.0**	**97.0**	**99.0**	----

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW019_HT_230404	0009_MW011_HT_230404	0009_MW009_HT_230404	0009_MW016_HT_230404	0009_QC100_230404
				Sampling date / time	04-Apr-2023 07:15	04-Apr-2023 07:40	04-Apr-2023 07:56	04-Apr-2023 08:09	04-Apr-2023 08:10
					ET2301883-001	ET2301883-002	ET2301883-003	ET2301883-004	ET2301883-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.06**	<0.02	<0.02	**0.20**	**0.22**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.07**	<0.02	<0.02	**0.26**	**0.27**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.77**	<0.01	**0.17**	**2.20**	**2.16**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.19**	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**6.68**	**0.10**	**0.15**	**0.24**	**0.24**
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		**0.15**	<0.02	<0.02	**0.09**	**0.08**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.19**	<0.02	**0.02**	**0.29**	**0.28**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.08**	<0.02	<0.02	**0.04**	**0.04**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.18**	**0.01**	<0.01	**0.02**	**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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW019_HT_230404	0009_MW011_HT_230404	0009_MW009_HT_230404	0009_MW016_HT_230404	0009_QC100_230404
				Sampling date / time	04-Apr-2023 07:15	04-Apr-2023 07:40	04-Apr-2023 07:56	04-Apr-2023 08:09	04-Apr-2023 08:10
Compound	CAS Number	LOR	Unit		ET2301883-001	ET2301883-002	ET2301883-003	ET2301883-004	ET2301883-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.14**	**0.15**
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		**8.42**	**0.11**	**0.34**	**3.48**	**3.45**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**7.45**	**0.10**	**0.32**	**2.44**	**2.40**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**8.16**	**0.11**	**0.34**	**3.22**	**3.18**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**98.6**	**97.1**	**93.0**	**93.7**	**92.5**
13C8-PFOA	----	0.02	%		**100**	**100**	**99.8**	**99.9**	**99.5**

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW007_HT_230404	0009_MW017_HT_230404	0009_MW015_HT_230404	0009_MW014_HT_230404	0009_MW005_HT_230404
				Sampling date / time	04-Apr-2023 08:22	04-Apr-2023 08:25	04-Apr-2023 08:40	04-Apr-2023 08:41	05-Apr-2023 09:46
					ET2301883-006	ET2301883-007	ET2301883-008	ET2301883-009	ET2301883-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.42**	**0.04**	<0.02	**0.93**	**0.65**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.50**	**0.04**	**0.02**	**0.73**	**0.53**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**4.24**	**0.40**	**0.37**	**14.0**	**8.08**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.47**	**0.02**	<0.02	**0.81**	**0.93**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**80.4**	**1.14**	**1.42**	**52.8**	**60.7**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.24	<0.02	<0.02	<0.05	<0.10
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<1.2	<0.1	<0.1	**0.4**	<0.5
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.28**	**0.05**	**0.08**	**0.77**	**1.04**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.90**	**0.10**	**0.12**	**3.48**	**1.53**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.24	**0.02**	**0.03**	**0.43**	**0.45**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.50**	**0.04**	**0.04**	**0.85**	**1.04**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.24	<0.02	<0.02	<0.05	**0.12**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.24	<0.02	<0.02	<0.05	<0.10
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.24	<0.02	<0.02	<0.05	<0.10
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.24	<0.02	<0.02	<0.05	<0.10
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.24	<0.02	<0.02	<0.05	<0.10
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.59	<0.05	<0.05	<0.12	<0.24
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.24	<0.02	<0.02	**0.17**	<0.10
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.59	<0.05	<0.05	<0.12	<0.24
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.59	<0.05	<0.05	<0.12	<0.24

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW007_HT_230404	0009_MW017_HT_230404	0009_MW015_HT_230404	0009_MW014_HT_230404	0009_MW005_HT_230404
				Sampling date / time	04-Apr-2023 08:22	04-Apr-2023 08:25	04-Apr-2023 08:40	04-Apr-2023 08:41	05-Apr-2023 09:46
Compound	CAS Number	LOR	Unit		ET2301883-006	ET2301883-007	ET2301883-008	ET2301883-009	ET2301883-010
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.59	<0.05	<0.05	<0.12	<0.24
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.59	<0.05	<0.05	<0.12	<0.24
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.24	<0.02	<0.02	<0.05	<0.10
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.24	<0.02	<0.02	<0.05	<0.10
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.24	<0.05	<0.05	<0.05	<0.10
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.24	<0.05	**0.12**	<0.05	<0.10
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.24	<0.05	<0.05	<0.05	<0.10
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.24	<0.05	<0.05	<0.05	<0.10
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**87.7**	**1.85**	**2.20**	**75.4**	**75.1**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**84.6**	**1.54**	**1.79**	**66.8**	**68.8**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**86.7**	**1.79**	**2.18**	**73.7**	**73.5**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.7**	**98.1**	**93.7**	**94.6**	**92.5**
13C8-PFOA	----	0.02	%		**99.4**	**103**	**96.9**	**95.7**	**98.9**

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW004_HT_230404	0009_MW013_HT_230404	0009_MW001_HT_230404	0009_MW002_HT_230404	0009_MW003_HT_230404
				Sampling date / time	05-Apr-2023 09:38	05-Apr-2023 09:56	05-Apr-2023 09:37	05-Apr-2023 09:44	05-Apr-2023 09:55
					ET2301883-011	ET2301883-012	ET2301883-013	ET2301883-014	ET2301883-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.62**	<0.02	<0.02	**1.44**	**1.13**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.60**	**0.03**	<0.02	**1.54**	**1.25**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**6.26**	**0.34**	**0.07**	**18.1**	**9.24**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.72**	**0.02**	<0.02	**1.52**	**0.49**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**39.6**	**1.87**	**0.03**	**75.8**	**7.08**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		**0.3**	<0.1	<0.1	<1.2	**0.3**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.71**	**0.04**	<0.02	**1.20**	**0.59**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**1.36**	**0.06**	<0.02	**4.50**	**2.53**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.52**	**0.02**	<0.02	**0.76**	**0.35**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.86**	**0.03**	<0.01	**1.91**	**0.72**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		**0.05**	**0.07**	<0.02	<0.24	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		**0.04**	<0.02	<0.02	<0.24	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.06	<0.05	<0.05	<0.61	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		**0.18**	<0.02	<0.02	<0.24	**0.02**
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.06	<0.05	<0.05	<0.61	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.06	<0.05	<0.05	<0.61	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW004_HT_230404	0009_MW013_HT_230404	0009_MW001_HT_230404	0009_MW002_HT_230404	0009_MW003_HT_230404
				Sampling date / time	05-Apr-2023 09:38	05-Apr-2023 09:56	05-Apr-2023 09:37	05-Apr-2023 09:44	05-Apr-2023 09:55
Compound	CAS Number	LOR	Unit		ET2301883-011	ET2301883-012	ET2301883-013	ET2301883-014	ET2301883-015
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.06	<0.05	<0.05	<0.61	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.06	<0.05	<0.05	<0.61	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.24	<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	<0.24	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.24	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		**0.06**	<0.05	<0.05	<0.24	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.24	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**51.9**	**2.48**	**0.10**	**107**	**23.7**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**45.9**	**2.21**	**0.10**	**93.9**	**16.3**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**50.3**	**2.36**	**0.10**	**104**	**21.9**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.7**	**94.6**	**90.1**	**97.0**	**92.5**
13C8-PFOA	----	0.02	%		**93.8**	**94.5**	**97.8**	**98.9**	**98.1**

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

Compound	CAS Number	LOR	Unit	Sample ID	0009_QC101_230404	0009_MW018_HT_230404	0009_MW014_LT_230404	0009_MW015_LT_230404	0009_MW007_LT_230404
				Sampling date / time	05-Apr-2023 09:55	04-Apr-2023 10:00	04-Apr-2023 13:35	04-Apr-2023 13:50	04-Apr-2023 14:45
					ET2301883-016	ET2301883-017	ET2301883-018	ET2301883-019	ET2301883-020
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**1.13**	<0.02	**0.70**	<0.02	**0.48**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**1.19**	<0.02	**0.62**	<0.02	**0.70**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**8.84**	<0.01	**11.0**	**0.32**	**4.75**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.49**	<0.02	**0.79**	<0.02	**0.41**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**8.01**	**0.05**	**73.9**	**1.39**	**62.4**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.24
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		**0.3**	<0.1	**0.3**	<0.1	<1.2
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.60**	<0.02	**0.62**	**0.08**	**0.36**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**2.56**	<0.02	**2.88**	**0.11**	**1.07**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.34**	<0.02	**0.37**	**0.03**	<0.24
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.69**	<0.01	**0.79**	**0.03**	**0.51**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.24
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.24
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.24
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.24
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.24
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.12	<0.05	<0.60
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	**0.28**	<0.02	<0.24
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.12	<0.05	<0.60
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.12	<0.05	<0.60

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC101_230404	0009_MW018_HT_230404	0009_MW014_LT_230404	0009_MW015_LT_230404	0009_MW007_LT_230404
				Sampling date / time	05-Apr-2023 09:55	04-Apr-2023 10:00	04-Apr-2023 13:35	04-Apr-2023 13:50	04-Apr-2023 14:45
Compound	CAS Number	LOR	Unit		ET2301883-016	ET2301883-017	ET2301883-018	ET2301883-019	ET2301883-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.12	<0.05	<0.60
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.12	<0.05	<0.60
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.24
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.05	<0.02	<0.24
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	<0.24
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	**0.07**	<0.24
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.24
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.24
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**24.2**	**0.05**	**92.2**	**2.03**	**70.7**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**16.8**	**0.05**	**84.9**	**1.71**	**67.2**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**22.5**	**0.05**	**90.6**	**2.03**	**69.6**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**88.4**	**94.6**	**94.2**	**93.6**	**98.6**
13C8-PFOA	----	0.02	%		**97.4**	**99.2**	**98.3**	**97.0**	**95.2**

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW016_LT_230404	0009_MW009_LT_230404	0009_MW003_LT_230404	0009_MW001_LT_230404	0009_MW019_LT_230404
				Sampling date / time	04-Apr-2023 15:12	04-Apr-2023 15:24	04-Apr-2023 15:13	04-Apr-2023 15:35	04-Apr-2023 16:11
					ET2301883-021	ET2301883-022	ET2301883-023	ET2301883-024	ET2301883-025
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.25**	<0.02	**1.12**	<0.02	**0.05**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.31**	<0.02	**1.30**	<0.02	**0.06**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**2.65**	**0.17**	**9.55**	**0.05**	**0.64**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	**0.62**	<0.02	**0.16**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.21**	**0.16**	**9.14**	**0.10**	**4.76**
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	**0.3**	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.09**	<0.02	**0.61**	<0.02	**0.14**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.36**	**0.02**	**2.58**	<0.02	**0.16**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.06**	<0.02	**0.36**	<0.02	**0.07**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.02**	**0.01**	**0.81**	<0.01	**0.15**
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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW016_LT_230404	0009_MW009_LT_230404	0009_MW003_LT_230404	0009_MW001_LT_230404	0009_MW019_LT_230404
				Sampling date / time	04-Apr-2023 15:12	04-Apr-2023 15:24	04-Apr-2023 15:13	04-Apr-2023 15:35	04-Apr-2023 16:11
Compound	CAS Number	LOR	Unit		ET2301883-021	ET2301883-022	ET2301883-023	ET2301883-024	ET2301883-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**0.11**	<0.05	<0.05	**0.07**	<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		**4.06**	**0.36**	**26.4**	**0.22**	**6.19**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**2.86**	**0.33**	**18.7**	**0.15**	**5.40**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**3.75**	**0.36**	**24.5**	**0.22**	**5.97**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**92.8**	**99.5**	**94.2**	**94.1**	**101**
13C8-PFOA	----	0.02	%		**93.3**	**101**	**99.9**	**98.5**	**97.8**

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW011_LT_230404	0009_MW018_LT_230404	0009_QC103_230404	0009_MW017_LT_230404	0009_MW002_LT_230404
				Sampling date / time	04-Apr-2023 16:21	04-Apr-2023 16:36	04-Apr-2023 16:41	04-Apr-2023 16:40	04-Apr-2023 15:24
					ET2301883-026	ET2301883-027	ET2301883-028	ET2301883-029	ET2301883-030
					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**	**1.64**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.03**	**1.55**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.01	**0.30**	**18.1**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**1.67**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.14**	**0.02**	**0.02**	**1.34**	**70.2**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.23
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<1.2
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	**0.03**	**1.17**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.05**	**4.77**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**0.84**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.06**	<0.01	<0.01	**0.02**	**1.88**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.23
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.23
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.23
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.23
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.23
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.59
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.23
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.59
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.59

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW011_LT_230404	0009_MW018_LT_230404	0009_QC103_230404	0009_MW017_LT_230404	0009_MW002_LT_230404
				Sampling date / time	04-Apr-2023 16:21	04-Apr-2023 16:36	04-Apr-2023 16:41	04-Apr-2023 16:40	04-Apr-2023 15:24
Compound	CAS Number	LOR	Unit		ET2301883-026	ET2301883-027	ET2301883-028	ET2301883-029	ET2301883-030
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.59
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.59
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.23
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.23
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	<0.23
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.23
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.23
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.23
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**0.20**	**0.02**	**0.02**	**1.79**	**102**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.14**	**0.02**	**0.02**	**1.64**	**88.3**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.20**	**0.02**	**0.02**	**1.76**	**98.6**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**110**	**94.8**	**102**	**95.6**	**99.3**
13C8-PFOA	----	0.02	%		**98.5**	**98.4**	**98.7**	**95.3**	**98.6**

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

Compound	CAS Number	LOR	Unit	Sample ID	0009_MW005_LT_230404	0009_MW013_LT_230404	0009_MW004_LT_230404	0009_QC102_230404	0009_QC300_230404
				Sampling date / time	04-Apr-2023 14:48	04-Apr-2023 15:01	04-Apr-2023 14:37	04-Apr-2023 14:37	04-Apr-2023 16:58
					ET2301883-031	ET2301883-032	ET2301883-033	ET2301883-034	ET2301883-035
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.58**	**0.05**	**0.47**	**0.53**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.61**	**0.02**	**0.49**	**0.49**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**8.02**	**0.30**	**4.98**	**4.93**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.80**	**0.02**	**0.46**	**0.52**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**55.4**	**1.63**	**22.9**	**23.9**	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.09	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.4	<0.1	**0.2**	**0.2**	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.97**	**0.04**	**0.56**	**0.54**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**1.44**	**0.07**	**1.08**	**1.05**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.45**	**0.02**	**0.40**	**0.38**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.90**	**0.03**	**0.63**	**0.64**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		**0.14**	**0.08**	**0.05**	**0.05**	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.09	<0.02	**0.03**	**0.02**	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.09	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.09	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.09	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.23	<0.05	<0.06	<0.06	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.09	<0.02	**0.11**	**0.13**	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.23	<0.05	<0.06	<0.06	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.23	<0.05	<0.06	<0.06	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_MW005_LT_230404	0009_MW013_LT_230404	0009_MW004_LT_230404	0009_QC102_230404	0009_QC300_230404
				Sampling date / time	04-Apr-2023 14:48	04-Apr-2023 15:01	04-Apr-2023 14:37	04-Apr-2023 14:37	04-Apr-2023 16:58
Compound	CAS Number	LOR	Unit		ET2301883-031	ET2301883-032	ET2301883-033	ET2301883-034	ET2301883-035
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.23	<0.05	<0.06	<0.06	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.23	<0.05	<0.06	<0.06	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.09	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.09	<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		<0.09	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.09	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.09	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.09	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**69.3**	**2.26**	**32.4**	**33.4**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**63.4**	**1.93**	**27.9**	**28.8**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**67.8**	**2.14**	**31.2**	**32.2**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.9**	**97.5**	**94.6**	**99.5**	**90.6**
13C8-PFOA	----	0.02	%		**99.1**	**97.8**	**99.5**	**97.6**	**98.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW036_230405	0009_MW031_230405	0009_MW035_230405	0009_MW036_230405	0009_SW101_230405
				Sampling date / time	05-Apr-2023 10:13	05-Apr-2023 10:46	05-Apr-2023 11:01	05-Apr-2023 11:10	05-Apr-2023 11:20
Compound	CAS Number	LOR	Unit		ET2301883-036	ET2301883-038	ET2301883-039	ET2301883-040	ET2301883-042
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.05**	**0.05**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.02**	**0.04**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.08**	**0.08**	**0.22**	<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	**0.44**	**0.12**	**0.28**	<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	**0.03**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW036_230405	0009_MW031_230405	0009_MW035_230405	0009_MW036_230405	0009_SW101_230405
				Sampling date / time	05-Apr-2023 10:13	05-Apr-2023 10:46	05-Apr-2023 11:01	05-Apr-2023 11:10	05-Apr-2023 11:20
Compound	CAS Number	LOR	Unit		ET2301883-036	ET2301883-038	ET2301883-039	ET2301883-040	ET2301883-042
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.11**	**0.18**	<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	**0.63**	**0.45**	**0.62**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.52**	**0.20**	**0.50**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.63**	**0.43**	**0.58**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**95.0**	**98.8**	**96.1**	**96.8**	**101**
13C8-PFOA	----	0.02	%		**92.6**	**99.2**	**95.0**	**100**	**95.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW100_230405	0009_QC104_230405	0009_SW030_230405	0009_SW031_230405	0009_SW034_230405
				Sampling date / time	05-Apr-2023 11:50	05-Apr-2023 11:50	05-Apr-2023 13:15	05-Apr-2023 13:32	05-Apr-2023 14:13
Compound	CAS Number	LOR	Unit		ET2301883-043	ET2301883-045	ET2301883-047	ET2301883-049	ET2301883-052
					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	**0.07**	**0.03**	**0.07**
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	**0.26**	**0.14**	**0.14**
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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW100_230405	0009_QC104_230405	0009_SW030_230405	0009_SW031_230405	0009_SW034_230405
				Sampling date / time	05-Apr-2023 11:50	05-Apr-2023 11:50	05-Apr-2023 13:15	05-Apr-2023 13:32	05-Apr-2023 14:13
Compound	CAS Number	LOR	Unit		ET2301883-043	ET2301883-045	ET2301883-047	ET2301883-049	ET2301883-052
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	**0.33**	**0.17**	**0.21**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.33**	**0.17**	**0.21**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**0.33**	**0.17**	**0.21**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.6**	**92.3**	**90.7**	**90.3**	**91.2**
13C8-PFOA	----	0.02	%		**97.5**	**97.9**	**95.0**	**92.9**	**94.1**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW035_230405	0009_SW032_230405	0009_SW033_230405	0009_QC301_230405	0009_QC302_230405
				Sampling date / time	05-Apr-2023 14:26	05-Apr-2023 16:54	05-Apr-2023 17:16	05-Apr-2023 17:33	05-Apr-2023 17:34
Compound	CAS Number	LOR	Unit		ET2301883-054	ET2301883-056	ET2301883-058	ET2301883-059	ET2301883-060
					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		**0.06**	<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		**0.14**	<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_SW035_230405	0009_SW032_230405	0009_SW033_230405	0009_QC301_230405	0009_QC302_230405
				Sampling date / time	05-Apr-2023 14:26	05-Apr-2023 16:54	05-Apr-2023 17:16	05-Apr-2023 17:33	05-Apr-2023 17:34
Compound	CAS Number	LOR	Unit		ET2301883-054	ET2301883-056	ET2301883-058	ET2301883-059	ET2301883-060
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**0.20**	<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		**0.20**	<0.01	**0.01**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.8**	**85.9**	**93.3**	**93.1**	**92.2**
13C8-PFOA	----	0.02	%		**94.3**	**91.1**	**94.6**	**95.6**	**95.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC303_230405	0009_QC500_230406	----	----	----
				Sampling date / time	05-Apr-2023 17:35	06-Apr-2023 17:09	----	----	----
Compound	CAS Number	LOR	Unit		ET2301883-061	ET2301883-062	--------	--------	--------
					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	<0.01	----	----	----
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	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0009_QC303_230405	0009_QC500_230406	----	----	----
				Sampling date / time	05-Apr-2023 17:35	06-Apr-2023 17:09	----	----	----
Compound	CAS Number	LOR	Unit		ET2301883-061	ET2301883-062	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	%		**94.1**	**92.0**	----	----	----
13C8-PFOA	----	0.02	%		**95.6**	**95.5**	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(WATER) EP231C: Perfluoroalkyl Sulfonamides

(WATER) EP231D: (n:2) Fluorotelomer Sulfonic Acids

(WATER) EP231P: PFAS Sums

(WATER) EP231A: Perfluoroalkyl Sulfonic Acids

(WATER) EP231B: Perfluoroalkyl Carboxylic Acids

(WATER) EP231S: PFAS Surrogate

(SOIL) EP231B: Perfluoroalkyl Carboxylic Acids

(SOIL) EP231D: (n:2) Fluorotelomer Sulfonic Acids

(SOIL) EP231C: Perfluoroalkyl Sulfonamides

(SOIL) EP231A: Perfluoroalkyl Sulfonic Acids

(SOIL) EP231P: PFAS Sums

(SOIL) EP231S: PFAS Surrogate

(SOIL) EA055: Moisture Content (Dried @ 105-110°C)

QUALITY CONTROL REPORT

Work Order	: **ET2301883**	Page	: 1 of 15
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_23	Date Samples Received	: 12-Apr-2023
Order number	: 60612487_4.1	Date Analysis Commenced	: 13-Apr-2023
C-O-C number	: 50542	Issue Date	: 08-May-2023
Sampler	: [redacted]		
Site	: QLD_0009		
Quote number	: TV/007/21 v2 - Compass		
No. of samples received	: 62		
No. of samples analysed	: 61		

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]		

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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4991378)									
EB2311192-001	Anonymous	EA055: Moisture Content	----	0.1	%	6.6	6.4	3.8	0% - 20%
ET2301883-057	0009_SD033_230405	EA055: Moisture Content	----	0.1	%	55.2	54.1	2.0	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4991377)									
EB2309023-008	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ET2301883-051	0009_SD034_230405	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0015	0.0015	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4991377)									
EB2309023-008	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0015	0.0015	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0019	0.0019	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0010	0.0009	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0013	0.0013	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.0003	41.2	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 4991377) - continued									
EB2309023-008	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ET2301883-051	0009_SD034_230405	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4991377)									
EB2309023-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ET2301883-051	0009_SD034_230405	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 4991377)									
EB2309023-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	0.0007	0.0007	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ET2301883-051	0009_SD034_230405	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	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 (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4998203)									
ET2301883-001	0009_MW019_HT_230404	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.77	0.74	2.9	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	6.68	6.52	2.3	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.07	0.06	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.19	0.18	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: 4998207)									
ET2301883-022	0009_MW009_LT_230404	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.17	0.18	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.16	0.16	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
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4998210)									
ET2301883-058	0009_SW033_230405	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: 4998203)									

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: 4998203) - continued									
ET2301883-001	0009_MW019_HT_230404	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.18	0.18	0.0	0% - 50%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.15	0.15	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.19	0.19	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.08	0.08	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: 4998207)									
ET2301883-022	0009_MW009_LT_230404	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: 4998210)									
ET2301883-058	0009_SW033_230405	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: 4998203)									
ET2301883-001	0009_MW019_HT_230404	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: 4998203) - continued									
ET2301883-001	0009_MW019_HT_230404	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: 4998207)									
ET2301883-022	0009_MW009_LT_230404	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: 4998210)									
ET2301883-058	0009_SW033_230405	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: 4998203)									
ET2301883-001	0009_MW019_HT_230404	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 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: 4998203) - continued									
ET2301883-001	0009_MW019_HT_230404	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: 4998207)									
ET2301883-022	0009_MW009_LT_230404	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: 4998210)									
ET2301883-058	0009_SW033_230405	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: 4998203)									
ET2301883-001	0009_MW019_HT_230404	EP231X: Sum of PFAS	----	0.01	µg/L	8.42	8.21	2.5	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	7.45	7.26	2.6	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	8.16	7.97	2.4	0% - 20%
EP231P: PFAS Sums (QC Lot: 4998207)									
ET2301883-022	0009_MW009_LT_230404	EP231X: Sum of PFAS	----	0.01	µg/L	0.36	0.36	0.0	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.33	0.34	3.0	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.36	0.36	0.0	0% - 20%
EP231P: PFAS Sums (QC Lot: 4998210)									
ET2301883-058	0009_SW033_230405	EP231X: Sum of PFAS	----	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	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: **SOIL**

				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: 4991377)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0011 mg/kg	# 146	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00117 mg/kg	88.5	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	82.2	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	82.4	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	97.0	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0012 mg/kg	104	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4991377)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	86.3	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.6	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.4	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.2	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.8	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.8	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4991377)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.8	59.6	143
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	112	62.8	140
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	61.5	139
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	106	61.9	137
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4991377)								

Sub-Matrix: **SOIL**

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: 4991377) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	106	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00118 mg/kg	123	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	105	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.0012 mg/kg	121	54.8	124

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: 4998203)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	114	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	111	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	98.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	102	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	101	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	95.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4998207)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	128	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	123	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	110	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	110	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	108	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	102	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4998210)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	116	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	106	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	97.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	107	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	103	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	97.5	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4998203)								
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	107	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	97.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	92.4	71.0	133

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4998203) - continued								
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	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	100	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	105	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	94.2	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4998207)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	113	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	113	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	107	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	98.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	122	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	118	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	110	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	101	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4998210)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	97.9	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	95.8	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	94.0	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	113	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	99.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	96.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4998203)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	109	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	100	60.5	138

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: 4998203) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.7	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	102	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4998207)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	122	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	135	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	100	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	110	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	108	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	99.8	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: 4998210)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	98.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	76.8	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.9	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	92.4	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	97.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	94.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4998203)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	102	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	110	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	120	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	103	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4998207)								

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: 4998207) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	112	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	116	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	125	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	117	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4998210)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	103	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	103	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	112	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	101	64.2	133
EP231P: PFAS Sums (QCLot: 4998203)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4998207)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4998210)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

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: **SOIL**

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: 4991377)							
EB2309023-044	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0011 mg/kg	# 148	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00117 mg/kg	108	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00118 mg/kg	87.7	67.0	130

Sub-Matrix: **SOIL**

				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: 4991377) - continued							
EB2309023-044	Anonymous	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	100	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	102	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0012 mg/kg	105	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4991377)							
EB2309023-044	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	86.7	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	90.0	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	122	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	100	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	102	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	106	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	89.2	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	112	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	95.2	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	101	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	99.2	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4991377)							
EB2309023-044	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	103	48.0	128
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	91.5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	106	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	108	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	120	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	91.6	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	116	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4991377)							
EB2309023-044	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	93.6	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00118 mg/kg	108	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	110	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0012 mg/kg	122	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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4998203)							
ET2301883-019	0009_MW015_LT_230404	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	121	72.0	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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4998203) - continued							
ET2301883-019	0009_MW015_LT_230404	EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	115	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	113	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	106	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	105	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4998207)							
ET2301883-038	0009_MW031_230405	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	120	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	109	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	97.5	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	101	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	84.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	85.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4998203)							
ET2301883-019	0009_MW015_LT_230404	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	106	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	110	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	100	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	97.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	117	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	114	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	115	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	106	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	97.4	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4998207)							
ET2301883-038	0009_MW031_230405	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	105	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	104	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	91.6	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	93.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	96.4	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	116	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	96.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	98.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	91.0	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	87.0	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	84.3	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4998203)							

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: 4998203) - continued							
ET2301883-019	0009_MW015_LT_230404	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	112	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	117	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	98.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	94.5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	99.0	70.0	130
		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	102	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4998207)							
ET2301883-038	0009_MW031_230405	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	102	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	112	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	92.5	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	91.7	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	90.6	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	89.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4998203)							
ET2301883-019	0009_MW015_LT_230404	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	110	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	115	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	129	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	123	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4998207)							
ET2301883-038	0009_MW031_230405	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	103	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	95.1	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	104	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	89.8	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ET2301883**	Page	: 1 of 10
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Telephone	: [redacted]
Project	: QLD_0009_PFASOMP_23	Date Samples Received	: 12-Apr-2023
Site	: QLD_0009	Issue Date	: 08-May-2023
Sampler	: [redacted]	No. of samples received	: 62
Order number	: 60612487_4.1	No. of samples analysed	: 61

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, 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: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	QC-4991377-002	----	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	146 %	72.0-128%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EB2309023--044	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	148 %	72.0-128%	**Recovery greater than upper data quality objective**

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	ET2301883--019	0009_MW015_LT_230404	**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
Method	QC	Regular	Actual	Expected	
	3				
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	3	57	5.26	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	2	57	3.51	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: **SOIL**

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: **SOIL**

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
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
0009_SD036_230405, 0009_SD100_230405, 0009_QC105_230405, 0009_SD030_230405, 0009_SD031_230405, 0009_SD034_230405, 0009_SD035_230405, 0009_SD032_230405, 0009_SD033_230405	**05-Apr-2023**	**----**	----	**----**	**14-Apr-2023**	19-Apr-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0009_SD036_230405, 0009_SD100_230405, 0009_QC105_230405, 0009_SD030_230405, 0009_SD031_230405, 0009_SD034_230405, 0009_SD035_230405, 0009_SD032_230405, 0009_SD033_230405	**05-Apr-2023**	**17-Apr-2023**	02-Oct-2023	✓	**20-Apr-2023**	27-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
0009_SD036_230405, 0009_SD100_230405, 0009_QC105_230405, 0009_SD030_230405, 0009_SD031_230405, 0009_SD034_230405, 0009_SD035_230405, 0009_SD032_230405, 0009_SD033_230405	**05-Apr-2023**	**17-Apr-2023**	02-Oct-2023	✓	**20-Apr-2023**	27-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
0009_SD036_230405, 0009_SD100_230405, 0009_QC105_230405, 0009_SD030_230405, 0009_SD031_230405, 0009_SD034_230405, 0009_SD035_230405, 0009_SD032_230405, 0009_SD033_230405	**05-Apr-2023**	**17-Apr-2023**	02-Oct-2023	✓	**20-Apr-2023**	27-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0009_SD036_230405, 0009_SD100_230405, 0009_QC105_230405, 0009_SD030_230405, 0009_SD031_230405, 0009_SD034_230405, 0009_SD035_230405, 0009_SD032_230405, 0009_SD033_230405	**05-Apr-2023**	**17-Apr-2023**	02-Oct-2023	✓	**20-Apr-2023**	27-May-2023	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
0009_SD036_230405, 0009_SD100_230405, 0009_QC105_230405, 0009_SD030_230405, 0009_SD031_230405, 0009_SD034_230405, 0009_SD035_230405, 0009_SD032_230405, 0009_SD033_230405	**05-Apr-2023**	**17-Apr-2023**	02-Oct-2023	✓	**20-Apr-2023**	27-May-2023	✓

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) 0009_MW007_LT_230404, 0009_MW016_LT_230404, 0009_MW009_LT_230404, 0009_MW003_LT_230404, 0009_MW001_LT_230404, 0009_MW019_LT_230404, 0009_MW011_LT_230404, 0009_MW018_LT_230404, 0009_QC103_230404, 0009_MW017_LT_230404, 0009_MW002_LT_230404, 0009_MW005_LT_230404, 0009_MW013_LT_230404, 0009_MW004_LT_230404, 0009_QC102_230404, 0009_QC300_230404	**04-Apr-2023**	**20-Apr-2023**	01-Oct-2023	✓	**22-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW019_HT_230404, 0009_MW011_HT_230404, 0009_MW009_HT_230404, 0009_MW016_HT_230404, 0009_QC100_230404, 0009_MW007_HT_230404, 0009_MW017_HT_230404, 0009_MW015_HT_230404, 0009_MW014_HT_230404, 0009_MW018_HT_230404, 0009_MW014_LT_230404, 0009_MW015_LT_230404	**04-Apr-2023**	**20-Apr-2023**	01-Oct-2023	✓	**24-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW036_230405, 0009_SW101_230405, 0009_SW100_230405, 0009_QC104_230405, 0009_SW030_230405, 0009_SW031_230405, 0009_SW034_230405, 0009_SW035_230405, 0009_SW032_230405, 0009_SW033_230405, 0009_QC301_230405, 0009_QC302_230405, 0009_QC303_230405	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**21-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW036_230405, 0009_MW031_230405, 0009_MW035_230405	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**22-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW005_HT_230404, 0009_MW004_HT_230404, 0009_MW013_HT_230404, 0009_MW001_HT_230404, 0009_MW002_HT_230404, 0009_MW003_HT_230404, 0009_QC101_230404	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**24-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_QC500_230406	**06-Apr-2023**	**20-Apr-2023**	03-Oct-2023	✓	**21-Apr-2023**	03-Oct-2023	✓

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) 0009_MW007_LT_230404, 0009_MW016_LT_230404, 0009_MW009_LT_230404, 0009_MW003_LT_230404, 0009_MW001_LT_230404, 0009_MW019_LT_230404, 0009_MW011_LT_230404, 0009_MW018_LT_230404, 0009_QC103_230404, 0009_MW017_LT_230404, 0009_MW002_LT_230404, 0009_MW005_LT_230404, 0009_MW013_LT_230404, 0009_MW004_LT_230404, 0009_QC102_230404, 0009_QC300_230404	**04-Apr-2023**	**20-Apr-2023**	01-Oct-2023	✓	**22-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW019_HT_230404, 0009_MW011_HT_230404, 0009_MW009_HT_230404, 0009_MW016_HT_230404, 0009_QC100_230404, 0009_MW007_HT_230404, 0009_MW017_HT_230404, 0009_MW015_HT_230404, 0009_MW014_HT_230404, 0009_MW018_HT_230404, 0009_MW014_LT_230404, 0009_MW015_LT_230404	**04-Apr-2023**	**20-Apr-2023**	01-Oct-2023	✓	**24-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW036_230405, 0009_SW101_230405, 0009_SW100_230405, 0009_QC104_230405, 0009_SW030_230405, 0009_SW031_230405, 0009_SW034_230405, 0009_SW035_230405, 0009_SW032_230405, 0009_SW033_230405, 0009_QC301_230405, 0009_QC302_230405, 0009_QC303_230405	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**21-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW036_230405, 0009_MW031_230405, 0009_MW035_230405	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**22-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW005_HT_230404, 0009_MW004_HT_230404, 0009_MW013_HT_230404, 0009_MW001_HT_230404, 0009_MW002_HT_230404, 0009_MW003_HT_230404, 0009_QC101_230404	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**24-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_QC500_230406	**06-Apr-2023**	**20-Apr-2023**	03-Oct-2023	✓	**21-Apr-2023**	03-Oct-2023	✓

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) 0009_MW007_LT_230404, 0009_MW016_LT_230404, 0009_MW009_LT_230404, 0009_MW003_LT_230404, 0009_MW001_LT_230404, 0009_MW019_LT_230404, 0009_MW011_LT_230404, 0009_MW018_LT_230404, 0009_QC103_230404, 0009_MW017_LT_230404, 0009_MW002_LT_230404, 0009_MW005_LT_230404, 0009_MW013_LT_230404, 0009_MW004_LT_230404, 0009_QC102_230404, 0009_QC300_230404	**04-Apr-2023**	**20-Apr-2023**	01-Oct-2023	✓	**22-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW019_HT_230404, 0009_MW011_HT_230404, 0009_MW009_HT_230404, 0009_MW016_HT_230404, 0009_QC100_230404, 0009_MW007_HT_230404, 0009_MW017_HT_230404, 0009_MW015_HT_230404, 0009_MW014_HT_230404, 0009_MW018_HT_230404, 0009_MW014_LT_230404, 0009_MW015_LT_230404	**04-Apr-2023**	**20-Apr-2023**	01-Oct-2023	✓	**24-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW036_230405, 0009_SW101_230405, 0009_SW100_230405, 0009_QC104_230405, 0009_SW030_230405, 0009_SW031_230405, 0009_SW034_230405, 0009_SW035_230405, 0009_SW032_230405, 0009_SW033_230405, 0009_QC301_230405, 0009_QC302_230405, 0009_QC303_230405	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**21-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW036_230405, 0009_MW031_230405, 0009_MW035_230405	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**22-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW005_HT_230404, 0009_MW004_HT_230404, 0009_MW013_HT_230404, 0009_MW001_HT_230404, 0009_MW002_HT_230404, 0009_MW003_HT_230404, 0009_QC101_230404	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**24-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_QC500_230406	**06-Apr-2023**	**20-Apr-2023**	03-Oct-2023	✓	**21-Apr-2023**	03-Oct-2023	✓

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) 0009_MW007_LT_230404, 0009_MW016_LT_230404, 0009_MW009_LT_230404, 0009_MW003_LT_230404, 0009_MW001_LT_230404, 0009_MW019_LT_230404, 0009_MW011_LT_230404, 0009_MW018_LT_230404, 0009_QC103_230404, 0009_MW017_LT_230404, 0009_MW002_LT_230404, 0009_MW005_LT_230404, 0009_MW013_LT_230404, 0009_MW004_LT_230404, 0009_QC102_230404, 0009_QC300_230404	**04-Apr-2023**	**20-Apr-2023**	01-Oct-2023	✓	**22-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW019_HT_230404, 0009_MW011_HT_230404, 0009_MW009_HT_230404, 0009_MW016_HT_230404, 0009_QC100_230404, 0009_MW007_HT_230404, 0009_MW017_HT_230404, 0009_MW015_HT_230404, 0009_MW014_HT_230404, 0009_MW018_HT_230404, 0009_MW014_LT_230404, 0009_MW015_LT_230404	**04-Apr-2023**	**20-Apr-2023**	01-Oct-2023	✓	**24-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW036_230405, 0009_SW101_230405, 0009_SW100_230405, 0009_QC104_230405, 0009_SW030_230405, 0009_SW031_230405, 0009_SW034_230405, 0009_SW035_230405, 0009_SW032_230405, 0009_SW033_230405, 0009_QC301_230405, 0009_QC302_230405, 0009_QC303_230405	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**21-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW036_230405, 0009_MW031_230405, 0009_MW035_230405	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**22-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW005_HT_230404, 0009_MW004_HT_230404, 0009_MW013_HT_230404, 0009_MW001_HT_230404, 0009_MW002_HT_230404, 0009_MW003_HT_230404, 0009_QC101_230404	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**24-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_QC500_230406	**06-Apr-2023**	**20-Apr-2023**	03-Oct-2023	✓	**21-Apr-2023**	03-Oct-2023	✓

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) 0009_MW007_LT_230404, 0009_MW016_LT_230404, 0009_MW009_LT_230404, 0009_MW003_LT_230404, 0009_MW001_LT_230404, 0009_MW019_LT_230404, 0009_MW011_LT_230404, 0009_MW018_LT_230404, 0009_QC103_230404, 0009_MW017_LT_230404, 0009_MW002_LT_230404, 0009_MW005_LT_230404, 0009_MW013_LT_230404, 0009_MW004_LT_230404, 0009_QC102_230404, 0009_QC300_230404	**04-Apr-2023**	**20-Apr-2023**	01-Oct-2023	✓	**22-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW019_HT_230404, 0009_MW011_HT_230404, 0009_MW009_HT_230404, 0009_MW016_HT_230404, 0009_QC100_230404, 0009_MW007_HT_230404, 0009_MW017_HT_230404, 0009_MW015_HT_230404, 0009_MW014_HT_230404, 0009_MW018_HT_230404, 0009_MW014_LT_230404, 0009_MW015_LT_230404	**04-Apr-2023**	**20-Apr-2023**	01-Oct-2023	✓	**24-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW036_230405, 0009_SW101_230405, 0009_SW100_230405, 0009_QC104_230405, 0009_SW030_230405, 0009_SW031_230405, 0009_SW034_230405, 0009_SW035_230405, 0009_SW032_230405, 0009_SW033_230405, 0009_QC301_230405, 0009_QC302_230405, 0009_QC303_230405	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**21-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_SW036_230405, 0009_MW031_230405, 0009_MW035_230405	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**22-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_MW005_HT_230404, 0009_MW004_HT_230404, 0009_MW013_HT_230404, 0009_MW001_HT_230404, 0009_MW002_HT_230404, 0009_MW003_HT_230404, 0009_QC101_230404	**05-Apr-2023**	**20-Apr-2023**	02-Oct-2023	✓	**24-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0009_QC500_230406	**06-Apr-2023**	**20-Apr-2023**	03-Oct-2023	✓	**21-Apr-2023**	03-Oct-2023	✓

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: **SOIL**

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)							
Moisture Content	EA055	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	14	**14.29**	**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	1	14	**7.14**	**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	3	57	**5.26**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	57	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	57	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	57	**3.51**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed 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 soil 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 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 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
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 : **ET2301883**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Townsville
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: 1[redacted] QLD Australia 4815
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	:
Project	: QLD_0009_PFASOMP_23	Page	: 1 of 5
Order number	: 60612487_4.1	Quote number	: ET2021AECOMAU0001 (TV/007/21 v2 - Compass)
C-O-C number	: 50542	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: QLD_0009		
Sampler	: [redacted]		

Dates

Date Samples Received	: 12-Apr-2023 08:00	Issue Date	: 13-Apr-2023
Client Requested Due Date	: 21-Apr-2023	Scheduled Reporting Date	: **21-Apr-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 16.0°C - Ice present
Receipt Detail	: HARD ESKY	No. of samples received / analysed	: 62 / 61

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
- ***SRN Reissued 13/04/23: As per the email from L[redacted]sample 0009_SD101_230405 (ALS #041) has been placed on hold.***
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- $$ conducted by ALS Townsville, NATA accreditation no. 825, (Site no. 23472 for Chemical Testing and Site no. 23313 for Biological Testing)
- 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.
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- 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.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ET2301883-001	: 04-Apr-2023 07:15	: 0009_MW019_HT_230404
ET2301883-002	: 04-Apr-2023 07:40	: 0009_MW011_HT_230404
ET2301883-003	: 04-Apr-2023 07:56	: 0009_MW009_HT_230404
ET2301883-004	: 04-Apr-2023 08:09	: 0009_MW016_HT_230404
ET2301883-006	: 04-Apr-2023 08:22	: 0009_MW007_HT_230404
ET2301883-007	: 04-Apr-2023 08:25	: 0009_MW017_HT_230404
ET2301883-008	: 04-Apr-2023 08:40	: 0009_MW015_HT_230404
ET2301883-009	: 04-Apr-2023 08:41	: 0009_MW014_HT_230404
ET2301883-010	: 05-Apr-2023 09:46	: 0009_MW005_HT_230404
ET2301883-011	: 05-Apr-2023 09:38	: 0009_MW004_HT_230404
ET2301883-012	: 05-Apr-2023 09:56	: 0009_MW013_HT_230404
ET2301883-013	: 05-Apr-2023 09:37	: 0009_MW001_HT_230404
ET2301883-014	: 05-Apr-2023 09:44	: 0009_MW002_HT_230404
ET2301883-015	: 05-Apr-2023 09:55	: 0009_MW003_HT_230404
ET2301883-017	: 04-Apr-2023 10:00	: 0009_MW018_HT_230404
ET2301883-018	: 04-Apr-2023 13:35	: 0009_MW014_LT_230404
ET2301883-019	: 04-Apr-2023 13:50	: 0009_MW015_LT_230404
ET2301883-020	: 04-Apr-2023 14:45	: 0009_MW007_LT_230404
ET2301883-021	: 04-Apr-2023 15:12	: 0009_MW017_LT_230404
ET2301883-022	: 04-Apr-2023 15:24	: 0009_MW009_LT_230404
ET2301883-023	: 04-Apr-2023 15:13	: 0009_MW003_LT_230404
ET2301883-024	: 04-Apr-2023 15:35	: 0009_MW001_LT_230404
ET2301883-025	: 04-Apr-2023 16:11	: 0009_MW019_LT_230404
ET2301883-026	: 04-Apr-2023 16:21	: 0009_MW011_LT_230404
ET2301883-027	: 04-Apr-2023 16:36	: 0009_MW018_LT_230404
ET2301883-029	: 04-Apr-2023 16:40	: 0009_MW017_LT_230404
ET2301883-030	: 04-Apr-2023 15:24	: 0009_MW002_LT_230404
ET2301883-031	: 04-Apr-2023 14:48	: 0009_MW005_LT_230404
ET2301883-032	: 04-Apr-2023 15:01	: 0009_MW013_LT_230404
ET2301883-033	: 04-Apr-2023 14:37	: 0009_MW004_LT_230404

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: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ET2301883-037	05-Apr-2023 10:13	0009_SD036_230405		✓	✓
ET2301883-041	05-Apr-2023 11:18	0009_SD101_230405	✓		
ET2301883-044	05-Apr-2023 11:50	0009_SD100_230405		✓	✓
ET2301883-046	05-Apr-2023 11:50	0009_QC105_230405		✓	✓
ET2301883-048	05-Apr-2023 13:16	0009_SD030_230405		✓	✓
ET2301883-050	05-Apr-2023 13:32	0009_SD031_230405		✓	✓
ET2301883-051	05-Apr-2023 14:12	0009_SD034_230405		✓	✓
ET2301883-053	05-Apr-2023 14:25	0009_SD035_230405		✓	✓

			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ET2301883-055	05-Apr-2023 16:53	0009_SD032_230405		✓	✓
ET2301883-057	05-Apr-2023 17:15	0009_SD033_230405		✓	✓

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (28 analytes)
ET2301883-001	04-Apr-2023 07:15	0009_MW019_HT_230404	✓
ET2301883-002	04-Apr-2023 07:40	0009_MW011_HT_230404	✓
ET2301883-003	04-Apr-2023 07:56	0009_MW009_HT_230404	✓
ET2301883-004	04-Apr-2023 08:09	0009_MW016_HT_230404	✓
ET2301883-005	04-Apr-2023 08:10	0009_QC100_230404	✓
ET2301883-006	04-Apr-2023 08:22	0009_MW007_HT_230404	✓
ET2301883-007	04-Apr-2023 08:25	0009_MW017_HT_230404	✓
ET2301883-008	04-Apr-2023 08:40	0009_MW015_HT_230404	✓
ET2301883-009	04-Apr-2023 08:41	0009_MW014_HT_230404	✓
ET2301883-010	05-Apr-2023 09:46	0009_MW005_HT_230404	✓
ET2301883-011	05-Apr-2023 09:38	0009_MW004_HT_230404	✓
ET2301883-012	05-Apr-2023 09:56	0009_MW013_HT_230404	✓
ET2301883-013	05-Apr-2023 09:37	0009_MW001_HT_230404	✓
ET2301883-014	05-Apr-2023 09:44	0009_MW002_HT_230404	✓
ET2301883-015	05-Apr-2023 09:55	0009_MW003_HT_230404	✓
ET2301883-016	05-Apr-2023 09:55	0009_QC101_230404	✓
ET2301883-017	04-Apr-2023 10:00	0009_MW018_HT_230404	✓
ET2301883-018	04-Apr-2023 13:35	0009_MW014_LT_230404	✓
ET2301883-019	04-Apr-2023 13:50	0009_MW015_LT_230404	✓
ET2301883-020	04-Apr-2023 14:45	0009_MW007_LT_230404	✓
ET2301883-021	04-Apr-2023 15:12	0009_MW017_LT_230404	✓
ET2301883-022	04-Apr-2023 15:24	0009_MW009_LT_230404	✓
ET2301883-023	04-Apr-2023 15:13	0009_MW003_LT_230404	✓
ET2301883-024	04-Apr-2023 15:35	0009_MW001_LT_230404	✓
ET2301883-025	04-Apr-2023 16:11	0009_MW019_LT_230404	✓
ET2301883-026	04-Apr-2023 16:21	0009_MW011_LT_230404	✓
ET2301883-027	04-Apr-2023 16:36	0009_MW018_LT_230404	✓

			WATER - EP231X PFAS - Full Suite (28 analytes)
ET2301883-028	04-Apr-2023 16:41	0009_QC103_230404	✓
ET2301883-029	04-Apr-2023 16:40	0009_MW017_LT_230404	✓
ET2301883-030	04-Apr-2023 15:24	0009_MW002_LT_230404	✓
ET2301883-031	04-Apr-2023 14:48	0009_MW005_LT_230404	✓
ET2301883-032	04-Apr-2023 15:01	0009_MW013_LT_230404	✓
ET2301883-033	04-Apr-2023 14:37	0009_MW004_LT_230404	✓
ET2301883-034	04-Apr-2023 14:37	0009_QC102_230404	✓
ET2301883-035	04-Apr-2023 16:58	0009_QC300_230404	✓
ET2301883-036	05-Apr-2023 10:13	0009_SW036_230405	✓
ET2301883-038	05-Apr-2023 10:46	0009_MW031_230405	✓
ET2301883-039	05-Apr-2023 11:01	0009_MW035_230405	✓
ET2301883-040	05-Apr-2023 11:10	0009_MW036_230405	✓
ET2301883-042	05-Apr-2023 11:20	0009_SW101_230405	✓
ET2301883-043	05-Apr-2023 11:50	0009_SW100_230405	✓
ET2301883-045	05-Apr-2023 11:50	0009_QC104_230405	✓
ET2301883-047	05-Apr-2023 13:15	0009_SW030_230405	✓
ET2301883-049	05-Apr-2023 13:32	0009_SW031_230405	✓
ET2301883-052	05-Apr-2023 14:13	0009_SW034_230405	✓
ET2301883-054	05-Apr-2023 14:26	0009_SW035_230405	✓
ET2301883-056	05-Apr-2023 16:54	0009_SW032_230405	✓
ET2301883-058	05-Apr-2023 17:16	0009_SW033_230405	✓
ET2301883-059	05-Apr-2023 17:33	0009_QC301_230405	✓
ET2301883-060	05-Apr-2023 17:34	0009_QC302_230405	✓
ET2301883-061	05-Apr-2023 17:35	0009_QC303_230405	✓
ET2301883-062	06-Apr-2023 17:09	0009_QC500_230406	✓

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]

[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	
- A4 - AU Tax Invoice (INV)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ENMRG (ENMRG)	Email	
- EDI Format - XTab (XTAB)	Email	

[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 - ENMRG (ENMRG)	Email	
- EDI Format - XTab (XTAB)	Email	

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)	Email	[redacted]

[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 - ENMRG (ENMRG)	Email	
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	
- EDI Format - ESDAT (ESDAT)	Email	

[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **979474-S**
Project name
Project ID QLD_0009_PFASOMP_23
Received Date Apr 11, 2023

Client Sample ID			**0009_QC205_230405**
Sample Matrix			**Soil**
Eurofins Sample No.			**TW23-Ap0018373**
Date Sampled			**Apr 05, 2023**
Test/Reference	LOR	Unit	
Sample Properties			
% Moisture	1	%	53
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5
13C4-PFBA (surr.)	1	%	94
13C5-PFPeA (surr.)	1	%	66
13C5-PFHxA (surr.)	1	%	60
13C4-PFHpA (surr.)	1	%	59
13C8-PFOA (surr.)	1	%	105
13C5-PFNA (surr.)	1	%	64
13C6-PFDA (surr.)	1	%	68
13C2-PFUnDA (surr.)	1	%	72
13C2-PFDoDA (surr.)	1	%	75
13C2-PFTeDA (surr.)	1	%	87
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	5	ug/kg	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	5	ug/kg	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10

Client Sample ID			0009_QC205_230405
Sample Matrix			Soil
Eurofins Sample No.			TW23-Ap0018373
Date Sampled			Apr 05, 2023
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
13C8-FOSA (surr.)	1	%	79
D3-N-MeFOSA (surr.)	1	%	73
D5-N-EtFOSA (surr.)	1	%	93
D7-N-MeFOSE (surr.)	1	%	79
D9-N-EtFOSE (surr.)	1	%	84
D5-N-EtFOSAA (surr.)	1	%	72
D3-N-MeFOSAA (surr.)	1	%	74
Perfluoroalkyl sulfonic acids (PFSAs)			
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5
13C3-PFBS (surr.)	1	%	77
18O2-PFHxS (surr.)	1	%	99
13C8-PFOS (surr.)	1	%	93
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	10	ug/kg	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5
13C2-4:2 FTSA (surr.)	1	%	46
13C2-6:2 FTSA (surr.)	1	%	64
13C2-8:2 FTSA (surr.)	1	%	61
13C2-10:2 FTSA (surr.)	1	%	73
PFASs Summations			
Sum (PFHxS + PFOS)*	5	ug/kg	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
% Moisture	Brisbane	Apr 11, 2023	14 Days
- Method: LTM-GEN-7080 Moisture			
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	Apr 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	Apr 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	Apr 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	Apr 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Company Name: [redacted]
Address:

Project Name:
Project ID: QLD_0009_PFASOMP_23

Order No.: 60612487_4.1
Report #: 979474
Phone: [redacted]
Fax:

Received: Apr 11, 2023 3:00 PM
Due: Apr 18, 2023
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254							X
Brisbane Laboratory - NATA # 1261 Site # 20794						X	
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0009_QC200_230404	Apr 04, 2023		Water	TW23-Ap0018368		X
2	0009_QC201_230404	Apr 04, 2023		Water	TW23-Ap0018369		X
3	0009_QC202_230404	Apr 04, 2023		Water	TW23-Ap0018370		X
4	0009_QC203_230404	Apr 04, 2023		Water	TW23-Ap0018371		X
5	0009_QC204_230405	Apr 05, 2023		Water	TW23-Ap0018372		X
6	0009_QC205_230405	Apr 05, 2023		Soil	TW23-Ap0018373	X	X
Test Counts						1	6

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Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR: No Limit

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

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/kg	< 5			5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 5			5	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 5			5	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 5			5	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 5			5	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 5			5	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 5			5	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/kg	< 5			5	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/kg	< 5			5	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 5			5	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 5			5	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/kg	< 5			5	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/kg	< 5			5	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/kg	< 5			5	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/kg	< 5			5	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/kg	< 5			5	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/kg	< 10			10	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 10			10	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 5			5	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/kg	< 5			5	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/kg	< 5			5	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 5			5	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 5			5	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 5			5	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 5			5	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 5			5	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/kg	< 10			10	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/kg	< 5			5	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	88			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	88			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	89			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	93			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	89			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	92			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	87			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	103			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	96			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	97			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	107			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	91			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	95			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	93			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	96			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	96			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	77			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	93			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	88			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	100			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	70			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	79			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	109			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	93			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	91			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	93			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	90			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	62			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	TW23-Ap0018373	CP	%	88			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	TW23-Ap0018373	CP	%	98			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	TW23-Ap0018373	CP	%	103			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	TW23-Ap0018373	CP	%	92			50-150	Pass	
Perfluorooctanoic acid (PFOA)	TW23-Ap0018373	CP	%	89			50-150	Pass	
Perfluorononanoic acid (PFNA)	TW23-Ap0018373	CP	%	95			50-150	Pass	
Perfluorodecanoic acid (PFDA)	TW23-Ap0018373	CP	%	88			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	TW23-Ap0018373	CP	%	107			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	TW23-Ap0018373	CP	%	94			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	TW23-Ap0018373	CP	%	97			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	TW23-Ap0018373	CP	%	105			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	TW23-Ap0018373	CP	%	93			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	TW23-Ap0018373	CP	%	86			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	TW23-Ap0018373	CP	%	71			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	TW23-Ap0018373	CP	%	102			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	TW23-Ap0018373	CP	%	87			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	TW23-Ap0018373	CP	%	75			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	TW23-Ap0018373	CP	%	91			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	TW23-Ap0018373	CP	%	83			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	TW23-Ap0018373	CP	%	103			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	TW23-Ap0018373	CP	%	69			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	TW23-Ap0018373	CP	%	76			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	TW23-Ap0018373	CP	%	93			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	TW23-Ap0018373	CP	%	87			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	TW23-Ap0018373	CP	%	81			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	TW23-Ap0018373	CP	%	92			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	TW23-Ap0018373	CP	%	110			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	TW23-Ap0018373	CP	%	102			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	TW23-Ap0018373	CP	%	87			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	TW23-Ap0018373	CP	%	60			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	B23-Ap0014889	NCP	%	11	12	4.6	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorotridecanoic acid (PFTrDA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B23-Ap0021752	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B23-Ap0021752	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	B23-Ap0021752	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B23-Ap0021752	NCP	ug/kg	< 5	< 5	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

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

Authorised by:

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **979474-W**
Project name
Project ID QLD_0009_PFASOMP_23
Received Date Apr 11, 2023

Client Sample ID			**0009_QC200_230404**	**0009_QC201_230404**	**0009_QC202_230404**	**0009_QC203_230404**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**TW23-Ap0018368**	**TW23-Ap0018369**	**TW23-Ap0018370**	**TW23-Ap0018371**
Date Sampled			**Apr 04, 2023**	**Apr 04, 2023**	**Apr 04, 2023**	**Apr 04, 2023**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	0.07	0.28	0.22	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	0.05	0.46	0.45	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.31	2.4	1.1	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	0.04	0.36	0.30	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	[N09]0.02	[N09]0.47	[N09]0.46	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	[N09]< 0.01	[N09]0.02	[N09]0.04	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01	[N09]0.02	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	106	75	102	125
13C5-PFPeA (surr.)	1	%	152	112	122	108
13C5-PFHxA (surr.)	1	%	113	90	117	105
13C4-PFHpA (surr.)	1	%	99	86	105	100
13C8-PFOA (surr.)	1	%	120	93	108	132
13C5-PFNA (surr.)	1	%	116	85	94	113
13C6-PFDA (surr.)	1	%	109	88	80	86
13C2-PFUnDA (surr.)	1	%	75	106	72	87
13C2-PFDoDA (surr.)	1	%	86	91	85	106
13C2-PFTeDA (surr.)	1	%	67	79	68	82
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	101	58	111	99
D3-N-MeFOSA (surr.)	1	%	57	131	96	67

Client Sample ID			0009_QC200_230404	0009_QC201_230404	0009_QC202_230404	0009_QC203_230404
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			TW23-Ap0018368	TW23-Ap0018369	TW23-Ap0018370	TW23-Ap0018371
Date Sampled			Apr 04, 2023	Apr 04, 2023	Apr 04, 2023	Apr 04, 2023
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D5-N-EtFOSA (surr.)	1	%	61	88	130	68
D7-N-MeFOSE (surr.)	1	%	56	165	84	72
D9-N-EtFOSE (surr.)	1	%	52	125	76	64
D5-N-EtFOSAA (surr.)	1	%	105	73	103	70
D3-N-MeFOSAA (surr.)	1	%	106	121	98	72
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	0.10	0.41	0.23	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	[N09]0.03	[N09]0.03	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	0.04	0.31	0.11	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	[N09]0.10	[N09]0.75	[N09]0.19	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	[N09]1.7	[N09]6.5	[N09]3.9	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	[N09]0.38	[N09]0.31	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	[N09]0.23	[N09]4.8	[N09]23	[N09]0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	157	73	137	127
18O2-PFHxS (surr.)	1	%	131	79	104	92
13C8-PFOS (surr.)	1	%	102	78	59	82
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	0.10	< 0.05	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	0.02	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	50	74	98	93
13C2-6:2 FTSA (surr.)	1	%	51	71	104	75
13C2-8:2 FTSA (surr.)	1	%	110	129	94	102
13C2-10:2 FTSA (surr.)	1	%	100	125	98	78
PFASs Summations						
Sum (PFHxS + PFOS)*	0.01	ug/L	1.93	11.3	26.9	0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	0.25	5.27	23.46	0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	1.95	11.77	27.36	0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	2.62	15.68	29.68	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	2.76	17.17	30.43	< 0.1

Client Sample ID			0009_QC204_230405
Sample Matrix			Water
Eurofins Sample No.			TW23-Ap0018372
Date Sampled			Apr 05, 2023
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01
13C4-PFBA (surr.)	1	%	91
13C5-PFPeA (surr.)	1	%	127
13C5-PFHxA (surr.)	1	%	141
13C4-PFHpA (surr.)	1	%	123
13C8-PFOA (surr.)	1	%	140
13C5-PFNA (surr.)	1	%	131
13C6-PFDA (surr.)	1	%	127
13C2-PFUnDA (surr.)	1	%	95
13C2-PFDoDA (surr.)	1	%	74
13C2-PFTeDA (surr.)	1	%	66
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05
13C8-FOSA (surr.)	1	%	126
D3-N-MeFOSA (surr.)	1	%	116
D5-N-EtFOSA (surr.)	1	%	94
D7-N-MeFOSE (surr.)	1	%	145
D9-N-EtFOSE (surr.)	1	%	118
D5-N-EtFOSAA (surr.)	1	%	98
D3-N-MeFOSAA (surr.)	1	%	100
Perfluoroalkyl sulfonic acids (PFSAs)			
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01

Client Sample ID			0009_QC204_230405
Sample Matrix			**Water**
Eurofins Sample No.			**TW23-Ap0018372**
Date Sampled			**Apr 05, 2023**
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonic acids (PFSAs)			
13C3-PFBS (surr.)	1	%	151
18O2-PFHxS (surr.)	1	%	126
13C8-PFOS (surr.)	1	%	127
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01
13C2-4:2 FTSA (surr.)	1	%	57
13C2-6:2 FTSA (surr.)	1	%	65
13C2-8:2 FTSA (surr.)	1	%	103
13C2-10:2 FTSA (surr.)	1	%	106
PFASs Summations			
Sum (PFHxS + PFOS)*	0.01	ug/L	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	Apr 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	Apr 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	Apr 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	Apr 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Project Name:
Project ID: QLD_0009_PFASOMP_23

Order No.: 60612487_4.1
Report #: 979474
Phone: [redacted]
Fax:

Received: Apr 11, 2023 3:00 PM
Due: Apr 18, 2023
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254							X
Brisbane Laboratory - NATA # 1261 Site # 20794						X	
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0009_QC200_230404	Apr 04, 2023		Water	TW23-Ap0018368		X
2	0009_QC201_230404	Apr 04, 2023		Water	TW23-Ap0018369		X
3	0009_QC202_230404	Apr 04, 2023		Water	TW23-Ap0018370		X
4	0009_QC203_230404	Apr 04, 2023		Water	TW23-Ap0018371		X
5	0009_QC204_230405	Apr 05, 2023		Water	TW23-Ap0018372		X
6	0009_QC205_230405	Apr 05, 2023		Soil	TW23-Ap0018373	X	X
Test Counts						1	6

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR: No Limit

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

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	83			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	96			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	98			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	99			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	83			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	113			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	85			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	97			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	122			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	114			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	128			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	85			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	106			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	106			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	95			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	102			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	98			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	95			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	79			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	89			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	84			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	93			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	92			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	77			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	92			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	61			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	104			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	101			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	100			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	TW23-Ap0018372	CP	%	111			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	TW23-Ap0018372	CP	%	88			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	TW23-Ap0018372	CP	%	87			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	TW23-Ap0018372	CP	%	108			50-150	Pass	
Perfluorooctanoic acid (PFOA)	TW23-Ap0018372	CP	%	95			50-150	Pass	
Perfluorononanoic acid (PFNA)	TW23-Ap0018372	CP	%	108			50-150	Pass	
Perfluorodecanoic acid (PFDA)	TW23-Ap0018372	CP	%	75			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	TW23-Ap0018372	CP	%	94			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	TW23-Ap0018372	CP	%	122			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	TW23-Ap0018372	CP	%	119			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	TW23-Ap0018372	CP	%	126			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	TW23-Ap0018372	CP	%	85			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	TW23-Ap0018372	CP	%	97			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	TW23-Ap0018372	CP	%	104			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	TW23-Ap0018372	CP	%	88			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	TW23-Ap0018372	CP	%	109			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	TW23-Ap0018372	CP	%	97			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	TW23-Ap0018372	CP	%	101			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	TW23-Ap0018372	CP	%	71			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	TW23-Ap0018372	CP	%	76			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	TW23-Ap0018372	CP	%	56			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	TW23-Ap0018372	CP	%	88			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	TW23-Ap0018372	CP	%	108			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	TW23-Ap0018372	CP	%	92			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	TW23-Ap0018372	CP	%	88			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	TW23-Ap0018372	CP	%	54			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	TW23-Ap0018372	CP	%	65			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	TW23-Ap0018372	CP	%	101			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	TW23-Ap0018372	CP	%	93			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	TW23-Ap0018372	CP	%	89			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	TW23-Ap0018369	CP	ug/L	0.28	0.29	4.0	30%	Pass	
Perfluoropentanoic acid (PFPeA)	TW23-Ap0018369	CP	ug/L	0.46	0.45	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	TW23-Ap0018369	CP	ug/L	2.4	2.6	7.6	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	TW23-Ap0018369	CP	ug/L	0.36	0.34	6.5	30%	Pass	
Perfluorooctanoic acid (PFOA)	TW23-Ap0018369	CP	ug/L	0.47	0.48	3.8	30%	Pass	
Perfluorononanoic acid (PFNA)	TW23-Ap0018369	CP	ug/L	0.02	0.03	18	30%	Pass	
Perfluorodecanoic acid (PFDA)	TW23-Ap0018369	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	TW23-Ap0018369	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorododecanoic acid (PFDoDA)	TW23-Ap0018369	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	TW23-Ap0018369	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	TW23-Ap0018369	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	TW23-Ap0018369	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	TW23-Ap0018369	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	TW23-Ap0018369	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	TW23-Ap0018369	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	TW23-Ap0018369	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	TW23-Ap0018369	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	TW23-Ap0018369	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	TW23-Ap0018369	CP	ug/L	0.41	0.54	26	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	TW23-Ap0018369	CP	ug/L	0.03	0.03	4.7	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	TW23-Ap0018369	CP	ug/L	0.31	0.28	8.0	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	TW23-Ap0018369	CP	ug/L	0.75	0.65	15	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	TW23-Ap0018369	CP	ug/L	6.5	6.7	2.8	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	TW23-Ap0018369	CP	ug/L	0.38	0.37	2.3	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	TW23-Ap0018369	CP	ug/L	4.8	4.9	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	TW23-Ap0018369	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	TW23-Ap0018369	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	TW23-Ap0018369	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	TW23-Ap0018369	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	TW23-Ap0018369	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West NSW 2304
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	Tel: +61 2 4968 8448
Tel: +61 3 8564 5000	Tel: +61 3 8564 5000	Tel: +61 2 9900 8400	Tel: +61 2 6113 8091	Tel: +61 7 3902 4600	NATA# 1261
NATA# 1261 Site# 1254	NATA# 1261 Site# 25403	NATA# 1261 Site# 18217	NATA# 1261 Site# 25466	NATA# 1261 Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
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46-48 Banksia Road
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Tel: +61 8 6253 4444
NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Christchurch
35 O'Rorke Road	43 Detroit Drive
Penrose,	Rolleston,
Auckland 1061	Christchurch 7675
Tel: +64 9 526 45 51	Tel: 0800 856 450
IANZ# 1327	IANZ# 1290

Company Name: [redacted]
Address:

Project Name:
Project ID: QLD_0009_PFASOMP_23

Order No.: 60612487_4.1
Report #: 979474
Phone: [redacted]
Fax:

Received: Apr 11, 2023 3:00 PM
Due: Apr 18, 2023
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : Zoe Flynn

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254							X
Brisbane Laboratory - NATA # 1261 Site # 20794						X	
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0009_QC200_230404	Apr 04, 2023		Water	TW23-Ap0018368		X
2	0009_QC201_230404	Apr 04, 2023		Water	TW23-Ap0018369		X
3	0009_QC202_230404	Apr 04, 2023		Water	TW23-Ap0018370		X
4	0009_QC203_230404	Apr 04, 2023		Water	TW23-Ap0018371		X
5	0009_QC204_230405	Apr 05, 2023		Water	TW23-Ap0018372		X
6	0009_QC205_230405	Apr 05, 2023		Soil	TW23-Ap0018373	X	X
Test Counts						1	6

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NATA# 1261 Site# 1254

Geelong
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Grovedale
VIC 3216
Tel: +61 3 8564 5000
NATA# 1261 Site# 25403

Sydney
179 Magowar Road
Girraween
NSW 2145
Tel: +61 2 9900 8400
NATA# 1261 Site# 18217

Canberra
Unit 1,2 Dacre Street
Mitchell
ACT 2911
Tel: +61 2 6113 8091
NATA# 1261 Site# 25466

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

Newcastle
1/2 Frost Drive
Mayfield West NSW 2304
Tel: +61 2 4968 8448
NATA# 1261
Site# 25079 & 25289

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Auckland 1061
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IANZ# 1327

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

Sample Receipt Advice

Company name:	[redacted]
Contact name:	
Project name:	Not provided
Project ID:	QLD_0009_PFASOMP_23
Turnaround time:	5 Day
Date/Time received	Apr 11, 2023 3:00 PM
Eurofins reference	979474

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted]

Results will be delivered electronically via email to [redacted]

Note: A copy of these results will also be delivered to the general [redacted]

Global Leader - Results you can trust

Appendix F

Equipment Calibration Certificates

Oil / Water Interface Meter

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Instrument Interface Meter (30M)
Serial No. 349173

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
Tape Check	Cleaned	✓	
	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Calibrated by: [redacted]

Calibration date: 22/03/2023

Next calibration due: 22/09/2023

Oil / Water Interface Meter

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Instrument **Interface Meter (30M)**
Serial No. **312521**

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
Tape Check	Cleaned	✓	
	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Calibrated by: [redacted]

Calibration date: **23/03/2023**

Next calibration due: **23/09/2023**

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 18G103299

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.00		398134	pH 7.02
2. pH 4.00		pH 4.00		393112	pH4.00
3. ORP		237.8mV		398884/395763	237.4mV
4. SPC		1413uS/cm		393776	1414uS/cm
5. D.O		0.00%		11343	0.00%
6. Temp		21.0°C		MultiTherm	21.0°C

Calibrated by: [redacted]

Calibration date: **23/03/2023**

Next calibration due: **23/09/2023**

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PLAS DMP HMAS CNS	**Project Number:**	60612487-4.1
Project Location:	Cairns Qld	**Client:**	Dept of Defence
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Airmet
Make and Model:	YSI Quatro Pro Plus
Serial Number:	18G103299

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	4/4/23 0639				
Parameter	Acidity		Conductivity	ORP / Dissolved Oxygen	
Units	4 pH	7 pH	~~mS/cm~~ µS/cm	mV ppm	~~ppm~~ %
Calibration Standard Concentration:	4.01	7.00	35.7	229.4	100
Calibration Reading:	3.97	6.98	34.56	225.8	90.5
Calibration Temperature:	26.2	26.0	26.0	26.2	25.9

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☑ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[redacted] 4/4/23

Fieldwork Staff Signature — Date

Distribution: Project Central File

ANZ

AECOM

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFASOMP HMAS CAIRNS	Project Number:	60612487.4.1
Project Location:	Cairns Qld	Client:	Dept of Defence
PM Name:	[redacted]	Fieldwork Staff Name:	[redacted]

This calibration record is intended for [redacted] fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	AECOM
Make and Model:	YSI Pro DSS
Serial Number:	18K102334

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	5/4/23 0905				
Parameter	Acidity		Conductivity	ORP / Dissolved Oxygen	
Units	4 pH	7 pH	µS/cm	~~mV~~ ~~ppm~~	~~ppm~~ %
Calibration Standard Concentration:	4.01	7.00	36300	227.	100
Calibration Reading:	4.23	7.11	35081	222.8	99.9
Calibration Temperature:	27.5	27.4	27.4	27.5	29.3

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☑ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[redacted] — 5/4/23

Fieldwork Staff Signature — Date

Distribution: Project Central File

ANZ

AECOM

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PMSAMP - HMAS CNS	Project Number	606287 - 41
Project Location:	CAIRNS QLD	Client:	DEPT OF DEFENCE
PM Name:	[redacted]	Fieldwork Staff Name:	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks

INSTRUMENT DETAILS

Supplier:	AECOM
Make and Model:	YSI ProDSS
Serial Number:	18K102334

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	4/4/23 0640.				
Parameter	Acidity		Conductivity	ORP / Dissolved Oxygen	
Units	pH	pH	~~mS~~ µS/cm	mV ~~ppm~~	~~ppm~~ %
Calibration Standard Concentration:	7.0	4.01	35.7	229.5	100
Calibration Reading:	6.99	3.94	29.05	228.4	107.2
Calibration Temperature:	25.9	26.2	25.9	26.2	25.5

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☑ Each individual instrument has been [redacted] bump tested as required by fieldwork staff.

[redacted] — 4/4/23

Fieldwork Staff Signature — Date

Distribution: Project Central File

Appendix C

Tables

Table T1: Ground Water Gauging and Field Parameters

Monitoring Round	Property ID	Location ID	HydraSleeve™ Deployment Date	HydraSleeve™ Deployment Time	Screen Interval (mbgl)	HydraSleeve™ Deployment Collar Depth* (mbgl)	Sample Date	Sample Time	Well Depth (mbtoc)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Condition of Gatic	DO (mg/L)	EC (µS/cm)	pH	Corrected Redox (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method	Comment
Sep/Oct-2020	**HMAS Cairns High Tide**																							
	0009	MW001	29/09/2020	14:15	2.5 – 5.5	4.05	30/09/2020	08:00	5.35	0.703	2.494	1.791	Good	3.97	9125	6.73	263.2	28.2	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW002	29/09/2020	14:00	1.5 – 4.5	2.91	30/09/2020	08:20	4.21	1.428	2.564	1.136	Good	2.40	5735	6.49	213.0	28.8	Low	Yellow / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW003	29/09/2020	13:50	2.5 – 5.5	2.78	30/09/2020	08:50	4.08	1.272	2.542	1.270	Good	1.93	10310	6.71	196.9	27.2	Clear	Clear	No odour	Biosheen	HydraSleeve™	
	0009	MW004	29/09/2020	13:15	2.0 – 4.0	2.6	30/09/2020	09:25	3.90	1.818	2.543	0.725	Good	3.07	44697	6.89	138.2	26.0	Medium	Light Brown	Strong rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW005	29/09/2020	13:30	2.0 – 4.0	2.3	30/09/2020	09:10	3.60	1.758	2.548	0.790	Good	3.28	34406	6.94	243.3	26.7	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW007	29/09/2020	15:05	1.5 – 4.0	2.3	30/09/2020	10:35	3.60	1.009	2.602	1.593	Good	3.03	6307	6.95	167.9	28.7	Medium	Light Brown	Distinct rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW009	29/09/2020	16:10	1.5 – 4.5	3.11	30/09/2020	11:05	4.41	0.709	2.659	1.950	Good	3.45	4260	6.94	271.7	25.5	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW011	29/09/2020	16:35	2.0 – 3.0	2.62	30/09/2020	07:15	2.92	1.467	2.376	0.909	Good	2.57	7749	6.99	188.9	24.2	Clear	Clear	Weak rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW013	29/09/2020	13:40	2.0 – 5.0	3.66	30/09/2020	09:05	4.96	1.624	2.437	0.813	Good	2.60	20366	6.75	177.4	27.0	Low	Black	Distinct rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW014	29/09/2020	15:35	2.0 – 5.0	3.68	30/09/2020	09:50	4.98	1.354	2.395	1.041	Good	2.53	14342	7.03	176.2	26.0	Low	Light Brown	Distinct rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW015	29/09/2020	15:15	2.0 – 5.0	3.73	30/09/2020	10:10	5.03	1.990	2.515	0.525	Good	6.73	52134	7.24	278.0	25.3	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW016	29/09/2020	16:00	2.0 – 5.0	3.73	30/09/2020	10:20	5.03	0.895	2.702	1.807	Good	1.86	68177	6.38	245.3	27.7	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW017	29/09/2020	15:45	2.0 – 5.0	3.61	30/09/2020	10:50	4.91	2.294	2.498	0.204	Good	6.12	5144	6.99	286.2	26.7	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW018	29/09/2020	15:50	2.0 – 5.0	3.61	30/09/2020	11:20	4.91	2.073	2.668	0.595	Good	1.38	14290	7.05	167.7	26.4	Turbid	Light Brown	Weak rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW019	29/09/2020	16:30	2.0 – 5.0	3.69	30/09/2020	06:50	4.99	1.343	1.913	0.570	Good	0.28	23792	6.51	137.5	24.6	Medium	Yellow / Green	Very strong rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	HMAS Cairns Low Tide																							
	0009	MW001	30/09/2020	08:00	2.5 – 5.5	4.05	30/09/2020	12:45	5.35	0.764	2.494	1.730	Good	2.57	34395	6.64	224.2	29.6	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW002	30/09/2020	08:20	1.5 – 4.5	2.91	30/09/2020	12:55	4.21	1.066	2.564	1.498	Good	2.72	7552	6.59	181.5	28.5	Low	Yellow / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW003	30/09/2020	08:50	2.5 – 5.5	2.78	30/09/2020	13:10	4.08	1.259	2.542	1.283	Good	2.34	10702	6.75	173.2	28.7	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW004	30/09/2020	09:25	2.0 – 4.0	2.6	30/09/2020	13:55	3.90	2.085	2.543	0.458	Good	3.27	43991	6.96	144.1	26.3	Low	Light Brown	Distinct rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW005	30/09/2020	09:10	2.0 – 4.0	2.3	30/09/2020	13:40	3.60	2.149	2.548	0.399	Good	4.22	31645	6.97	264.1	27.1	Medium	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW007	30/09/2020	10:35	1.5 – 4.0	2.3	30/09/2020	16:10	3.60	1.023	2.602	1.579	Good	2.42	5450	7.04	191.7	29.2	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW009	30/09/2020	11:05	1.5 – 4.5	3.11	30/09/2020	16:30	4.41	0.699	2.659	1.960	Good	2.00	7025	6.87	264.4	25.5	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW011	30/09/2020	07:15	2.0 – 3.0	2.62	30/09/2020	12:30	2.92	1.482	2.376	0.894	Good	3.40	9301	7.07	173.5	27.3	Medium	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW013	30/09/2020	09:05	2.0 – 5.0	3.66	30/09/2020	13:30	4.96	2.033	2.437	0.404	Good	3.22	17529	6.70	213.2	27.7	Low	Light Grey	Strong rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW014	30/09/2020	09:50	2.0 – 5.0	3.68	30/09/2020	15:40	4.98	1.363	2.395	1.032	Good	3.01	12287	7.49	241.1	26.8	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW015	30/09/2020	10:10	2.0 – 5.0	3.73	30/09/2020	15:50	5.03	3.145	2.515	-0.630	Good	6.67	52998	7.38	269.5	25.2	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW016	30/09/2020	10:20	2.0 – 5.0	3.73	30/09/2020	16:05	5.03	1.868	2.702	0.834	Good	2.08	69833	6.47	262.2	28.4	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW017	30/09/2020	10:50	2.0 – 5.0	3.61	30/09/2020	16:20	4.91	3.018	2.498	-0.520	Good	3.59	63783	6.66	290.7	26.5	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW018	30/09/2020	11:20	2.0 – 5.0	3.61	30/09/2020	16:45	4.91	2.176	2.668	0.492	Good	3.36	11099	7.18	256.0	26.1	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW019	30/09/2020	06:50	2.0 – 5.0	3.69	30/09/2020	12:15	4.99	1.371	1.913	0.542	Good	0.64	29807	6.38	99.8	26.8	Medium	Yellow / Green	Very strong rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	Former WWII RAN Fuel Installation																							
	0009	MW031	29/09/2020	17:15	2.5 – 4.5	-	1/10/2020	06:45	5.37	5.121	7.06	1.939	Good	3.30	412	6.02	282.2	22.9	Turbid	Light Brown	No odour	No sheen	Bailer	
	0009	MW035	29/09/2020	17:50	1.0 – 2.0	1.44	1/10/2020	07:15	2.74	1.781	2.426	0.645	Good	2.51	629	6.07	318.2	21.9	Turbid	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW036	29/09/2020	17:40	0.7 – 1.7	-	1/10/2020	07:05	2.20	1.806	2.878	1.072	Good	2.56	410.1	6.07	261.2	22.0	Turbid	Light Brown	No odour	No sheen	Bailer	
Apr-21	**HMAS Cairns High Tide**																							
	0009	MW001	8/04/2021	7:35	2.5 – 5.5	4.04	9/04/2021	08:43	5.34	0.624	2.494	1.870	Damaged	0.01	41817	6.76	-40.5	30.6	Medium	Yellow / Brown	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW002	8/04/2021	7:38	1.5 – 4.5	2.94	9/04/2021	08:28	4.24	0.853	2.564	1.711	Good	1.18	2480	6.76	150.3	29.8	Low	Yellow / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW003	8/04/2021	7:41	2.5 – 5.5	3.6	9/04/2021	08:15	4.90	0.999	2.542	1.543	Good	0.79	17136	6.97	155.5	30.1	Low	Yellow / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW004	8/04/2021	7:45	2.0 – 4.0	2.6	9/04/2021	07:31	3.90	1.186	2.543	1.357	Good	2.55	15289	7.06	250.6	27.4	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW005	8/04/2021	7:55	2.0 – 4.0	2.29	9/04/2021	07:45	3.59	1.263	2.548	1.285	Good	1.62	9153	7.08	251.8	28.6	Low	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW007	8/04/2021	7:15	1.5 – 4.0	2.31	9/04/2021	08:52	3.61	0.969	2.602	1.633	Good	2.31	4706	7.24	40.1	31.7	Medium	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW009	8/04/2021	7:35	1.5 – 4.5	3.12	9/04/2021	08:07	4.42	0.587	2.659	2.072	Good	1.93	4397	6.92	163.3	28.1	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW011	8/04/2021	7:25	2.0 – 3.0	1.63	9/04/2021	07:52	2.93	1.288	2.376	1.088	Good	1.96	2038	7.13	103.0	27.9	Low	Light Yellow	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW013	8/04/2021	7:50	2.0 – 5.0	3.67	9/04/2021	08:02	4.97	1.098	2.437	1.339	Good	0.76	8814	7.20	29.8	29.3	Low	Grey / Brown	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW014	8/04/2021	7:15	2.0 – 5.0	3.71	9/04/2021	09:13	5.01	1.259	2.395	1.136	Good	0.01	24800	7.08	-85.5	28.7	Low	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW015	8/04/2021	7:20	2.0 – 5.0	3.74	9/04/2021	09:04	5.04	1.094	2.515	1.421	Good	6.41	36755	7.44	164.2	28.2	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW016	8/04/2021	7:32	2.0 – 5.0	3.75	9/04/2021	08:40	5.05	0.810	2.702	1.892	Good	1.87	44946	6.89	28.6	31.6	Medium	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW017	8/04/2021	7:18	2.0 – 5.0	3.61	9/04/2021	07:23	4.91	1.086	2.498	1.412	Good	6.61	30221	6.56	429.3	27.7	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW018	8/04/2021	7:23	2.0 – 5.0	3.63	9/04/2021	07:40	4.93	1.976	2.668	0.692	Good	1.86	8842	7.31	84.2	28.4	Low	Light Brown	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW019	8/04/2021	7:40	2.0 – 5.0	3.71	9/04/2021	08:29	5.01	1.172	1.913	0.741	Good	0.05	30820	6.63	-75.3	28.2	Medium	Black / Grey	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	HMAS Cairns Low Tide																							
	0009	MW001	7/04/2021	12:15	2.5 – 5.5	4.04	8/04/2021	14:47	5.34	0.621	2.494	1.873	Damaged	0.00	31217	6.82	-0.9	33.0	Low	Grey / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW002	7/04/2021	12:21	1.5 – 4.5	2.94	8/04/2021	14:35	4.24	0.913	2.564	1.651	Good	0.40	4726	6.64	120.6	32.4	Low	Yellow / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW003	7/04/2021	12:25	2.5 – 5.5	3.6	8/04/2021	14:22	4.90	0.988	2.542	1.554	Good	0.62	19791	6.86	132.3	32.7	Low	Yellow / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW004	7/04/2021	12:32	2.0 – 4.0	2.6	8/04/2021	13:25	3.90	1.994	2.543	0.549	Good	0.48	31105	7.18	-40.8	31.5	Low	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW005	7/04/2021	12:38	2.0 – 4.0	2.29	8/04/2021	13:37	3.59	2.068	2.548	0.480	Good	1.29	17024	7.19	115.8	32.6	Low	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW007	7/04/2021	12:32	1.5 – 4.0	2.31	8/04/2021	14:29	3.61	0.970	2.602	1.632	Good	1.74	4321	7.16	64.7	33.3	Low	Light Yellow	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW009	7/04/2021	12:42	1.5 – 4.5	3.12	8/04/2021	13:44	4.42	0.569	2.659	2.090	Good	2.48	3523	6.90	203.2	29.7	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW011	7/04/2021	13:03	2.0 – 3.0	1.63	8/04/2021	13:30	2.93	1.321	2.376	1.055	Good	2.09	839	7.12	133.6	30.5	Clear	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW013	7/04/2021	12:52	2.0 – 5.0	3.67	8/04/2021	13:59	4.97	1.954	2.437	0.483	Good	0.16	8940	6.96	9.9	32.4	Low	Grey / Brown	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW014	7/04/2021	12:20	2.0 – 5.0	3.71	8/04/2021	13:03	5.01	1.263	2.395	1.132	Good	0.09	48301	6.89	-133.1	31.2	Low	Light Brown	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW015	7/04/2021	12:24	2.0 – 5.0	3.74	8/04/2021	14:47	5.04	2.855	2.515	-0.340	Good	5.78	40361	7.41	231.1	29.7	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW016	7/04/2021	13:31	2.0 – 5.0	3.75	8/04/2021	14:17	5.05	0.777	2.702	1.925	Good	1.51	56289	6.64	128.8	33.6	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW017	7/04/2021	13:20	2.0 – 5.0	3.61	8/04/2021	12:51	4.91	3.046	2.498	-0.548	Good	3.67	46243	6.93	335.8	32.0	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW018	7/04/2021	12:57	2.0 – 5.0	3.63	8/04/2021	13:08	4.93	1.980	2.668	0.688	Good	1.13	10571	7.41	12.1	30.8	Clear	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW019	7/04/2021	13:32	2.0 – 5.0	3.71	8/04/2021	14:05	5.01	1.206	1.913	0.707	Good	0.14	15738	6.68	54.3	31.7	Medium	Yellow / Brown	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	Former WWII RAN Fuel Installation																							
	0009	MW031	7/04/2021	10:01	2.5 – 4.5	4.08	8/04/2021	10:14	5.38	2.921	7.06	4.139	Good	2.81	382	6.46	185.9	25.2	Medium	Light Brown	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW035	7/04/2021	10:25	1.0 – 2.0	1.45	8/04/2021	10:39	2.75	0.753	2.426	1.673	Good	2.93	918	5.89	248.1	25.6	Medium	Yellow / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW036	7/04/2021	10:15	0.7 – 1.7	-	8/04/2021	10:36	2.05	1.444	2.878	1.434	Good	3.53	446.6	6.05	186.4	26.3	Medium	Light Brown	No odour	No sheen	Bailer	

Table T1: Ground Water Gauging and Field Parameters

Monitoring Round	Property ID	Location ID	HydraSleeve™ Deployment Date	HydraSleeve™ Deployment Time	Screen Interval (mbgl)	HydraSleeve™ Deployment Collar Depth* (mbgl)	Sample Date	Sample Time	Well Depth (mbtoc)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Condition of Gatic	DO (mg/L)	EC (µS/cm)	pH	Corrected Redox (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method	Comment
Oct-21	**HMAS Cairns High Tide**																							
	0009	MW001	26/10/2021	12:50	2.5 – 5.5	4.04	27/10/2021	15:24	5.34	0.813	2.494	1.681	Good	0.37	59933	7.09	-95.4	31.6	Clear	Light Yellow	Strong sulfurous odour	No sheen	HydraSleeve™	
	0009	MW002	26/10/2021	12:40	1.5 – 4.5	2.94	27/10/2021	15:10	4.24	1.188	2.564	1.376	Good	1.46	9815	6.96	14.3	31.4	Low	Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW003	26/10/2021	12:30	2.5 – 5.5	3.6	27/10/2021	14:59	4.90	1.401	2.542	1.141	Good	0.91	41124	7.18	-26.4	31.0	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW004	26/10/2021	12:00	2.0 – 4.0	2.6	27/10/2021	14:12	3.90	2.296	2.543	0.247	Good	0.09	57808	7.33	-148.0	31.9	Low	Light Yellow	Very strong sulfurous odour	No sheen	HydraSleeve™	
	0009	MW005	26/10/2021	12:10	2.0 – 4.0	2.29	27/10/2021	14:25	3.59	2.341	2.548	0.207	Good	1.78	54396	7.46	-28.1	29.7	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW007	26/10/2021	13:35	1.5 – 4.0	2.31	27/10/2021	14:44	3.61	1.145	2.602	1.457	Good	0.29	7653	7.02	20.0	32.2	Medium	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW009	26/10/2021	14:35	1.5 – 4.5	3.12	27/10/2021	15:30	4.42	0.974	2.659	1.685	Good	0.17	23515	7.09	100.3	27.9	Clear	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW011	26/10/2021	14:40	2.0 – 3.0	2.63	27/10/2021	15:51	2.93	2.585	2.376	-0.209	Good	-	55704	7.01	-150.2	27.7	Turbid	Black	Very strong sulfurous odour	No sheen	Bailer	
	0009	MW013	26/10/2021	12:20	2.0 – 5.0	3.67	27/10/2021	14:46	4.97	2.224	2.437	0.213	Good	0.13	56627	7.23	-161.0	29.4	Low	Light Yellow	Distinct sulfurous odour	No sheen	HydraSleeve™	
	0009	MW014	26/10/2021	13:10	2.0 – 5.0	3.71	27/10/2021	15:58	5.01	1.461	2.395	0.934	Good	1.91	21861	7.79	-72.1	28.5	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW015	26/10/2021	13:25	2.0 – 5.0	3.74	27/10/2021	16:16	5.04	1.898	2.515	0.617	Good	1.63	54600	7.47	84.2	28.1	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW016	26/10/2021	14:20	2.0 – 5.0	3.75	27/10/2021	15:15	5.05	0.954	2.702	1.748	Damaged	0.63	92467	6.73	128.3	30.5	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW017	26/10/2021	13:45	2.0 – 5.0	3.61	27/10/2021	16:30	4.91	1.890	2.498	0.608	Good	2.60	33196	7.25	133.6	29.4	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW018	26/10/2021	14:50	2.0 – 5.0	3.63	27/10/2021	16:40	4.93	2.221	2.668	0.447	Good	0.92	10143	7.49	66.0	29.3	Clear	Clear	Distinct sulfurous odour	No sheen	HydraSleeve™	
	0009	MW019	26/10/2021	12:18	2.0 – 5.0	3.71	27/10/2021	14:16	5.01	1.564	1.913	0.349	Good	0.79	62241	6.61	-163.3	32.7	Medium	Yellow	Strong sulfurous odour	No sheen	HydraSleeve™	
	HMAS Cairns Low Tide																							
	0009	MW001	27/10/2021	15:24	2.5 – 5.5	4.04	28/10/2021	09:17	5.34	0.880	2.494	1.614	Good	1.19	41660	6.84	-18.9	32.9	Low	Yellow	Very strong sulfurous odour	No sheen	HydraSleeve™	
	0009	MW002	27/10/2021	15:10	1.5 – 4.5	2.94	28/10/2021	09:06	4.24	1.189	2.564	1.375	Good	1.13	9147	6.73	59.4	31.8	Low	Light Yellow	Weak sulfurous odour	No sheen	HydraSleeve™	
	0009	MW003	27/10/2021	14:59	2.5 – 5.5	3.6	28/10/2021	08:55	4.90	1.440	2.542	1.102	Good	1.36	36021	6.84	38.0	29.9	Low	Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW004	27/10/2021	14:12	2.0 – 4.0	2.6	28/10/2021	08:24	3.90	2.268	2.543	0.275	Good	0.55	43779	7.15	-106.2	28.0	Low	Light Yellow	Very strong sulfurous odour	No sheen	HydraSleeve™	
	0009	MW005	27/10/2021	14:25	2.0 – 4.0	2.29	28/10/2021	08:35	3.59	2.325	2.548	0.223	Good	1.76	42039	7.20	18.1	29.7	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW007	27/10/2021	14:44	1.5 – 4.0	2.31	28/10/2021	10:32	3.61	1.115	2.602	1.487	Good	0.76	9461	7.18	64.0	30.9	Medium	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW009	27/10/2021	15:30	1.5 – 4.5	3.12	28/10/2021	09:39	4.42	0.986	2.659	1.673	Good	0.26	24908	7.17	82.8	28.5	Medium	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW011	27/10/2021	15:51	2.0 – 3.0	1.63	28/10/2021	09:09	2.93	2.607	2.376	-0.231	Good	-	58817	7.07	-151.0	29.0	Turbid	Black / Grey	Very strong sulfurous odour	No sheen	Bailer	
	0009	MW013	27/10/2021	14:46	2.0 – 5.0	3.67	28/10/2021	08:45	4.97	2.217	2.437	0.220	Good	1.67	30782	7.10	-97.8	29.6	Low	Light Yellow	Very strong sulfurous odour	No sheen	HydraSleeve™	
	0009	MW014	27/10/2021	15:58	2.0 – 5.0	3.71	28/10/2021	10:06	5.01	1.482	2.395	0.913	Good	1.12	52061	7.25	-84.5	27.4	Low	Yellow	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW015	27/10/2021	16:16	2.0 – 5.0	3.74	28/10/2021	10:14	5.04	2.807	2.515	-0.292	Good	2.81	55640	7.59	187.1	28.6	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW016	27/10/2021	15:15	2.0 – 5.0	3.75	28/10/2021	09:57	5.05	1.037	2.702	1.665	Damaged	0.15	75537	6.75	95.1	31.3	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW017	27/10/2021	16:30	2.0 – 5.0	3.61	28/10/2021	10:41	4.91	2.784	2.498	-0.286	Good	0.47	62207	7.01	174.6	28.7	Medium	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW018	27/10/2021	16:40	2.0 – 5.0	3.63	28/10/2021	10:55	4.93	2.235	2.668	0.433	Good	0.76	12297	7.39	47.8	28.8	Highly Turbid	Brown	No odour	No sheen	HydraSleeve™	
	0009	MW019	27/10/2021	14:16	2.0 – 5.0	3.71	28/10/2021	08:51	5.01	1.589	1.913	0.324	Good	-	51772	6.66	-142.5	27.5	Medium	Light Yellow	Strong sulfurous odour	No sheen	HydraSleeve™	
	Former WWII RAN Fuel Installation																							
	0009	MW031	26/10/2021	15:30	2.5 – 4.5	4.08	27/10/2021	17:20	5.38	4.813	7.06	2.247	Good	2.04	1028	6.63	162.8	26.2	Turbid	Orange / Brown	No odour	No sheen	Bailer	
	0009	MW035	26/10/2021	15:40	1.0 – 2.0	1.45	27/10/2021	09:50	2.75	2.223	2.426	0.203	Good	2.31	824	6.66	260.8	25.0	Low	Light Brown	No odour	No sheen	Bailer	
	0009	MW036	-	-	0.7 – 1.7	-	-	-	2.05	-	2.878	Well dry at the time of sampling.												
	Resampling Round - 7 and 8 December 2021																							
	0009	MW009	7/12/2021	10:06	1.5 – 4.5	2.87	8/12/2021	10:33	4.17	0.696	2.659	1.963	Good	0.66	23123	7.14	84.5	29.7	Low	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW016	7/12/2021	9:58	2.0 – 5.0	3.51	8/12/2021	10:19	4.81	0.859	2.702	1.843	Damaged	0.49	69914	6.79	100.7	32.6	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW018	7/12/2021	10:30	2.0 – 5.0	3.41	8/12/2021	10:52	4.71	1.935	2.668	0.733	Good	0.81	10640	7.27	27.4	30.7	Clear	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW019	7/12/2021	9:46	2.0 – 5.0	3.47	8/12/2021	09:59	4.77	1.292	1.913	0.621	Good	0.29	52164	6.66	-134.2	29.0	Low	Yellow	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
Apr-22	**HMAS Cairns High Tide**																							
	0009	MW001	4/04/2022	14:30	2.5 – 5.5	4.05	5/04/2022	8:34	5.35	0.697	2.494	1.797	Good	2.04	46687	6.83	-44.3	33.5	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW002	4/04/2022	14:21	1.5 – 4.5	2.94	5/04/2022	8:25	4.24	0.903	2.564	1.661	Good	1.70	8910	6.69	84.6	31.0	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW003	4/04/2022	14:12	2.5 – 5.5	3.64	5/04/2022	8:17	4.94	1.039	2.542	1.503	Good	2.25	33486	6.73	69.9	31.7	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW004	4/04/2022	13:34	2.0 – 4.0	2.6	5/04/2022	7:56	3.90	2.166	2.543	0.377	Good	1.79	31372	6.84	-70.7	29.5	Low	Light Yellow	Distinct sulfurous odour	No sheen	HydraSleeve™	
	0009	MW005	4/04/2022	13:47	2.0 – 4.0	2.32	5/04/2022	8:03	3.62	2.208	2.548	0.340	Good	2.15	24720	7.08	2.8	30.3	Low	Light Yellow	Distinct sulfurous odour	No sheen	HydraSleeve™	
	0009	MW007	4/04/2022	15:46	1.5 – 4.0	2.32	5/04/2022	9:34	3.62	1.028	2.602	1.574	Good	2.18	10265	7.14	69.1	33.5	Low	Light Yellow	Distinct sulfurous odour	No sheen	HydraSleeve™	
	0009	MW009	4/04/2022	16:48	1.5 – 4.5	3.13	5/04/2022	10:20	4.43	0.664	2.659	1.995	Good	1.94	8611	7.02	12.4	30.0	Low	Yellow / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW011	4/04/2022	16:29	2.0 – 3.0	1.65	5/04/2022	10:07	2.95	1.554	2.376	0.822	Good	2.34	3317	7.02	15.1	30.7	Low	Yellow / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW013	4/04/2022	13:57	2.0 – 5.0	3.7	5/04/2022	8:10	5.00	2.097	2.437	0.340	Good	3.74	12624	7.17	-26.6	30.9	Low	Light Yellow	Weak sulfurous odour	No sheen	HydraSleeve™	
	0009	MW014	4/04/2022	14:56	2.0 – 5.0	3.72	5/04/2022	9:03	5.02	1.373	2.395	1.022	Good	0.82	33983	7.01	-87.5	29.9	Low	Light Grey	No odour	No sheen	HydraSleeve™	
	0009	MW015	4/04/2022	15:08	2.0 – 5.0	3.75	5/04/2022	9:06	5.05	2.208	2.515	0.307	Damaged	5.28	50858	7.37	116.5	29.0	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW016	4/04/2022	15:30	2.0 – 5.0	3.75	5/04/2022	9:21	5.05	0.865	2.702	1.837	Good	2.32	69422	6.69	65.4	32.5	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW017	4/04/2022	15:58	2.0 – 5.0	3.66	5/04/2022	9:42	4.96	2.165	2.498	0.333	Good	5.36	41577	7.25	178.5	31.0	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW018	4/04/2022	16:09	2.0 – 5.0	3.66	5/04/2022	9:50	4.96	2.094	2.668	0.574	Good	3.66	11037	7.68	66.7	30.4	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW019	4/04/2022	16:31	2.0 – 5.0	3.74	5/04/2022	10:08	5.04	1.314	1.913	0.599	Good	0.29	42829	6.51	-112.1	30.2	Low	Yellow	Very strong sulfurous odour	No sheen	HydraSleeve™	
	HMAS Cairns Low Tide																							
	0009	MW001	25/03/2022	12:51	2.5 – 5.5	4.05	4/04/2022	14:30	5.35	0.671	2.494	1.823	Good	1.53	19446	7.14	-17.2	34.3	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW002	25/03/2022	12:45	1.5 – 4.5	2.94	4/04/2022	14:21	4.24	0.911	2.564	1.653	Good	2.66	7937	6.97	75.6	32.9	Low	Light Yellow	Weak sulfurous odour	No sheen	HydraSleeve™	
	0009	MW003	25/03/2022	12:39	2.5 – 5.5	3.64	4/04/2022	14:12	4.94	1.006	2.542	1.536	Good	2.93	32521	7.03	74.8	32.7	Low	Light Yellow	Weak sulfurous odour	No sheen	HydraSleeve™	
	0009	MW004	25/03/2022	12:25	2.0 – 4.0	2.6	4/04/2022	13:34	3.90	2.104	2.543	0.439	Good	0.32	40411	7.12	-101.0	31.9	Clear	Clear	Very strong sulfurous odour	No sheen	HydraSleeve™	
	0009	MW005	25/03/2022	12:28	2.0 – 4.0	2.32	4/04/2022	13:47	3.62	2.135	2.548	0.413	Good	1.65	25535	7.25	-34.3	31.3	Low	Yellow / Brown	Distinct sulfurous odour	No sheen	HydraSleeve™	
	0009	MW007	25/03/2022	10:38	1.5 – 4.0	2.32	4/04/2022	15:46	3.62	1.035	2.602	1.567	Good	2.22	6740	7.33	65.6	33.7	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW009	25/03/2022	10:09	1.5 – 4.5	3.13	4/04/2022	16:48	4.43	0.833	2.659	1.826	Good	2.13	8167	7.41	27.9	29.2	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW011	25/03/2022	10:02	2.0 – 3.0	1.65	4/04/2022	16:29	2.95	1.495	2.376	0.881	Good	2.55	1006	7.86	7.8	29.6	Low	Yellow	Distinct sulfurous odour	No sheen	HydraSleeve™	
	0009	MW013	25/03/2022	12:35	2.0 – 5.0	3.7	4/04/2022	13:57	5.00	2.032	2.437	0.405	Good	1.45	31088	7.10	-91.8	31.7	Low	Light Grey	Strong sulfurous odour	No sheen	HydraSleeve™	
	0009	MW014	25/03/2022	10:43	2.0 – 5.0	3.72	4/04/2022	14:56	5.02	1.360	2.395	1.035	Good	0.71	52968	6.84	-111.9	30.0	Clear	Clear	Strong sulfurous odour	No sheen	HydraSleeve™	
	0009	MW015	25/03/2022	10:55	2.0 – 5.0	3.75	4/04/2022	15:08	5.05	3.862	2.515	-1.347	Damaged	5.43	49825	7.60	87.5	29.7	Clear	Clear	No odour	No sheen	HydraSleeve™	Lugs broken. Gatic collar needs to be repaired.
	0009	MW016	25/03/2022	11:07	2.0 – 5.0	3.75	4/04/2022	15:30	5.05	0.787	2.702	1.915	Good	1.80	86854	6.70	85.1	32.8	Clear	Clear	Distinct sulfurous odour	No sheen	HydraSleeve™	
	0009	MW017	25/03/2022	10:30	2.0 – 5.0	3.66	4/04/2022	15:58	4.96	2.953	2.498	-0.455	Good	4.17	44721	7.10	94.4	30.7	Low	Light Yellow	No odour	No sheen	HydraSleeve™	Flooded above top of casing. Water removed prior to opening well.
	0009	MW018	25/03/2022	10:17	2.0 – 5.0	3.66	4/04/2022	16:09	4.96	2.130	2.668	0.538	Good	2.14	12178	7.56	-32.4	30.6	Low	Light Grey	No odour	No sheen	HydraSleeve™	
	0009	MW019	25/03/2022	9:55	2.0 – 5.0	3.74	4/04/2022	16:31	5.04	1.283	1.913	0.630	Good	0.24	49490	6.52	-126.1	30.0	Low	Yellow	Very strong sulfurous odour	No sheen	HydraSleeve™	
	Former WWII RAN Fuel Installation																							
	0009	MW031	4/04/2022	8:40	2.5 – 4.5	4.09	5/04/2022	10:48	5.39	3.259	7.06	3.801	Good	2.68	555	6.61	171.2	27.5	Medium	Yellow / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW035	4/04/2022	8:23	1.0 – 2.0	1.44	5/04/2022	11:02	2.74	0.968	2.426	1.458	Good	3.96	1177	5.96	231.6	26.7	Medium	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW036	-	-	0.7 – 1.7	-	4/04/2022	8:25	2.05	1.532	2.878	1.346	Good	4.54	981	6.06	183.9	25.9	Low	Light Yellow	Distinct sulfurous odour	No sheen	Bailer	

Table T1: Ground Water Gauging and Field Parameters

Monitoring Round	Property ID	Location ID	HydraSleeve™ Deployment Date	HydraSleeve™ Deployment Time	Screen Interval (mbgl)	HydraSleeve™ Deployment Collar Depth* (mbgl)	Sample Date	Sample Time	Well Depth (mbtoc)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Condition of Gatic	DO (mg/L)	EC (µS/cm)	pH	Corrected Redox (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method	Comment
Sep-22	**HMAS Cairns High Tide**																							
	0009	MW001	12/09/2022	16:03	2.5 – 5.5	4.05	13/09/2022	10:18	5.35	0.716	2.494	1.778	Good	0.68	12189	6.93	19.0	29.2	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW002	12/09/2022	16:00	1.5 – 4.5	2.94	13/09/2022	10:33	4.24	0.925	2.564	1.639	Good	0.68	8895	7.02	-61.2	29.5	Medium	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW003	12/09/2022	15:54	2.5 – 5.5	3.64	13/09/2022	10:49	4.94	1.170	2.542	1.372	Good	0.69	4996	7.75	-73.6	28.7	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW004	12/09/2022	15:37	2.0 – 4.0	2.6	13/09/2022	11:18	3.90	1.997	2.543	0.546	Good	1.99	22667	7.47	-100.8	26.9	Clear	Clear	Distinct sulfurous	No sheen	HydraSleeve™	
	0009	MW005	12/09/2022	15:45	2.0 – 4.0	2.32	13/09/2022	11:06	3.62	1.957	2.548	0.591	Good	1.20	14474	7.28	-85.7	27.2	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW007	12/09/2022	17:31	1.5 – 4.0	2.32	13/09/2022	11:52	3.62	1.011	2.602	1.591	Good	0.56	6072	7.37	-56.0	30.5	Clear	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW009	12/09/2022	18:15	1.5 – 4.5	3.13	13/09/2022	13:04	4.43	0.739	2.659	1.920	Good	0.73	10222	7.25	-94.4	26.1	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW011	12/09/2022	18:55	2.0 – 3.0	1.65	13/09/2022	13:27	2.95	1.478	2.376	0.898	Good	0.76	7042	6.86	-74.6	27.0	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW013	12/09/2022	15:48	2.0 – 5.0	3.7	13/09/2022	10:58	5.00	1.900	2.437	0.537	Good	0.58	8679	7.38	-129.9	27.9	Clear	Clear	Distinct sulfurous	No sheen	HydraSleeve™	
	0009	MW014	12/09/2022	17:00	2.0 – 5.0	3.72	13/09/2022	12:15	5.02	1.345	2.395	1.050	Good	0.57	16287	7.65	-118.9	27.0	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW015	12/09/2022	17:23	2.0 – 5.0	3.75	13/09/2022	12:26	5.05	2.020	2.515	0.495	Lugs broken	4.62	50886	7.59	1.7	26.2	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW016	12/09/2022	17:54	2.0 – 5.0	3.75	13/09/2022	12:38	5.05	0.850	2.702	1.852	Good	0.72	89325	6.33	81.1	30.9	Medium	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW017	12/09/2022	17:43	2.0 – 5.0	3.66	13/09/2022	12:03	4.96	1.892	2.498	0.606	Good	4.32	51281	7.50	-9.8	28.4	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW018	12/09/2022	18:25	2.0 – 5.0	3.66	13/09/2022	12:54	4.96	2.113	2.668	0.555	Good	0.55	12021	7.33	-45.0	27.9	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW019	12/09/2022	18:40	2.0 – 5.0	3.74	13/09/2022	13:13	5.04	1.308	1.913	0.605	Good	0.11	41238	6.90	-144.5	28.3	Low	Light Yellow	Strong sulfurous	No sheen	HydraSleeve™	
	HMAS Cairns Low Tide																							
	0009	MW001	12/09/2022	9:16	2.5 – 5.5	4.05	12/09/2022	16:03	5.35	0.665	2.494	1.829	Good	1.08	35254	8.01	-112.9	28.2	Low	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW002	12/09/2022	9:22	1.5 – 4.5	2.94	12/09/2022	16:00	4.24	0.896	2.564	1.668	Good	Insufficient volume for water quality parameters								No sheen	HydraSleeve™	Data logger
	0009	MW003	12/09/2022	9:31	2.5 – 5.5	3.64	12/09/2022	15:54	4.94	1.140	2.542	1.402	Good	1.57	5468	7.73	-126.8	27.7	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW004	12/09/2022	8:57	2.0 – 4.0	2.6	12/09/2022	15:37	3.90	2.071	2.543	0.472	Good	0.92	29250	9.56	-234.0	27.4	Clear	Clear	Distinct sulfurous	No sheen	HydraSleeve™	Data logger
	0009	MW005	12/09/2022	8:40	2.0 – 4.0	2.32	12/09/2022	15:45	3.62	2.142	2.548	0.406	Good	3.52	18219	8.50	-104.7	28.4	Clear	Clear	No odour	No sheen	HydraSleeve™	Data logger
	0009	MW007	11/09/2022	15:20	1.5 – 4.0	2.32	12/09/2022	17:31	3.62	1.005	2.602	1.597	Good	0.93	5406	7.50	-114.6	28.4	Turbid	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW009	11/09/2022	16:02	1.5 – 4.5	3.13	12/09/2022	18:15	4.43	0.720	2.659	1.939	Good	1.11	8758	7.46	-102.3	25.1	Medium	Orange / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW011	11/09/2022	14:00	2.0 – 3.0	1.65	12/09/2022	18:55	2.95	1.466	2.376	0.910	Good	0.75	4891	7.14	-117.5	24.9	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW013	12/09/2022	8:30	2.0 – 5.0	3.7	12/09/2022	15:48	5.00	2.035	2.437	0.402	Good	0.68	24962	7.72	-194.9	27.7	Low	Clear	Distinct sulfurous	No sheen	HydraSleeve™	Water in gatic and j-cap unsecure upon HydraSleeve deployment. Potential water ingress into well prior to deployment.
	0009	MW014	11/09/2022	15:00	2.0 – 5.0	3.72	12/09/2022	17:00	5.02	1.332	2.395	1.063	Good	0.33	15484	7.81	-225.0	26.4	Clear	Clear	Distinct sulfurous	No sheen	HydraSleeve™	Gatic flooded above top of casing, water removed before opening well.
	0009	MW015	-	-	2.0 – 5.0	-	12/09/2022	17:23	5.05	3.343	2.515	-0.828	Lugs broken	3.29	44606	7.69	-24.2	25.4	Turbid	Light Brown	No odour	No sheen	Bailer	Insufficient water column for HydraSleeve deployment.
	0009	MW016	11/09/2022	15:49	2.0 – 5.0	3.75	12/09/2022	17:54	5.05	0.830	2.702	1.872	Good	0.78	55758	7.01	-85.9	28.5	Low	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW017	11/09/2022	15:38	2.0 – 5.0	3.66	12/09/2022	17:43	4.96	3.249	2.498	-0.751	Good	3.46	46001	7.28	-43.4	26.5	Turbid	Light Brown	No odour	No sheen	HydraSleeve™	Gatic flooded above top of casing, water removed before opening well.
	0009	MW018	11/09/2022	16:17	2.0 – 5.0	3.66	12/09/2022	18:25	4.96	2.132	2.668	0.536	Good	1.18	8871	7.67	-113.1	25.8	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW019	11/09/2022	13:45	2.0 – 5.0	3.74	12/09/2022	18:40	5.04	1.311	1.913	0.602	Good	0.68	32943	7.13	-161.1	26.3	Clear	Light Brown	Distinct sulfurous	No sheen	HydraSleeve™	
	Former WWII RAN Fuel Installation																							
	0009	MW031	-	-	2.5 – 4.5	-	13/09/2022	15:20	5.39	3.926	7.06	3.134	Good	0.61	509	5.48	79.6	25.3	Clear	Clear	No odour	No sheen	Bailer	Insufficient water column for HydraSleeve deployment.
	0009	MW035	11/09/2022	16:53	1.0 – 2.0	1.44	13/09/2022	16:16	2.74	1.402	2.426	1.024	Good	0.87	989	5.72	-21.7	22.8	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW036	-	-	0.7 – 1.7	-	13/09/2022	16:07	2.05	1.710	2.878	1.168	Good	1.53	1197	5.92	87.3	23.5	Low	Brown	No odour	No sheen	Bailer	Insufficient water column for HydraSleeve deployment.
Apr-23	**HMAS Cairns Low Tide**																							
	0009	MW001	04/04/2023	09:37	2.5 – 5.5	4.04	04/04/2023	15:36	5.34	0.571	2.494	1.923	Good	2.66	16,275	7.08	93.3	33.4	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW002	04/04/2023	09:44	1.5 – 4.5	2.93	04/04/2023	15:26	4.23	0.852	2.564	1.712	Good	2.2	6456	6.75	85.5	32.1	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW003	04/04/2023	10:06	2.5 – 5.5	3.62	04/04/2023	15:15	4.92	0.902	2.542	1.640	Good	2.09	29,162	6.86	85.9	32.7	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW004	04/04/2023	09:35	2.0 – 4.0	2.59	04/04/2023	14:31	3.89	2.076	2.543	0.467	Good	1.4	37,115	7.12	-81.6	31.1	Low	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW005	04/04/2023	09:50	2.0 – 4.0	2.29	04/04/2023	14:51	3.59	2.153	2.548	0.395	Good	4.09	185.5	7.44	50.7	33.6	Medium	Light Brown	No odour	No sheen	HydraSleeve™	
	0009	MW007	04/04/2023	08:19	1.5 – 4.0	2.32	04/04/2023	15:06	3.62	1.011	2.602	1.591	Good	0.17	6604	7.2	101.4	33.5	Medium	Light Yellow / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW009	04/04/2023	07:47	1.5 – 4.5	3.11	04/04/2023	15:24	4.41	0.556	2.659	2.103	Good	0.63	4562	6.87	155.9	29.2	Medium	Orange / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW011	04/04/2023	07:35	2.0 – 3.0	1.64	04/04/2023	16:14	2.94	1.495	2.376	0.881	Good	2.27	1576	7.11	36.6	30	Low	Light Yellow	No odour	No sheen	HydraSleeve™	
	0009	MW013	04/04/2023	10:00	2.0 – 5.0	3.68	04/04/2023	15:02	4.98	2.046	2.437	0.391	Good	2.5	7175	7.41	0.5	32.5	Low	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	J cap loose, water to TOC, sediment on IP
	0009	MW014	04/04/2023	08:43	2.0 – 5.0	3.72	04/04/2023	13:46	5.02	1.357	2.395	1.038	Good	0.02	32,322	7.27	-93.5	31.1	Clear	Black / Grey	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	Water above TOC, water removed prior to opening
	0009	MW015	04/04/2023	08:49	2.0 – 5.0	3.7	04/04/2023	14:36	5.00	3.166	2.515	-0.651	Good	3.39	42,904	7.78	214.3	31.1	Medium	Light Brown	No odour	No sheen	HydraSleeve™	Well cap off on arrival, gatic secure
	0009	MW016	04/04/2023	08:02	2.0 – 5.0	3.72	04/04/2023	15:06	5.02	0.784	2.702	1.918	Good	0.48	50,176	7.15	185.9	34.2	Low	Light Yellow / Brown	No odour	No sheen	HydraSleeve™	
	0009	MW017	04/04/2023	08:25	2.0 – 5.0	3.64	04/04/2023	16:40	4.94	2.880	2.498	-0.382	Good	5.08	42,795	6.99	169.7	30.7	Low	Light Yellow	No odour	No sheen	HydraSleeve™	Flooded above TOC, water removed prior to opening
	0009	MW018	04/04/2023	10:00	2.0 – 5.0	3.62	04/04/2023	16:33	4.92	2.138	2.668	0.530	Good	2.8	3775	7.32	97.1	30.7	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW019	04/04/2023	07:12	2.0 – 5.0	3.72	04/04/2023	16:07	5.02	1.090	1.913	0.823	Good	1.66	33,481	6.7	-80.3	29.6	Low	Light Yellow	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	HMAS Cairns High Tide																							
	0009	MW001	3/04/2023	15:35	2.5 – 5.5	4.04	04/04/2023	09:37	5.34	0.581	2.494	1.913	Good	2.85	25,726	7.28	-3.6	32.7	Clear	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	0009	MW002	3/04/2023	15:40	1.5 – 4.5	2.93	04/04/2023	09:44	4.23	0.868	2.564	1.696	Good	2.35	6495	6.79	87.3	33.5	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW003	3/04/2023	15:16	2.5 – 5.5	3.62	04/04/2023	10:06	4.92	0.928	2.542	1.614	Good	1.75	30,664	6.89	89.0	33.7	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW004	3/04/2023	15:34	2.0 – 4.0	2.59	04/04/2023	09:35	3.89	1.576	2.543	0.967	Good	2.26	16,748	7.36	46.4	31.6	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW005	3/04/2023	15:42	2.0 – 4.0	2.29	04/04/2023	09:50	3.59	1.652	2.548	0.896	Good	2.53	6501	7.48	188.2	32.4	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW007	3/04/2023	16:22	1.5 – 4.0	2.32	04/04/2023	08:19	3.62	0.971	2.602	1.631	Good	2.5	6030	7.05	62.4	31.6	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW009	3/04/2023	16:37	1.5 – 4.5	3.11	04/04/2023	07:47	4.41	0.536	2.659	2.123	Good	3.55	2867	6.69	129.0	27.4	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW011	3/04/2023	16:50	2.0 – 3.0	1.64	04/04/2023	07:35	2.94	1.433	2.376	0.943	Good	4.66	555	6.96	63.6	28.4	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW013	3/04/2023	15:49	2.0 – 5.0	3.68	04/04/2023	10:00	4.98	1.562	2.437	0.875	Good	0.63	5530	7.58	38.5	32.7	Low	Clear	No odour	No sheen	HydraSleeve™	J cap loose, water to TOC, sediment on IP
	0009	MW014	3/04/2023	16:08	2.0 – 5.0	3.72	04/04/2023	08:43	5.02	1.338	2.395	1.057	Good	0.93	36,278	7	-79.7	28.8	Low	Light Yellow / Brown	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	Water above TOC, water removed prior to opening
	0009	MW015	3/04/2023	16:05	2.0 – 5.0	3.7	04/04/2023	08:49	5.00	1.406	2.515	1.109	Good	5.52	45,318	7.34	82.4	29.4	-	Clear	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	Well cap off on arrival, gatic secure
	0009	MW016	3/04/2023	16:34	2.0 – 5.0	3.72	04/04/2023	08:02	5.02	0.780	2.702	1.922	Good	3.31	26,600	6.86	169.2	31.6	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW017	3/04/2023	16:30	2.0 – 5.0	3.64	04/04/2023	08:25	4.94	1.402	2.498	1.096	Good	6.49	33,732	7.21	208.2	30.4	Clear	Clear	No odour	No sheen	HydraSleeve™	Flooded above TOC, water removed prior to opening
	0009	MW018	3/04/2023	16:44	2.0 – 5.0	3.62	04/04/2023	10:00	4.92	2.024	2.668	0.644	Good	3.4	4498	7.61	90.7	31.3	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW019	3/04/2023	16:51	2.0 – 5.0	3.72	04/04/2023	07:12	5.02	1.046	1.913	0.867	Good	2.27	23,978	6.52	-35.9	28.3	Medium	Yellow	Rotten egg smell (sulfurous)	No sheen	HydraSleeve™	
	Former WWII RAN Fuel Installation																							
	0009	MW031	4/04/2023	11:52	2.5 – 4.5	4.06	05/04/2023	10:43	5.36	2.242	7.06	4.818	Good	4.04	1317	6.13	341.8	27.5	Clear	Clear	No odour	No sheen	HydraSleeve™	
	0009	MW035	4/04/2023	11:45	1.0 – 2.0	1.44	05/04/2023	10:56	2.74	0.787	2.426	1.639	Good	3.69	1099	6.03	332.0	26.5	Clear	Clear	No odour	No sheen	HydraSleeve™	Sediment on IP
	0009	MW036	4/04/2023	11:45	0.7 – 1.7	0.75	05/04/2023	11:05	2.05	1.498	2.878	1.380	Good	2.71	906	5.69	161.2	26.3	Medium	Yellow / Brown	No odour	No sheen	Bailer	No HS deployed, insufficient water

*HydraSleeve™ were installed with bottom weight touching the bottom of the well, HydraSleeve installation depth was calculated based on HydraSleeve length of 1.3 m full length and 0.3 m if installed with a top weight.

mbtoc	metres below top of casing	mg/L	milligrams per litre
mAHD	metres above Australian Height Datum	µS/cm	micro siemens per centimetre
DO	Dissolved Oxygen	mV	millivolt
EC	Electrical Conductivity	°C	degrees Celsius
ORP	Oxidation Reduction Potential	-	no data collected
Temp	Temperature		

Table T2: Groundwater Analytical Results

				(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids										Perfluoroalkyl Sulfonic Acids					PFAS Sums	
				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)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluorooctanoic acid (PFOA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorobutane sulfonic acid (PFBS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Sum of PFAS
			Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.005	0.001	0.001	0.005	0.005	0.005	0.005	0.005	0.005	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	0.001	0.0001	0.001	0.005
PFAS NEMP 2020 Freshwater and Interim Marine 95%																				**220**										**0.13**		
Property ID	**Location ID**	**Field ID**	**Sample Date**																													
HMAS Cairns																																
0009	MW001	MW01_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	0.042	0.29	0.038	0.067	<0.01	<0.01	<0.01	<0.01	0.11	0.031	<0.01	0.71	0.11	0.025	0.735	1.529
		MW01_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.027	<0.001	<0.001	0.023	0.16	0.027	0.035	<0.001	<0.001	<0.001	<0.001	0.054	0.039	<0.001	0.37	0.066	0.022	0.392	0.873
		MW01_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	<0.001	<0.001	0.013	0.058	0.014	0.019	<0.001	<0.001	<0.001	<0.001	0.032	0.025	<0.001	0.25	0.045	0.038	0.288	0.555
		MW01_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.02	<0.001	<0.001	0.016	0.1	0.021	0.016	<0.001	<0.001	<0.001	<0.001	0.046	0.006	<0.001	0.33	0.049	0.1	0.43	0.734
		0009_MW001_HT_200930	30/09/2020	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.04	0.24	0.04	0.05	<0.05	<0.02	<0.02	<0.02	0.09	0.02	<0.02	0.73	0.14	**0.16**	0.89	1.56
		0009_MW001_LT_200930	30/09/2020	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.1	<0.02	<0.02	0.11	0.76	0.15	0.17	<0.05	<0.02	<0.02	<0.02	0.42	0.08	<0.02	2.02	0.53	**0.26**	2.28	4.66
		0009_MW001_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.02	0.13	0.03	0.03	<0.05	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	0.32	0.07	**0.23**	0.55	0.88
		0009_MW001_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.03	0.22	0.04	0.04	<0.05	<0.02	<0.02	<0.02	0.10	<0.02	<0.02	0.54	0.11	0.09	0.63	1.17
		0009_MW001_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.13	0.02	0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	0.32	0.06	0.08	0.40	0.67
		0009_MW001_LT_211028	28/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.07	<0.02	0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.17	<0.02	**0.36**	0.53	0.67
		0009_MW001_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	0.02	0.12	0.21	0.26
		0009_MW001_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.1	<0.02	<0.02	<0.02	0.09	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.23	0.05	<0.06	0.23	0.37
		0009_MW001_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.11	0.02	0.04	0.15	0.21
		0009_MW001_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.02	0.04	0.11	0.16
		0009_MW001_LT_230404	4/04/2023	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	0.10	0.15	0.22
		0009_MW001_HT_230404	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	<0.02	0.03	0.10	0.10
0009	MW002	MW02_HIGH_190522	22/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.4	<0.1	<0.1	1.9	14	2.4	4.1	<0.1	<0.1	<0.1	<0.1	3	2.2	<0.1	36	3.2	**46**	82	-
		MW02_LOW_190523	23/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	1.4	<0.1	<0.1	1.6	12	2	3.8	<0.1	<0.1	<0.1	<0.1	2.7	1.4	<0.1	32	3.2	**41**	73	-
		MW02_LOW_20190618	18/06/2019	<0.001	0.046	0.02	<0.001	<0.005	<0.005	<0.005	0.052	<0.005	<0.005	<0.005	1.4	0.013	<0.001	1.8	11	2.4	3.8	<0.001	<0.001	<0.001	0.067	3.3	2.4	0.009	31	3.2	**49**	80	112.407
		MW02_HIGH_20190619	19/06/2019	<0.001	0.064	0.024	<0.001	<0.005	<0.005	<0.005	0.056	<0.005	<0.005	<0.005	1.4	0.013	<0.001	1.9	11	1.1	3.8	<0.001	<0.001	<0.001	0.062	2.4	1.9	0.006	26	3.6	**53**	79	108.825
		0009_MW002_HT_200930	30/09/2020	<0.32	<0.32	<0.32	<0.32	<0.81	<0.32	<0.81	<0.32	<0.81	<0.32	<0.81	<1.6	<0.32	<0.32	1.49	10.6	2.24	3.63	<0.81	<0.32	<0.32	<0.32	3.18	2.95	<0.32	32.2	3.73	**77.5**	110	138
		0009_MW002_LT_200930	30/09/2020	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<2.5	<0.50	<0.50	1.50	9.35	1.65	3.35	<1.25	<0.50	<0.50	<0.50	2.50	2.35	<0.50	29.2	2.60	**66.0**	95.2	118
		0009_MW002_LT_210408	8/04/2021	<0.37	<0.37	<0.37	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	<0.37	<0.92	<1.8	<0.37	<0.37	1.07	6.55	1.37	2.40	<0.92	<0.37	<0.37	<0.37	1.59	2.11	<0.37	18.1	1.59	**85.1**	103	120
		0009_MW002_HT_210409	9/04/2021	<0.38	<0.38	<0.38	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	<0.38	<0.96	<1.9	<0.38	<0.38	1.03	6.04	1.38	2.25	<0.96	<0.38	<0.38	<0.38	1.45	1.80	<0.38	14.1	1.34	**78.6**	92.7	108
		0009_MW002_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.07	<0.05	<0.02	<0.05	1.1	<0.02	<0.02	1.52	10.2	1.82	3.57	<0.05	<0.02	<0.02	0.06	3.36	4.54	<0.02	34.0	2.48	**70.0**	104	133
		0009_MW002_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.13	<0.05	<0.02	<0.05	1.0	<0.02	<0.02	1.66	9.94	1.98	3.38	<0.05	<0.02	<0.02	0.06	2.45	4.80	0.12	29.7	2.44	**84.6**	114	142
		0009_MW002_LT_220404	4/04/2022	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<0.50	<0.20	<0.50	<0.20	<0.50	<1.0	<0.20	<0.20	1.30	8.66	1.60	2.96	<0.50	<0.20	<0.20	<0.20	2.04	2.56	<0.20	25.9	2.04	**83.6**	110	131
		0009_MW002_HT_220405	5/04/2022	<0.48	<0.48	<0.48	<0.48	<1.19	<0.48	<1.19	<0.48	<1.19	<0.48	<1.19	<2.4	<0.48	<0.48	1.28	8.05	1.62	3.14	<1.19	<0.48	<0.48	<0.48	2.48	2.62	<0.48	29.3	2.57	**68.1**	97.4	119
		0009_MW002_LT_220912	12/09/2022	<0.08	<0.08	<0.08	<0.08	<0.21	<0.08	<0.21	<0.08	<0.21	<0.08	<0.21	0.5	<0.08	<0.08	1.20	7.03	1.40	2.59	<0.21	<0.08	<0.08	<0.08	1.83	2.03	<0.08	21.6	1.77	**44.7**	66.3	84.6
		0009_MW002_HT_220913	13/09/2022	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	0.5	<0.10	<0.10	1.48	7.53	1.68	3.12	<0.25	<0.10	<0.10	<0.10	2.20	2.24	<0.10	24.1	2.07	**55.4**	79.5	100
		0009_MW002_LT_230404	4/04/2023	<0.23	<0.23	<0.23	<0.23	<0.59	<0.23	<0.59	<0.23	<0.59	<0.23	<0.59	<1.2	<0.23	<0.23	0.84	4.77	1.17	1.88	<0.59	<0.23	<0.23	<0.23	1.55	1.67	<0.23	18.1	1.64	**70.2**	88.3	102
		0009_MW002_HT_230404	5/04/2023	<0.24	<0.24	<0.24	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	<1.2	<0.24	<0.24	0.76	4.50	1.20	1.91	<0.61	<0.24	<0.24	<0.24	1.54	1.52	<0.24	18.1	1.44	**75.8**	93.9	107
0009	MW003	MW03_HIGH_190522	22/05/2019	<0.001	<0.005	0.002	<0.001	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	<0.005	0.09	0.008	<0.001	0.11	0.54	0.18	0.23	<0.001	<0.001	0.001	0.021	0.42	0.24	<0.001	2.4	0.21	**7.8**	10.2	12.453
		MW03_LOW_190523	23/05/2019	<0.001	0.007	0.002	<0.001	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.083	0.008	<0.001	0.1	0.59	0.13	0.24	<0.001	<0.001	0.001	0.019	0.4	0.35	<0.001	2.1	0.16	**5.4**	7.5	9.8
		MW03_LOW_20190618	18/06/2019	<0.001	0.011	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.27	0.003	<0.001	0.3	2.5	0.42	0.61	<0.001	<0.001	<0.001	0.012	1	0.57	<0.001	8.8	0.9	**2**	10.8	17.906
		MW03_HIGH_20190619	19/06/2019	<0.001	0.012	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.28	0.003	<0.001	0.33	3	0.81	0.62	<0.001	<0.001	<0.001	0.014	1	0.6	<0.001	9.4	1.1	**1.9**	11.3	19.629
		0009_MW003_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	<0.2	<0.03	<0.03	0.11	0.75	0.21	0.24	<0.08	<0.03	<0.03	<0.03	0.31	0.15	<0.03	3.16	0.33	**5.58**	8.74	10.8
		0009_MW003_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	<0.2	<0.03	<0.03	0.12	0.85	0.22	0.29	<0.08	<0.03	<0.03	<0.03	0.35	0.18	<0.03	3.59	0.36	**6.62**	10.2	12.6
		0009_MW003_LT_210408	8/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.2	<0.02	<0.02	0.25	1.79	0.41	0.46	<0.05	<0.02	<0.02	0.02	0.60	0.24	<0.02	5.43	0.69	**4.45**	9.88	14.6
		0009_MW003_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.3	<0.02	<0.02	0.33	2.58	0.53	0.64	<0.05	<0.02	<0.02	<0.02	0.86	0.32	0.02	6.59	0.94	**4.84**	11.4	18.0
		0009_MW003_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.4	<0.02	<0.02	0.39	3.60	0.61	0.76	<0.05	<0.02	<0.02	<0.02	1.18	0.57	<0.02	9.05	1.03	**3.34**	12.4	20.9
		0009_MW003_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.4	<0.02	<0.02	0.45	3.89	0.68	0.78	<0.05	<0.02	<0.02	<0.02	1.30	0.64	<0.02	9.65	1.11	**3.34**	13.0	22.2
		0009_MW003_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.3	<0.02	<0.02	0.38	3.15	0.60	0.81	<0.05	<0.02	<0.02	<0.02	1.01	0.49	<0.02	8.43	1.02	**4.65**	13.1	20.8
		0009_MW003_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.2	<0.05	<0.05	0.39	2.97	0.64	0.78	<0.12	<0.05	<0.05	<0.05	1.25	0.43	<0.05	9.29	1.14	**3.89**	13.2	21.0
		0009_MW003_LT_220012	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	0.07	<0.12	<0.05	<0.12	<0.2	<0.05	<0.05	0.27	1.64	0.33	0.77	<0.12	<0.05	<0.05	<0.05	0.50	0.55	<0.05	6.90	0.48	**26.7**	33.6	38.2
		0009_MW003_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	0.06	<0.06	<0.02	<0.06	<0.1	<0.02	<0.02	0.32	1.47	0.38	0.85	<0.06	<0.02	<0.02	0.04	0.55	0.59	<0.02	7.59	0.49	**22.6**	30.2	34.9
		0009_MW003_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.02	<0.05	<0.02	<0.05	0.3	<0.02	<0.02	0.36	2.58	0.61	0.81	<0.05	<0.02	<0.02	0.02	1.30	0.62	<0.02	9.55	1.12	**9.14**	18.7	26.4
		0009_MW003_HT_230404	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.02	<0.05	<0.02	<0.05	0.3	<0.02	<0.02	0.35	2.53	0.59	0.72	<0.05	<0.02	<0.02	<0.02	1.25	0.49	<0.02	9.24	1.13	**7.08**	16.3	23.7
0009	MW004	MW04_HIGH_190522	22/05/2019	<0.001	0.006	0.015	<0.001	<0.005	<0.005	<0.005	0.034	<0.005	<0.005	<0.005	0.22	0.01	<0.001	0.28	1	0.54	0.47	<0.001	<0.001	<0.001	0.018	0.81	0.44	<0.001	3.5	0.4	**9.5**	13	17.483
		MW04_LOW_190523	23/05/2019	<0.001	0.005	0.012	<0.001	<0.005	<0.005	<0.005	0.045	<0.005	<0.005	<0.005	0.25	0.008	<0.001	0.34	1.2	0.5	0.65	<0.001	<0.001	<0.001	0.022	0.89	0.93	<0.001	3.7	0.41	**8.5**	12.2	17.782
		MW04_LOW_20190618	18/06/2019	<0.001	0.008	0.011	<0.001	<0.005	<0.005	<0.005	0.05	<0.005	<0.005	<0.005	0.23	0.01	<0.001	0.32	1.2	0.44	0.56	<0.001	<0.001	0.001	0.017	0.57	0.41	<0.001	4.9	0.41	**11**	15.9	20.497
		MW04_HIGH_20190619	19/06/2019	<0.001	0.006	0.007	<0.001	<0.005	<0.005	<0.005	0.046	<0.005	<0.005	<0.005	0.26	0.007	<0.001	0.35	1.4	0.53	0.56	<0.001	<0.001	<0.001	0.015	0.66	0.45	<0.001	5	0.44	**7.7**	12.7	17.721
		0009_MW004_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.3	<0.03	<0.03	0.37	1.35	0.66	0.72	<0.08	<0.03	<0.03	<0.03	0.52	0.37	<0.03	5.22	0.58	**10.6**	15.8	20.7
		0009_MW004_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.2	<0.03	<0.03	0.29	1.09	0.56	0.56	<0.08	<0.03	<0.03	<0.03	0.43	0.30	<0.03	4.20	0.48	**8.24**	12.4	16.4
		0009_MW004_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.9	<0.18	<0.18	0.53	1.67	0.81	1.16	<0.46	<0.18	<0.18	<0.18	0.52	0.59	<0.18	7.01	0.66	**27.0**	34.0	40.0
		0009_MW004_HT_210409	9/04/2021	<0.19	<0.19	<0.19	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	<0.19	<0.47	<0.9	<0.19	<0.19	0.73	2.56	1.27	1.51	<0.47	<0.19	<0.19	<0.19	0.73	0.92	<0.19	7.93	0.90	**31.5**	39.4	48.0
		0009_MW004_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.08	<0.05	<0.02	<0.05	0.3	0.02	<0.02	0.36	1.31	0.52	0.41	<0.05	<0.02	<0.02	<0.02	0.41	0.29	<0.02	3.80	0.43	**8.62**	12.4	16.6
		0009_MW004_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.08	<0.05	<0.02	<0.05	0.3	0.02	<0.02	0.37	1.32	0.51	0.56	<0.05	<0.02	<0.02	<0.02	0.36	0.37	0.04	4.25	0.44	**11.0**	15.2	19.6
		0009_MW004_LT_220404	4/04/2022	<0.05	0.06	<0.05	<0.05	<0.06	<0.02	<0.06	0.12	<0.06	<0.02	<0.06	0.1	<0.02	<0.02	0.31	0.92	0.44	0.62	<0.06	<0.02	<0.02	<0.02	0.36	0.38	<0.02	3.93	0.40	**22.8**	26.7	30.4
		0009_MW004_HT_220405	5/04/2022	<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<1.2	<0.25	<0.25	<0.25	1.06	0.40	0.54	<0.62	<0.25	<0.25	<0.25	0.35	0.27	<0.25	4.06	0.44	**20.1**	24.2	27.2
		0009_MW004_LT_220912	12/09/2022	<0.05	<0.05	<0.12	<0.05	<0.06	<0.02	<0.06	0.09	<0.06	<0.02	<0.06	0.1	<0.02	<0.02	0.34	1.10	0.46	0.72	<0.06	<0.02	<0.02	<0.02	0.32	0.45	<0.02	3.71	0.39	**20.9**	24.6	28.6
		0009_MW004_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	0.13	<0.06	<0.02	<0.06	0.1	<0.02	<0.02	0.38	1.00	0.53	0.75	<0.06	<0.02	<0.02	0.03	0.38	0.50	<0.02	4.48	0.39	**27.7**	32.2	36.4
		0009_MW004_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	0.11	<0.06	<0.02	<0.06	0.2	0.03	<0.02	0.40	1.08	0.56	0.63	<0.06	<0.02	<0.02	0.05	0.49	0.46	<0.02	4.98	0.47	**22.9**	27.9	32.4
		0009_MW004_HT_230404	5/04/2023	<0.05	<0.05	0.06	<0.05	<0.06	<0.02	<0.06	0.18	<0.06	<0.02	<0.06	0.3	0.04	<0.02	0.52	1.36	0.71	0.86	<0.06	<0.02	<0.02	0.05	0.60	0.72	<0.02	6.26	0.62	**39.6**	45.9	51.9

Table T2: Groundwater Analytical Results

					(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids										Perfluoroalkyl Sulfonic Acids					PFAS Sums	
					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)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluorooctanoic acid (PFOA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorobutane sulfonic acid (PFBS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Sum of PFAS
			Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.005	0.001	0.001	0.005	0.005	0.005	0.005	0.005	0.005	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	0.001	0.0001	0.001	0.005
PFAS NEMP 2020 Freshwater and Interim Marine 95%																						220									0.13		
Property ID	Location ID	Field ID	Sample Date																														
0009	MW005	MW05_HIGH_190522	22/05/2019		<0.001	0.011	0.011	<0.001	<0.005	<0.005	<0.005	0.027	<0.005	<0.005	<0.005	0.22	0.012	<0.001	0.26	1.1	0.61	0.62	<0.001	<0.001	0.003	0.05	0.78	0.8	0.004	3.8	0.32	**23**	26.8	31.888
		MW05_LOW_190523	23/05/2019		<0.001	0.011	0.022	<0.001	<0.005	<0.005	<0.005	0.043	<0.005	<0.005	<0.005	0.19	0.026	<0.001	0.3	1.2	0.5	0.67	<0.001	<0.001	0.006	0.056	0.72	0.59	0.005	3.8	0.31	**31**	34.8	-
		MW05_LOW_20190618	18/06/2019		<0.001	0.009	0.007	<0.001	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	0.15	0.009	<0.001	0.21	0.97	0.42	0.48	<0.001	<0.001	0.002	0.035	0.4	0.58	0.003	4.1	0.25	**18**	22.1	25.983
		MW05_HIGH_20190619	19/06/2019		<0.001	0.009	0.005	<0.001	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	0.14	0.008	<0.001	0.19	0.92	0.4	0.43	<0.001	<0.001	0.002	0.033	0.41	0.56	0.002	3.6	0.26	**14**	17.6	21.317
		0009_MW005_HT_200930	30/09/2020		<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.3	<0.06	<0.06	0.24	1.03	0.79	0.58	<0.16	<0.06	<0.06	0.06	0.40	0.45	<0.06	5.10	0.42	**24.4**	29.5	33.5
		0009_MW005_LT_200930	30/09/2020		<0.05	<0.05	<0.05	<0.05	<0.08	<0.03	<0.08	<0.03	<0.08	<0.03	<0.08	0.2	<0.03	<0.03	0.22	0.87	0.62	0.52	<0.08	<0.03	<0.03	0.06	0.36	0.35	<0.03	4.30	0.39	**20.7**	25.0	28.6
		0009_MW005_LT_210408	8/04/2021		<0.08	<0.08	<0.08	<0.08	<0.19	<0.08	<0.19	<0.08	<0.19	<0.08	<0.19	0.4	<0.08	<0.08	0.40	1.48	0.84	0.89	<0.19	<0.08	<0.08	0.13	0.50	0.65	<0.08	6.70	0.49	**40.6**	47.3	53.1
		0009_MW005_HT_210409	9/04/2021		<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<1.0	<0.19	<0.19	0.49	1.96	1.04	1.08	<0.48	<0.19	<0.19	<0.19	0.55	0.80	<0.19	6.94	0.65	**47.3**	54.2	60.8
		0009_MW005_HT_211027	27/10/2021		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.05	<0.05	<0.02	<0.05	0.2	<0.02	<0.02	0.21	1.04	0.51	0.43	<0.05	<0.02	<0.02	0.04	0.39	0.34	0.04	4.05	0.40	**19.5**	23.6	27.2
		0009_MW005_LT_211028	28/10/2021		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.05	<0.05	<0.02	<0.05	0.2	<0.02	<0.02	0.24	1.00	0.50	0.44	<0.05	<0.02	<0.02	0.03	0.32	0.36	0.03	4.01	0.32	**18.2**	22.2	25.7
		0009_MW005_LT_220404	4/04/2022		<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.2	<0.05	<0.05	0.33	1.26	0.66	0.85	<0.12	<0.05	<0.05	<0.05	0.46	0.62	<0.05	6.45	0.47	**39.9**	46.4	51.0
		0009_MW005_HT_220405	5/04/2022		<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<1.2	<0.25	<0.25	<0.25	1.26	0.49	0.69	<0.62	<0.25	<0.25	<0.25	0.34	0.40	<0.25	5.48	0.40	**32.7**	38.2	41.8
		0009_MW005_LT_220912	12/09/2022		<0.05	<0.05	<0.05	<0.05	<0.13	<0.05	<0.13	<0.05	<0.13	<0.05	<0.13	<0.2	<0.05	<0.05	0.26	1.09	0.56	0.71	<0.13	<0.05	<0.05	<0.05	0.35	0.52	<0.05	4.66	0.34	**35.0**	39.7	43.5
		0009_MW005_HT_220913	13/09/2022		<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.5	<0.10	<0.10	0.32	1.13	0.63	0.73	<0.25	<0.10	<0.10	<0.10	0.34	0.58	<0.10	5.07	0.42	**43.0**	48.1	52.2
		0009_MW005_LT_230404	4/04/2023		<0.09	<0.09	<0.09	<0.09	<0.23	<0.09	<0.23	<0.09	<0.23	<0.09	<0.23	<0.4	<0.09	<0.09	0.45	1.44	0.97	0.90	<0.23	<0.09	<0.09	0.14	0.61	0.80	<0.09	8.02	0.58	**55.4**	63.4	69.3
		0009_MW005_HT_230404	5/04/2023		<0.10	<0.10	<0.10	<0.10	<0.24	<0.10	<0.24	<0.10	<0.24	<0.10	<0.24	<0.5	<0.10	<0.10	0.45	1.53	1.04	1.04	<0.24	<0.10	<0.10	0.12	0.53	0.93	<0.10	8.08	0.65	**60.7**	68.8	75.1
0009	MW007	MW07_HIGH_190522	22/05/2019		<0.001	0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.079	<0.001	<0.001	0.079	0.53	0.14	0.24	<0.001	<0.001	<0.001	0.003	0.42	0.28	<0.001	2	0.19	**30**	32	34.092
		MW07_LOW_190523	23/05/2019		<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	0.1	0.003	<0.001	0.1	0.7	0.14	0.34	<0.001	<0.001	<0.001	0.004	0.58	0.65	0.003	2.3	0.23	**36**	38.3	41.818
		MW07_LOW_20190618	18/06/2019		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.31	<0.1	<0.1	0.35	2.2	0.48	0.99	0.21	<0.1	<0.1	<0.1	1.1	0.84	<0.1	9.9	0.86	**110**	119.9	127.49
		MW07_HIGH_20190619	19/06/2019		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.24	<0.1	<0.1	0.3	2	0.36	0.95	<0.1	<0.1	<0.1	<0.1	0.93	0.74	<0.1	7.8	0.65	**88**	95.8	102.16
		0009_MW007_HT_200930	30/09/2020		<0.06	<0.06	<0.06	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.06	<0.16	<0.3	<0.06	<0.06	0.11	0.76	0.24	0.33	<0.16	<0.06	<0.06	<0.06	0.35	0.28	<0.06	3.28	0.28	**42.2**	45.5	47.8
		0009_MW007_LT_200930	30/09/2020		<0.16	<0.16	<0.16	<0.16	<0.41	<0.16	<0.41	<0.16	<0.41	<0.16	<0.41	<0.8	<0.16	<0.16	<0.16	1.02	0.29	0.37	<0.41	<0.16	<0.16	<0.16	0.44	0.32	<0.16	4.14	0.39	**51.1**	55.2	58.1
		0009_MW007_LT_210408	8/04/2021		<0.19	<0.19	<0.19	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<0.19	<0.48	<1.0	<0.19	<0.19	<0.19	0.71	0.23	0.38	<0.48	<0.19	<0.19	<0.19	0.29	0.34	<0.19	2.58	0.19	**35.0**	37.6	39.7
		0009_MW007_HT_210409	9/04/2021		<0.24	<0.24	<0.24	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	<0.24	<0.61	<1.2	<0.24	<0.24	<0.32	1.29	0.34	0.58	<0.61	<0.24	<0.24	<0.24	0.66	0.36	<0.24	4.27	0.39	**45.5**	49.8	53.4
		0009_MW007_HT_211027	27/10/2021		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.03	<0.05	<0.02	<0.05	0.3	<0.02	<0.02	0.27	1.87	0.41	0.85	<0.05	<0.02	<0.02	<0.02	0.77	0.82	<0.02	6.70	0.62	**94.6**	101	107
		0009_MW007_LT_211028	28/10/2021		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.04	<0.05	<0.02	<0.05	0.3	<0.02	<0.02	0.31	1.98	0.44	0.92	<0.05	<0.02	<0.02	<0.02	0.70	0.99	0.03	7.66	0.66	**92.7**	100	107
		0009_MW007_LT_220404	4/04/2022		<0.10	<0.10	<0.10	<0.10	<0.24	<0.10	<0.24	<0.10	<0.24	<0.10	<0.24	<0.5	<0.10	<0.10	0.20	1.20	0.33	0.63	<0.24	<0.10	<0.10	<0.10	0.52	0.53	<0.10	5.09	0.43	**86.4**	91.5	95.3
		0009_MW007_HT_220405	5/04/2022		<0.46	<0.46	<0.46	<0.46	<1.16	<0.46	<1.16	<0.46	<1.16	<0.46	<1.16	<2.3	<0.46	<0.46	<0.46	0.98	<0.46	<0.46	<1.16	<0.46	<0.46	<0.46	0.46	<0.46	<0.46	4.74	<0.46	**68.2**	72.9	74.4
		0009_MW007_LT_220912	12/09/2022		<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.5	<0.10	<0.10	0.18	1.42	0.24	0.70	<0.25	<0.10	<0.10	<0.10	0.68	0.64	<0.10	5.45	0.50	**81.2**	86.6	91.0
		0009_MW007_HT_220913	13/09/2022		<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.10	<0.25	<0.5	<0.10	<0.10	0.26	1.59	0.36	0.83	<0.25	<0.10	<0.10	<0.10	0.74	0.62	<0.10	5.98	0.59	**92.4**	98.4	103
		0009_MW007_HT_230404	4/04/2023		<0.24	<0.24	<0.24	<0.24	<0.59	<0.24	<0.59	<0.24	<0.59	<0.24	<0.59	<1.2	<0.24	<0.24	<0.24	0.90	0.28	0.50	<0.59	<0.24	<0.24	<0.24	0.50	0.47	<0.24	4.24	0.42	**80.4**	84.6	87.7
		0009_MW007_LT_230404	4/04/2023		<0.24	<0.24	<0.24	<0.24	<0.60	<0.24	<0.60	<0.24	<0.60	<0.24	<0.60	<1.2	<0.24	<0.24	<0.24	1.07	0.36	0.51	<0.60	<0.24	<0.24	<0.24	0.70	0.41	<0.24	4.75	0.48	**62.4**	67.2	70.7
0009	MW009	MW09_LOW_190521	21/05/2019		<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.064	<0.01	<0.01	0.15	0.98	0.08	0.1	<0.01	<0.01	<0.01	<0.01	0.33	0.023	<0.01	1.8	0.2	**0.19**	1.99	3.968
		MW09_HIGH_190522	22/05/2019		<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.065	<0.01	<0.01	0.16	0.93	0.091	0.12	<0.01	<0.01	<0.01	<0.01	0.34	0.031	<0.01	2	0.21	**0.32**	2.32	4.319
		MW09_LOW_20190618	18/06/2019		<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	0.002	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	0.003	0.003	<0.001	0.021	0.002	0.071	0.092	0.104
		MW09_HIGH_20190619	19/06/2019		<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	0.001	0.005	0.002	0.002	<0.001	<0.001	<0.001	<0.001	0.003	0.003	<0.001	0.056	0.003	0.093	0.149	0.168
		0009_MW009_HT_200930	30/09/2020		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.12	<0.02	**0.27**	0.39	0.39
		0009_MW009_LT_200930	30/09/2020		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.16	<0.02	**0.25**	0.41	0.43
		0009_MW009_LT_210408	8/04/2021		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.10	<0.02	0.10	0.20	0.20
		0009_MW009_HT_210409	9/04/2021		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	**0.18**	0.26	0.26
		0009_MW009_HT_211027	27/10/2021		<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.10	<0.02	0.04	<0.05	<0.02	<0.02	<0.02	0.04	0.02	<0.02	0.62	0.04	**0.23**	0.85	1.17
		0009_MW009_LT_211028	28/10/2021		<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.09	0.02	0.03	<0.05	<0.02	<0.02	<0.02	0.04	0.02	<0.02	0.43	0.05	**0.21**	0.64	0.94
		0009_MW009_211208	8/12/2021		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.03	0.13	<0.04	0.05	<0.05	<0.02	<0.02	<0.02	0.07	0.04	<0.02	0.86	0.07	**0.28**	1.14	1.53
		0009_MW009_LT_220404	4/04/2022		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.20	0.03	0.10	0.30	0.38
		0009_MW009_HT_220405	5/04/2022		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.22	0.02	0.12	0.34	0.40
		0009_MW009_LT_220912	12/09/2022		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	0.30	0.03	0.12	0.42	0.54
		0009_MW009_HT_220913	13/09/2022		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.01	<0.05	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	0.35	0.02	**0.13**	0.48	0.58
		0009_MW009_HT_230404	4/04/2023		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.17	<0.02	**0.15**	0.32	0.34
		0009_MW009_LT_230404	4/04/2023		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.17	<0.02	**0.16**	0.33	0.36

Table T2: Groundwater Analytical Results

				(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids											Perfluoroalkyl Sulfonic Acids					PFAS Sums	
				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)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluorooctanoic acid (PFOA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorobutane sulfonic acid (PFBS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Sum of PFAS
		Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.005	0.001	0.001	0.005	0.005	0.005	0.005	0.005	0.005	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	0.001	0.001	0.0001	0.001	0.005
PFAS NEMP 2020 Freshwater and Interim Marine 95%																				220											0.13		
Property ID	**Location ID**	**Field ID**	**Sample Date**																														
0009	MW011	MW11_HIGH_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	0.019	0.021	<0.01	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	0.078	0.27
		MW11_LOW_190524	24/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.001	0.015	0.026	0.008	0.13	<0.001	<0.001	<0.001	0.005	<0.001	0.004	<0.001	0.005	<0.001	0.048	0.053	0.244
		MW11_LOW_20190619	19/06/2019	<0.001	0.006	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.004	<0.001	0.042	0.025	0.017	0.32	<0.001	<0.001	<0.001	0.019	0.003	0.007	<0.001	0.022	0.002	0.12	0.142	0.593
		MW11_HIGH_20190620	20/06/2019	<0.001	0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	0.006	<0.001	0.048	0.03	0.013	0.3	<0.001	<0.001	<0.001	0.021	0.004	0.009	<0.001	0.036	0.003	**0.17**	0.206	0.652
		0009_MW011_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.07	0.06	0.04	0.36	<0.05	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	0.05	<0.02	**0.35**	0.40	0.96
		0009_MW011_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.07	0.06	0.04	0.38	<0.05	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	0.07	<0.02	**0.34**	0.41	0.99
		0009_MW011_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.02	0.02	0.02	0.07	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.14**	0.14	0.27
		0009_MW011_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.04	0.04	0.03	0.18	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.23**	0.23	0.52
		0009_MW011_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.03	0.03	<0.02	0.11	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.01	<0.02	0.03	0.04	0.21
		0009_MW011_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.02	0.03	<0.02	0.11	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.01	<0.02	0.04	0.05	0.21
		0009_MW011_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.04	0.04	0.03	0.15	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.21**	0.22	0.48
		0009_MW011_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.09	0.05	0.03	0.26	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.15**	0.17	0.60
		0009_MW011_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.06	0.07	0.04	0.21	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.18**	0.21	0.59
		0009_MW011_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	0.10	0.10	0.11
		0009_MW011_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	**0.14**	0.14	0.20
0009	MW013	MW13_HIGH_190522	22/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.033	0.003	<0.001	0.041	0.14	0.083	0.084	<0.001	<0.001	0.002	0.13	0.086	0.059	<0.001	0.87	0.047	**4.1**	4.97	5.708
		MW13_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.032	0.003	<0.001	0.034	0.14	0.061	0.071	<0.001	<0.001	0.001	0.11	0.072	0.072	<0.001	0.79	0.042	**2.3**	3.09	3.778
		MW13_LOW_20190618	18/06/2019	<0.001	0.006	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.038	0.002	<0.001	0.055	0.17	0.086	0.085	<0.001	<0.001	<0.001	0.11	0.098	0.065	<0.001	1.1	0.064	**1.7**	2.8	3.619
		MW13_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.039	0.002	<0.001	0.058	0.18	0.083	0.089	<0.001	<0.001	<0.001	0.15	0.1	0.085	<0.001	1.6	0.059	**2.4**	4	4.885
		0009_MW013_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.2	<0.05	<0.05	0.05	0.27	0.08	0.09	<0.12	<0.05	<0.05	0.09	0.09	<0.05	<0.05	1.10	0.11	**2.27**	3.37	4.15
		0009_MW013_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.2	<0.05	<0.05	0.05	0.25	0.10	0.11	<0.12	<0.05	<0.05	0.11	0.09	0.06	<0.05	1.21	0.09	**3.06**	4.27	5.13
		0009_MW013_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.05	0.17	0.10	0.09	<0.05	<0.02	<0.02	0.24	0.08	0.06	<0.02	0.97	0.06	**3.58**	4.55	5.40
		0009_MW013_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.05	0.15	0.07	0.08	<0.05	<0.02	<0.02	0.08	0.05	0.05	<0.02	0.55	0.06	**2.49**	3.04	3.63
		0009_MW013_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.12	0.51	0.21	0.21	<0.05	<0.02	<0.02	0.10	0.18	0.14	<0.02	2.00	0.16	**4.16**	6.16	7.79
		0009_MW013_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.09	0.38	0.16	0.16	<0.05	<0.02	<0.02	0.10	0.12	0.10	<0.02	1.55	0.13	**4.19**	5.74	6.98
		0009_MW013_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.04	0.16	0.07	0.07	<0.05	<0.02	<0.02	0.13	0.06	0.05	<0.02	0.79	0.06	**2.68**	3.47	4.11
		0009_MW013_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.05	0.20	0.08	0.09	<0.05	<0.02	<0.02	0.15	0.07	0.05	<0.02	0.88	0.07	**2.33**	3.21	3.97
		0009_MW013_LT_220912	12/09/2022	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.04	0.22	0.07	0.06	<0.05	<0.02	<0.02	0.05	0.07	0.03	<0.02	0.64	0.08	**1.75**	2.39	3.07
		0009_MW013_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.02	0.10	0.05	0.04	<0.05	<0.02	<0.02	0.14	0.03	0.03	<0.02	0.48	0.02	**1.95**	2.43	2.86
		0009_MW013_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.02	0.07	0.04	0.03	<0.05	<0.02	<0.02	0.08	0.02	0.02	<0.02	0.30	0.05	**1.63**	1.93	2.26
		0009_MW013_HT_230404	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.02	0.06	0.04	0.03	<0.05	<0.02	<0.02	0.07	0.03	0.02	<0.02	0.34	<0.02	**1.87**	2.21	2.48
0009	MW014	MW14_HIGH_190522	22/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.16	<0.1	<0.1	<0.1	0.51	<0.1	<0.1	0.61	4.3	1.1	1.3	<0.1	<0.1	<0.1	<0.1	0.53	0.59	<0.1	11	0.45	**77**	88	-
		MW14_LOW_190523	23/05/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	0.24	<0.1	0.54	<0.1	<0.1	0.34	3.6	0.6	1.1	<0.1	<0.1	<0.1	<0.1	0.44	0.66	<0.1	8.9	0.38	**65**	73.9	-
		MW14_LOW_20190618	18/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.25	<0.1	<0.1	0.35	2.6	0.32	0.76	0.018	<0.1	<0.1	<0.1	0.38	0.61	<0.1	9.7	0.4	**86**	95.7	101.768
		MW14_HIGH_20190619	19/06/2019	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.27	<0.1	<0.1	<0.1	0.22	<0.1	<0.1	0.33	2.7	0.42	0.69	0.016	<0.1	<0.1	<0.1	0.38	0.6	<0.1	8.8	0.34	**84**	92.8	98.916
		0009_MW014_HT_200930	30/09/2020	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<0.50	<1.25	<2.5	<0.50	<0.50	<0.50	3.80	<0.50	0.85	<1.25	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7.90	<0.50	**120**	128	132
		0009_MW014_LT_200930	30/09/2020	<0.25	<0.25	<0.25	<0.25	<0.63	<0.25	<0.63	0.35	<0.63	<0.25	<0.63	<1.2	<0.25	<0.25	0.35	3.92	0.48	0.93	<0.63	<0.25	<0.25	<0.25	0.33	0.43	<0.25	7.31	0.30	**101**	108	115
		0009_MW014_LT_210408	8/04/2021	<0.18	<0.18	<0.18	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.18	<0.46	<0.9	<0.18	<0.18	0.46	3.03	0.64	0.91	<0.46	<0.18	<0.18	<0.18	0.51	0.69	<0.18	11.5	0.69	**48.5**	60.0	66.9
		0009_MW014_HT_210409	9/04/2021	<0.18	<0.18	<0.18	<0.18	<0.45	<0.18	<0.45	<0.18	<0.45	<0.18	<0.45	<0.9	<0.18	<0.18	0.36	2.89	0.65	0.73	<0.45	<0.18	<0.18	<0.18	0.49	0.54	<0.18	7.99	0.58	**42.0**	50.0	56.2
		0009_MW014_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.22	<0.05	<0.02	<0.05	0.3	<0.02	<0.02	0.44	3.91	0.63	0.85	<0.05	<0.02	<0.02	0.02	0.60	0.86	<0.02	10.7	0.50	**54.6**	65.3	73.6
		0009_MW014_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.12	<0.05	<0.02	<0.05	0.3	<0.02	<0.02	0.33	3.14	0.50	0.65	<0.05	<0.02	<0.02	<0.02	0.46	0.67	0.07	8.50	0.54	**41.9**	50.4	57.2
		0009_MW014_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	0.03	<0.05	<0.02	<0.05	0.3	<0.02	<0.02	0.26	2.20	0.43	0.38	<0.05	<0.02	<0.02	<0.02	0.51	0.26	<0.02	8.11	0.72	**11.2**	19.3	24.4
		0009_MW014_HT_220405	5/04/2022	<0.25	<0.25	<0.25	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<0.25	<0.62	<1.2	<0.25	<0.25	<0.25	2.23	0.32	0.42	<0.62	<0.25	<0.25	<0.25	0.37	0.35	<0.25	8.09	0.47	**30.7**	38.8	43.0
		0009_MW014_LT_220912	12/09/2022	<0.09	<0.09	<0.09	<0.09	<0.23	<0.09	<0.23	0.26	<0.23	<0.09	<0.23	<0.4	<0.09	<0.09	0.28	2.90	0.43	0.81	<0.23	<0.09	<0.09	<0.09	0.40	0.57	<0.14	7.78	0.39	**65.8**	73.6	79.6
		0009_MW014_HT_220913	13/09/2022	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	0.32	<0.25	<0.10	<0.25	<0.5	<0.10	<0.10	0.30	2.59	0.41	0.74	<0.25	<0.10	<0.10	<0.10	0.31	0.44	<0.10	6.44	0.25	**100**	106	112
		0009_MW014_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	0.17	<0.12	<0.05	<0.12	0.4	<0.05	<0.05	0.43	3.48	0.77	0.85	<0.12	<0.05	<0.05	<0.05	0.73	0.81	<0.05	14.0	0.93	**52.8**	66.8	75.4
		0009_MW014_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	0.28	<0.12	<0.05	<0.12	0.3	<0.05	<0.05	0.37	2.88	0.62	0.79	<0.12	<0.05	<0.05	<0.05	0.62	0.79	<0.05	11.0	0.70	**73.9**	84.9	92.2
0009	MW015	MW15_HIGH_190522	22/05/2019	<0.001	0.009	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.012	<0.001	<0.001	0.012	0.069	0.028	0.022	<0.001	<0.001	<0.001	0.002	0.016	0.014	<0.001	0.22	0.011	**2.1**	2.32	2.515
		MW15_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	0.016	<0.001	<0.001	0.018	0.095	0.036	0.034	<0.001	<0.001	<0.001	0.003	0.029	0.029	<0.001	0.33	0.016	**3**	3.33	-
		MW15_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.014	<0.001	<0.001	0.013	0.096	0.034	0.021	<0.001	<0.001	<0.001	0.001	0.016	0.016	<0.001	0.25	0.012	**1**	1.25	1.473
		MW15_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	0.015	<0.001	<0.001	0.017	0.097	0.035	0.024	<0.001	<0.001	<0.001	0.002	0.019	0.02	<0.001	0.28	0.014	**1.7**	1.98	2.249
		0009_MW015_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.2	<0.05	<0.05	<0.05	0.16	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.35	<0.05	**1.74**	2.09	2.25
		0009_MW015_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.1	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.21	<0.02	**1.17**	1.38	1.46
		0009_MW015_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.08	0.03	0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.21	<0.02	**1.44**	1.65	1.78
		0009_MW015_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.10	0.04	0.03	<0.05	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	0.27	<0.02	**2.52**	2.79	2.98
		0009_MW015_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.18	<0.02	**1.43**	1.61	1.66
		0009_MW015_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.23	<0.02	**0.97**	1.20	1.25
		0009_MW015_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.06	0.03	0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.24	<0.02	**1.79**	2.03	2.14
		0009_MW015_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.08	0.04	0.03	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.28	<0.02	**3.04**	3.32	3.47
		0009_MW015_LT_220912	12/09/2022	<0.05	0.16	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.02	0.11	0.05	0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.22	<0.02	**1.80**	2.02	2.38
		0009_MW015_HT_220913	13/09/2022	<0.05	0.10	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.03	0.16	0.08	0.05	<0.05	<0.02	<0.02	<0.02	0.02	0.03	<0.02	0.40	<0.02	**3.38**	3.78	4.25
		0009_MW015_HT_230404	4/04/2023	<0.05	0.12	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.03	0.12	0.08	0.04	<0.05	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	0.37	<0.02	**1.42**	1.79	2.20
		0009_MW015_LT_230404	4/04/2023	<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.03	0.11	0.08	0.03	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.32	<0.02	**1.39**	1.71	2.03

Table T2: Groundwater Analytical Results

				(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids											Perfluoroalkyl Sulfonic Acids					PFAS Sums	
				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)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluorooctanoic acid (PFOA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorobutane sulfonic acid (PFBS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Sum of PFAS
			Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.005	0.001	0.001	0.005	0.005	0.005	0.005	0.005	0.005	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	0.001	0.001	0.0001	0.001	0.005
PFAS NEMP 2020 Freshwater and Interim Marine 95%																				**220**										**0.13**		
Property ID	**Location ID**	**Field ID**	**Sample Date**																														
0009	MW016	MW16_LOW_190521	21/05/2019	<0.001	0.058	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.049	<0.001	<0.001	0.033	0.34	0.098	0.075	<0.001	<0.001	<0.001	0.002	0.27	0.11	<0.001	1.5	0.17	**1.6**	3.1	4.355
		MW16_HIGH_190522	22/05/2019	<0.001	0.048	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.054	<0.001	<0.001	0.036	0.41	0.11	0.067	<0.001	<0.001	<0.001	0.002	0.36	0.1	<0.001	1.4	0.2	**1.6**	3	4.447
		MW16_LOW_20190618	18/06/2019	<0.001	0.017	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.047	<0.001	<0.001	0.029	0.4	0.12	0.027	<0.001	<0.001	<0.001	<0.001	0.23	0.035	<0.001	1.1	0.18	**0.57**	1.67	2.825
		MW16_HIGH_20190619	19/06/2019	<0.001	0.02	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.051	<0.001	<0.001	0.033	0.42	0.089	0.024	<0.001	<0.001	<0.001	<0.001	0.23	0.042	<0.001	1.3	0.19	**0.53**	1.83	3.009
		0009_MW016_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.2	<0.05	<0.05	0.07	0.69	0.11	<0.05	<0.12	<0.05	<0.05	<0.05	0.45	<0.05	<0.05	3.20	0.35	0.07	3.27	4.94
		0009_MW016_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.2	<0.05	<0.05	0.07	0.67	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	0.44	<0.05	<0.05	3.08	0.36	0.10	3.18	4.72
		0009_MW016_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.08	0.58	0.16	0.02	<0.05	<0.02	<0.02	<0.02	0.38	<0.02	<0.02	2.59	0.31	**0.15**	2.74	4.27
		0009_MW016_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.05	0.42	0.09	0.01	<0.05	<0.02	<0.02	<0.02	0.34	<0.02	<0.02	1.72	0.20	**0.22**	1.94	3.05
		0009_MW016_HT_211027	27/10/2021	<0.05	0.18	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.03	0.32	0.08	<0.01	<0.05	<0.02	<0.02	<0.02	0.18	<0.02	<0.02	1.08	0.15	**0.27**	1.35	2.29
		0009_MW016_LT_211028	28/10/2021	<0.05	0.24	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.05	0.48	0.10	0.01	<0.05	<0.02	<0.02	<0.02	0.23	<0.02	<0.02	2.03	0.29	**0.16**	2.19	3.59
		0009_MW016_211208	8/12/2021	<0.05	0.12	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.06	0.46	0.09	<0.02	<0.05	<0.02	<0.02	<0.02	0.33	<0.02	<0.02	1.75	0.27	**0.15**	1.90	3.23
		0009_MW016_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.02	0.25	0.06	<0.01	<0.05	<0.02	<0.02	<0.02	0.19	<0.02	<0.02	1.19	0.14	**0.18**	1.37	2.03
		0009_MW016_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.23	0.05	<0.01	<0.05	<0.02	<0.02	<0.02	0.16	<0.02	<0.02	1.10	0.14	**0.15**	1.25	1.83
		0009_MW016_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.04	0.38	0.08	<0.01	<0.05	<0.02	<0.02	<0.02	0.26	<0.02	<0.02	1.80	0.20	**0.14**	1.94	2.90
		0009_MW016_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.06	0.38	0.08	0.01	<0.05	<0.02	<0.02	<0.02	0.28	<0.02	<0.02	2.05	0.20	0.11	2.16	3.17
		0009_MW016_HT_230404	4/04/2023	<0.05	0.14	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.04	0.29	0.09	0.02	<0.05	<0.02	<0.02	<0.02	0.26	<0.02	<0.02	2.20	0.20	**0.24**	2.44	3.48
		0009_MW016_LT_230404	4/04/2023	<0.05	0.11	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.06	0.36	0.09	0.02	<0.05	<0.02	<0.02	<0.02	0.31	<0.02	<0.02	2.65	0.25	**0.21**	2.86	4.06
0009	MW017	MW17_HIGH_190522	22/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	0.014	0.056	0.026	0.033	<0.01	<0.01	<0.01	<0.01	0.026	0.013	<0.01	0.22	0.014	**1.1**	1.32	1.516
		MW17_LOW_190523	23/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.014	<0.001	<0.001	0.016	0.064	0.025	0.03	<0.001	<0.001	<0.001	0.001	0.035	0.026	<0.001	0.31	0.019	**1**	1.31	1.54
		MW17_LOW_20190618	18/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.001	<0.001	0.008	0.037	0.018	0.013	<0.001	<0.001	<0.001	<0.001	0.017	0.007	<0.001	0.16	0.011	**0.38**	0.54	0.659
		MW17_HIGH_20190619	19/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.019	<0.001	<0.001	0.021	0.094	0.034	0.041	<0.001	<0.001	<0.001	0.002	0.051	0.03	<0.001	0.5	0.034	**1.3**	1.8	2.126
		0009_MW017_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.06	<0.02	0.03	<0.05	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	0.31	0.02	**1.13**	1.44	1.58
		0009_MW017_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	0.21	<0.02	**0.87**	1.08	1.17
		0009_MW017_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.08	0.03	0.03	<0.05	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	0.34	0.03	**1.67**	2.01	2.22
		0009_MW017_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.05	0.02	0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	0.23	<0.02	**0.97**	1.20	1.31
		0009_MW017_HT_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.02	0.12	0.04	0.06	<0.05	<0.02	<0.02	<0.02	0.07	0.04	<0.02	0.64	0.04	**2.08**	2.72	3.11
		0009_MW017_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.08	0.02	0.04	<0.05	<0.02	<0.02	<0.02	0.03	0.03	<0.02	0.45	0.03	**2.25**	2.70	2.93
		0009_MW017_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	0.03	0.03
		0009_MW017_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.07	0.03	0.03	<0.05	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	0.38	0.03	**1.44**	1.82	2.01
		0009_MW017_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.20	<0.02	**1.02**	1.22	1.27
		0009_MW017_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.19	<0.02	**0.81**	1.00	1.04
		0009_MW017_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.02	0.10	0.05	0.04	<0.05	<0.02	<0.02	<0.02	0.04	0.02	<0.02	0.40	0.04	**1.14**	1.54	1.85
		0009_MW017_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.05	0.03	0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	0.30	0.02	**1.34**	1.64	1.79
0009	MW018	MW18_LOW_190521	21/05/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	0.016	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	0.013	0.025	0.059
		MW18_HIGH_190522	22/05/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	0.003	0.004	0.003	0.012	<0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001	0.014	<0.001	0.068	0.082	0.107
		MW18_LOW_20190619	19/06/2019	<0.001	0.007	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	0.002	0.003	0.005	0.011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005	<0.001	0.013	0.018	0.046
		MW18_HIGH_20190620	20/06/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	0.002	0.003	0.005	0.009	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005	<0.001	0.012	0.017	0.036
		0009_MW018_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.08	0.08
		0009_MW018_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.04	0.04
		0009_MW018_LT_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.04	0.04
		0009_MW018_HT_210409	9/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.02	0.02
		0009_MW018_HT_211027	27/10/2021	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.01	<0.02	0.02	0.09
		0009_MW018_LT_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	0.01	0.01
		0009_MW018_211208	8/12/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.03	<0.01	<0.01
		0009_MW018_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.01
		0009_MW018_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	0.02	0.02
		0009_MW018_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	0.03	0.03
		0009_MW018_HT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	0.05	0.05
		0009_MW018_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	0.02	0.02
0009	MW019	MW19_HIGH_190521	21/05/2019	<0.001	0.078	0.002	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.055	<0.001	<0.001	0.18	0.41	0.29	0.38	<0.001	<0.001	<0.001	0.017	0.16	0.34	<0.001	1.1	0.081	**5.4**	6.5	8.513
		MW19_LOW_190524	24/05/2019	<0.001	0.11	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.053	<0.001	<0.001	0.17	0.39	0.28	0.38	<0.001	<0.001	<0.001	0.021	0.14	0.36	<0.001	1.2	0.076	**8.3**	9.5	11.503
		MW19_LOW_20190619	19/06/2019	<0.001	0.047	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.03	<0.001	<0.001	0.071	0.18	0.12	0.11	<0.001	<0.001	<0.001	0.006	0.046	0.1	<0.001	0.55	0.034	**1.7**	2.25	3.004
		MW19_HIGH_20190620	20/06/2019	<0.001	0.036	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.03	<0.001	<0.001	0.065	0.18	0.13	0.1	<0.001	<0.001	<0.001	0.006	0.052	0.093	<0.001	0.54	0.035	**1.2**	1.74	2.477
		0009_MW019_HT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.2	<0.05	<0.05	<0.05	0.20	0.07	0.12	<0.12	<0.05	<0.05	<0.05	<0.05	0.09	<0.05	0.55	0.06	**3.16**	3.71	4.25
		0009_MW019_LT_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.2	<0.05	<0.05	0.06	0.24	0.06	0.18	<0.12	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	0.63	0.07	**4.82**	5.45	6.20
		0009_MW019_LT_210408	8/04/2021	<0.10	0.31	<0.10	<0.10	<0.24	<0.10	<0.24	<0.10	<0.24	<0.10	<0.24	<0.5	<0.10	<0.10	0.11	0.26	0.15	0.26	<0.24	<0.10	<0.10	<0.10	<0.10	0.24	<0.10	0.86	<0.10	**11.7**	12.6	13.9
		0009_MW019_HT_210409	9/04/2021	<0.05	0.06	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.07	0.16	0.10	0.14	<0.05	<0.02	<0.02	<0.02	0.05	0.13	<0.02	0.47	0.04	**4.21**	4.68	5.43
		0009_MW019_HT_211027	27/10/2021	<0.05	0.63	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.03	0.10	0.06	0.06	<0.05	<0.02	<0.02	<0.02	0.02	0.06	<0.02	0.23	0.02	**2.11**	2.34	3.32
		0009_MW019_LT_211028	28/10/2021	<0.05	0.38	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.04	0.13	0.08	0.07	<0.05	<0.02	<0.02	<0.02	0.03	0.07	<0.02	0.28	0.02	**2.40**	2.68	3.50
		0009_MW019_211208	8/12/2021	<0.05	0.12	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.05	0.16	0.08	0.08	<0.05	<0.02	<0.02	<0.02	0.04	0.08	<0.02	0.32	0.04	**2.16**	2.48	3.13
		0009_MW019_LT_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.07	0.19	0.10	0.19	<0.05	<0.02	<0.02	<0.02	0.05	0.18	<0.02	0.62	0.15	**6.64**	7.26	8.19
		0009_MW019_HT_220405	5/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.07	0.18	0.10	0.15	<0.05	<0.02	<0.02	<0.02	0.04	0.16	<0.02	0.58	0.05	**4.40**	4.98	5.73
		0009_MW019_LT_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.06	0.13	0.08	0.12	<0.05	<0.02	<0.02	<0.02	0.04	0.10	<0.02	0.40	0.04	**2.71**	3.11	3.68
		0009_MW019_HT_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.04	0.14	0.09	0.10	<0.05	<0.02	<0.02	<0.02	0.04	0.10	<0.02	0.48	0.03	**3.22**	3.70	4.24
		0009_MW019_HT_230404	4/04/2023	<0.05	0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.08	0.19	0.15	0.18	<0.05	<0.02	<0.02	<0.02	0.07	0.19	<0.02	0.77	0.06	**6.68**	7.45	8.42
		0009_MW019_LT_230404	4/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.07	0.16	0.14	0.15	<0.05	<0.02	<0.02	<0.02	0.06	0.16	<0.02	0.64	0.05	**4.76**	5.40	6.19

Table T2: Groundwater Analytical Results

					(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids											Perfluoroalkyl Sulfonic Acids					PFAS Sums	
					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)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluorooctanoic acid (PFOA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorobutane sulfonic acid (PFBS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Sum of PFAS
				Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.005	0.001	0.001	0.005	0.005	0.005	0.005	0.005	0.005	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	0.001	0.001	0.0001	0.001	0.005
PFAS NEMP 2020 Freshwater and Interim Marine 95%																				**220**											**0.13**		
Property ID	**Location ID**	**Field ID**	**Sample Date**																														
Former WWII RAN Fuel Installation																																	
0009	MW031	MW31_190526	26/05/2019		<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.001	<0.001	<0.001	0.011	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	0.003	0.001	<0.001	0.035	0.003	**0.31**	0.345	0.366
		MW31_20190618	18/06/2019		<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	0.006	0.003	0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.002	<0.001	0.026	0.002	**0.32**	0.346	0.363
		0009_MW031_201001	1/10/2020		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	**0.26**	0.31	0.31
		0009_MW031_210408	8/04/2021		<0.05	0.07	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	**0.24**	0.30	0.37
		0009_MW031_211027	27/10/2021		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	0.12	0.14	0.14
		0009_MW031_220405	5/04/2022		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	<0.02	**0.33**	0.42	0.42
		0009_MW031_220913	13/09/2022		<0.05	0.48	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	**0.22**	0.26	0.74
		0009_MW031_230405	5/04/2023		<0.05	0.11	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	**0.44**	0.52	0.63
0009	MW035	CRC_MW01_190526	26/05/2019		<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.035	<0.001	<0.001	0.004	0.054	0.02	0.009	<0.001	<0.001	<0.001	<0.001	0.32	0.027	<0.001	0.8	0.2	0.097	0.897	1.626
		CRC_MW01_190618	18/06/2019		<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.046	<0.001	<0.001	0.003	0.078	0.017	0.01	<0.001	<0.001	<0.001	<0.001	0.2	0.025	<0.001	0.67	0.19	**0.34**	1.01	1.679
		0009_MW035_201001	1/10/2020		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	0.05	0.10	0.10
		0009_MW035_210408	8/04/2021		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	0.16	<0.02	<0.02	0.50	0.14	**0.13**	0.63	0.96
		0009_MW035_211027	27/10/2021		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	0.02	0.02	0.02
		0009_MW035_220405	5/04/2022		<0.05	0.15	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	0.10	<0.02	<0.02	0.42	0.13	**0.20**	0.62	1.00
		0009_MW035_220913	13/09/2022		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	0.18	0.06	0.08	0.26	0.36
		0009_MW035_230405	5/04/2023		<0.05	0.18	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	0.08	0.05	0.12	0.20	0.45
0009	MW036	CRC_MW02_190526	26/05/2019		<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.017	<0.001	<0.001	0.004	0.044	0.018	0.01	<0.001	<0.001	<0.001	<0.001	0.036	0.008	<0.001	0.21	0.04	**0.16**	0.37	0.557
		CRC_MW02_190618	18/06/2019		<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	<0.001	<0.001	0.002	0.044	0.011	0.008	<0.001	<0.001	<0.001	<0.001	0.031	0.008	<0.001	0.17	0.027	**0.28**	0.45	0.601
		0009_MW036_201001	1/10/2020		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.11	<0.02	**0.29**	0.40	0.40
		0009_MW036_210408	8/04/2021		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.05	<0.02	0.01	<0.05	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	0.25	0.05	**0.29**	0.54	0.71
		0009_MW036_220404	4/04/2022		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	0.17	0.06	**0.22**	0.39	0.51
		0009_MW036_220913	13/09/2022		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.12	<0.02	**0.22**	0.34	0.36
		0009_MW036_230405	5/04/2023		<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	<0.01	<0.05	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	0.22	0.05	**0.28**	0.50	0.62

Environmental Standards
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%

Table T3: Surface Water Field Parameters

Property ID	Sample ID	Sample Date	Sample Time	DO (mg/L)	EC (µS/cm)	pH	Redox (mV)	Corrected Redox (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method/Comments
HMAS Cairns														
0009	SW030	30-Sep-20	14:45	6.66	62817	8.00	66.5	260.5	30.4	Low	Dark Olive Brown	No odour	No sheen	Grab
		7/04/2021	14:40	2.40	51516	7.69	108.1	302.1	32.2	Turbid	Dark Olive Brown	No odour	No sheen	Grab
		27/10/2021	11:20	5.78	69384	7.61	157.5	351.5	31.9	Clear	Clear	No odour	No sheen	Grab
		4/04/2022	10:58	5.99	53503	7.48	94.2	288.2	29.9	Clear	Pale yellow	No odour	No sheen	Grab
		12/09/2022	15:20	Insufficient volume for water at low tide to collect water quality parameters.										Tidal water body. Sample collected at low tide.
		05/04/2023	13:17	6.64	56,681	7.78	82.5	276.5	32.3	Low	Light Olive Brown 2.5Y 5/4	No odour	No sheen	Tidal water body. Sample collected at low tide.
0009	SW031	1/10/2020	10:45	6.36	63387	8.02	77.4	271.4	29.9	Low	Olive Yellow	No odour	No sheen	Grab
		7/04/2021	14:50	2.93	50693	7.74	114	308.0	30.7	Turbid	Dark Olive Brown	No odour	No sheen	Grab
		27/10/2021	11:28	5.83	74160	7.77	64.9	258.9	32.2	Clear	Clear	No odour	No sheen	Grab
		4/04/2022	10:57	6.04	53776	7.20	75	269.0	30.7	Clear	Pale yellow	No odour	No sheen	Grab
		12/09/2022	15:12	5.70	50196	8.00	-132.1	61.9	28.1	Turbid	Brown	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
		05/04/2023	13:32	7.02	29,288	7.86	83.2	277.2	32.6	Medium	Light Olive Brown 2.5Y 5/4	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW032	1/10/2020	11:20	6.15	59333	8.36	54.3	248.3	26.8	Low	Light Olive Brown	No odour	No sheen	Grab
		7/04/2021	15:18	4.06	50778	7.88	103.9	297.9	31.2	Turbid	Dark Olive Brown	No odour	No sheen	Grab
		28/10/2021	07:38	5.90	54400	6.91	206	400.0	27.3	Medium	Brown	No odour	No sheen	Grab
		4/04/2022	12:39	6.02	53091	7.64	108.8	302.8	30.2	Clear	Pale yellow	No odour	No sheen	Grab
		13/09/2022	9:04	4.37	54380	7.67	-184.3	9.7	25.8	Clear	Clear	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
		05/04/2023	16:54	5.93	55,515	7.69	71.6	265.6	31.5	Low	Light Olive Brown 2.5Y 5/4	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW033	1/10/2020	11:40	5.61	59397	7.68	69.8	263.8	28.7	Medium	Light Olive Brown	No odour	No sheen	Grab
		7/04/2021	15:30	1.85	40003	7.62	96.5	290.5	29.3	Turbid	Dark Olive Brown	No odour	No sheen	Grab
		28/10/2021	07:54	3.73	35923	7.23	82.5	276.5	27.1	Medium	Brown	No odour	No sheen	Grab
		4/04/2022	12:52	6.46	54642	7.63	111.1	305.1	32.0	Low	Pale yellow	No odour	No sheen	Grab
		13/09/2022	9:30	3.63	55410	7.75	-195.5	-1.5	26.1	Clear	Clear	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
		05/04/2023	17:16	5.19	34,712	7.17	34.9	228.9	29.6	Medium	Light Olive Brown 2.5Y 5/4	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW034	1/10/2020	12:10	5.63	55352	7.79	65.9	259.9	28.0	Low	Light Olive Brown	No odour	No sheen	Grab
		7/04/2021	11:35	3.17	36172	6.92	232.4	426.4	27.8	Medium	Light Olive Brown	No odour	No sheen	Grab
		27/10/2021	12:01	5.68	73115	8.00	84.1	278.1	31.4	Clear	Brown	No odour	No sheen	Grab
		4/04/2022	12:24	6.51	54129	7.60	107.3	301.3	32.2	Clear	Pale yellow	No odour	No sheen	Grab
		12/09/2022	14:07	3.55	52919	7.84	-185.2	8.8	31.5	Turbid	Brown	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
		05/04/2023	14:10	5.27	39,017	7.19	75.5	269.5	30.8	Low	Brown 7.5YR 4/3	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW035	1/10/2020	12:00	5.92	51886	7.82	90.4	284.4	28.5	Low	Dark Olive Brown	No odour	No sheen	Grab
		7/04/2021	11:46	3.04	39778	7.25	183.3	377.3	29.2	Medium	Light Olive Brown	No odour	No sheen	Grab
		27/10/2021	12:09	5.74	72769	7.88	67.3	261.3	31.1	Clear	Brown	No odour	No sheen	Grab
		4/04/2022	12:08	5.90	52349	7.48	102	296.0	34.8	Clear	Clear	No odour	No sheen	Grab
		12/09/2022	14:35	2.30	50360	9.03	-214.8	-20.8	31.5	Turbid	Brown	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
		05/04/2023	14:28	5.24	39,699	7.19	74.1	268.1	30.7	Low	Brown 7.5YR 4/3	No odour	No sheen	Tidal water body. Sample collected with sampling pole and stainless steel cup below the surface of the water
Former WWII RAN Fuel Installation														
0009	SW036	1/10/2020	09:00	5.34	55489	7.53	161.5	355.5	24.3	Low	Light Olive Brown	No odour	No sheen	Grab
		7/04/2021	08:29	5.70	41952	6.84	263.7	457.7	27.6	Turbid	Light Olive Brown	No odour	No sheen	Grab
		27/10/2021	08:15	4.99	41022	7.39	210.3	404.3	27.1	Low	Brown	No odour	Slight oil sheen	Grab
		4/04/2022	7:48	5.23	21326	6.73	233.5	427.5	26.9	Low	Pale yellow	No odour	No sheen	Grab
		12/09/2022	12:03	2.67	52384	8.10	-200.9	-6.9	36.4	Low	Brown	No odour	No sheen	Tidal water body (Saltwater Creek). Sample collected with sampling pole and stainless steel cup below the surface of the water
		05/04/2023	10:17	5.16	37,040	7.16	232.9	426.9	30.0	Medium	Light Olive Brown 2.5Y 5/4	No odour	No sheen	Tidal water body (Saltwater Creek). Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW100	1/10/2020	08:00	4.37	55941	6.98	149.8	343.8	22.8	Low	Light Olive Brown	No odour	Biosheen Appearance	Grab
		7/04/2021	09:05	6.07	42157	7.72	166	360.0	27.8	Turbid	Yellowish Brown	No odour	No sheen	Grab
		27/10/2021	09:06	5.65	39211	7.87	134.4	328.4	27.5	Low	Brown	No odour	No sheen	Grab
		4/04/2022	9:20	6.67	15910	6.81	57.6	251.6	27.5	Low	Pale yellow	No odour	No sheen	Grab
		13/09/2022	15:58	3.22	37529	7.01	-78.2	115.8	28.1	Low	Brown	No odour	No sheen	Tidal water body (Saltwater Creek). Sample collected with sampling pole and stainless steel cup below the surface of the water
		05/04/2023	11:39	5.60	15,903	6.89	45	239.0	29.3	Medium	Brown 7.5YR 4/3	No odour	No sheen	Tidal water body (Saltwater Creek). Sample collected with sampling pole and stainless steel cup below the surface of the water
0009	SW101	1/10/2020	08:10	3.71	1243	7.25	78	272.0	22.5	Low	Light Olive Brown	No odour	No sheen	Grab
		7/04/2021	09:10	3.65	1568	8.04	109.6	303.6	26.4	Low	Dark Reddish Brown	No odour	No sheen	Grab
		27/10/2021	09:11	4.87	2075	7.93	42.6	236.6	25.6	Clear	Dark red brown	No odour	No sheen	Grab
		4/04/2022	9:23	1.72	1026	7.27	-25	169.0	25.2	Low	Yellow to brown	No odour	No sheen	Grab
		13/09/2022	15:41	3.17	467.4	6.44	-32.6	161.4	24.9	Clear	Pale yellow	No odour	No sheen	Pond in Botanical Gardens. Sample collected with sampling pole and stainless steel cup below the surface of the water
		05/04/2023	11:21	3.40	1,427	6.39	49.1	243.1	27.3	Low	Light Olive Brown 2.5Y 5/4	No odour	No sheen	Pond in Botanical Gardens. Sample collected with sampling pole and stainless steel cup below the surface of the water

mbtoc	metres below top of casing	mg/L	milligrams per litre
mAHD	metres above Australian Height Datum	µS/cm	microsiemens per centimetre
DO	Dissolved Oxygen	mV	millivolt
EC	Electrical Conductivity	°C	degrees Celsius
ORP	Oxidation Reduction Potential	-	no data collected
Temp	Temperature		

Table T4: Surface Water Analytical Results

				(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids										Perfluoroalkyl Sulfonic Acids						PFAS Sums	
				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)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFO	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOS	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctanoic acid (PFOA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorododecane sulfonic acid (PFDS)	Perfluorobutane sulfonic acid (PFBS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Sum of PFAS
		Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.005	0.001	0.001	0.005	0.005	0.005	0.005	0.005	0.005	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	0.001	0.0001	0.001	0.005
PFAS NEMP 2020 Freshwater 95% and Interim Marine 95%																								***220***						***0.13***		
NHMRC (2019) PFAS Recreational Water																								**10**						**2**		
Property ID	**Location Code**	**Field ID**	**Date**																													
HMAS Cairns																																
0009	SW030	0009_SW022_200930	30/09/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	0.06	0.02	<0.05	<0.02	<0.02	<0.02	0.04	0.02	0.30	0.03	<0.02	0.03	***1.24***	1.54	1.74
		0009_SW030_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	0.05	<0.02	<0.02	<0.02	***0.15***	0.20	0.20
		0009_SW030_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	0.02	0.02	0.02
		0009_SW030_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	0.01	0.01	0.01
		0009_SW030_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	0.05	0.14	0.05	<0.05	<0.02	<0.02	<0.02	0.09	0.08	0.76	0.06	<0.02	0.07	***2.29***	**3.05**	3.59
		0009_SW030_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	0.07	<0.02	<0.02	<0.02	***0.26***	0.33	0.33
0009	SW031	0009_SW023_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	0.01	0.01	0.01
		0009_SW031_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW031_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	0.01	0.01	0.01
		0009_SW031_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW031_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.06	0.06
		0009_SW031_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	0.03	<0.02	<0.02	<0.02	***0.14***	0.17	0.17
0009	SW032	HCSW01_190404	4/04/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.001	<0.001	0.006	0.018	0.008	<0.001	<0.001	<0.001	<0.001	0.014	0.006	0.084	0.008	<0.001	0.004	***0.38***	0.464	0.535
		0009_SW021_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW032_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.04	0.04
		0009_SW032_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW032_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW032_22913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW032_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
0009	SW033	HCSW04_190404	4/04/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.001	0.003	0.004	0.004	<0.001	<0.001	<0.001	0.001	0.007	<0.001	0.006	<0.001	<0.001	<0.001	0.025	0.031	0.053
		HCSW05_190404	4/04/2019	<0.001	0.005	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.001	<0.001	0.008	0.023	0.018	<0.001	<0.001	0.002	0.005	0.009	0.003	0.084	0.006	<0.001	0.004	***0.25***	0.334	0.427
		0009_SW024_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW033_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.03	0.03
		0009_SW033_211028	28/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW033_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW033_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW033_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	0.01	0.01	0.01
0009	SW034	HCSW06_190404	4/04/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	0.003	0.01	0.01	<0.001	<0.001	<0.001	0.002	0.004	0.001	0.033	0.002	<0.001	0.002	0.094	0.127	0.162
		HCSW5_190617	17/06/2019	<0.001	0.007	0.002	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.012	<0.001	<0.001	0.012	0.038	<0.05	0.016	<0.001	<0.001	0.003	0.012	0.005	0.064	0.006	<0.001	0.005	***0.28***	0.344	0.462
		HCSW5_190617_TOPA	17/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	0.02	0.11	0.04	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.08	<0.01	<0.01	<0.01	***0.25***	0.33	0.51
		0009_SW025_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.02	0.02
		0009_SW034_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	0.03	<0.02	<0.02	<0.02	0.09	0.12	0.12
		0009_SW034_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW034_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	0.02	0.02	0.02
		0009_SW034_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.06	<0.02	<0.06	<0.02	<0.06	<0.02	<0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		0009_SW034_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	0.07	<0.02	<0.02	<0.02	***0.14***	0.21	0.21
0009	SW035	HCSW6_190617	17/06/2019	<0.001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.001	<0.001	0.009	0.031	<0.05	<0.001	<0.001	<0.001	0.003	0.008	0.001	0.053	0.004	<0.001	0.003	***0.16***	0.213	0.281
		HCSW6_190617_TOPA	17/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	0.01	0.08	0.03	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.06	<0.01	<0.01	<0.01	***0.20***	0.26	0.39
		0009_SW026_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.05	0.05
		0009_SW035_210407	7/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.05	0.05
		0009_SW035_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW035_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	0.04	<0.02	<0.02	<0.02	0.07	0.11	0.11
		0009_SW035_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	0.02	0.02	0.02
		0009_SW035_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	0.06	<0.02	<0.02	<0.02	***0.14***	0.20	0.20

Table T4: Surface Water Analytical Results

				(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids										Perfluoroalkyl Sulfonic Acids						PFAS Sums	
				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)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFO	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOS	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluorooctanoic acid (PFOA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutane sulfonic acid (PFBS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Sum of PFAS
		Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	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	0.005	0.001	0.001	0.005	0.005	0.005	0.005	0.005	0.005	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	0.001	0.001	0.0001	0.001	0.005
PFAS NEMP 2020 Freshwater 95% and Interim Marine 95%																								***220***						***0.13***		
NHMRC (2019) PFAS Recreational Water																								**10**							**2**	
Property ID	**Location Code**	**Field ID**	**Date**																													
Former WWII RAN Fuel Installation																																
0009	SW036	SW08_190513	13/05/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<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	<0.001	0.003	0.004	0.006
		SW08_190618	18/06/2019	<0.001	<0.005	0.013	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	0.002	0.002	<0.001	<0.001	<0.001	0.001	<0.001	0.002	<0.001	<0.001	<0.001	0.0057	0.0077	0.0257
		SW08_190618_TOPA	18/06/2019	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.01	0.01	0.01	<0.1
		BIO05_200303	3/03/2020	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	0.0087	0.0107	0.0157
		0009_SW008_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW036_210408	8/04/2021	<0.05	0.08	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	0.08
		0009_SW036_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW036_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW036_220912	12/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW036_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
0009	SW100	SW20_190912	12/09/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<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	0.002	<0.001	<0.001	<0.001	0.0037	0.0057	0.0057
		0009_SW020_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW100_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW100_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	0.01	0.01	0.01
		0009_SW100_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW100_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW100_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
0009	SW101	SW17_190912	12/09/2019	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<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	0.002	<0.001	<0.001	<0.001	0.0034	0.0054	0.0064
		BIO07_200305	5/03/2020	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	0.001	0.01	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.001	<0.001	<0.001	<0.001	0.0078	0.0088	0.0218
		0009_SW017_201001	1/10/2020	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW101_210408	8/04/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW101_211027	27/10/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	0.01	0.01	0.01
		0009_SW101_220404	4/04/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW101_220913	13/09/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
		0009_SW101_230405	5/04/2023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01

Environmental Standards

HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
HEPA, January 2020, PFAS NEMP 2020 Recreational Water

Table T5: Sediment Observations

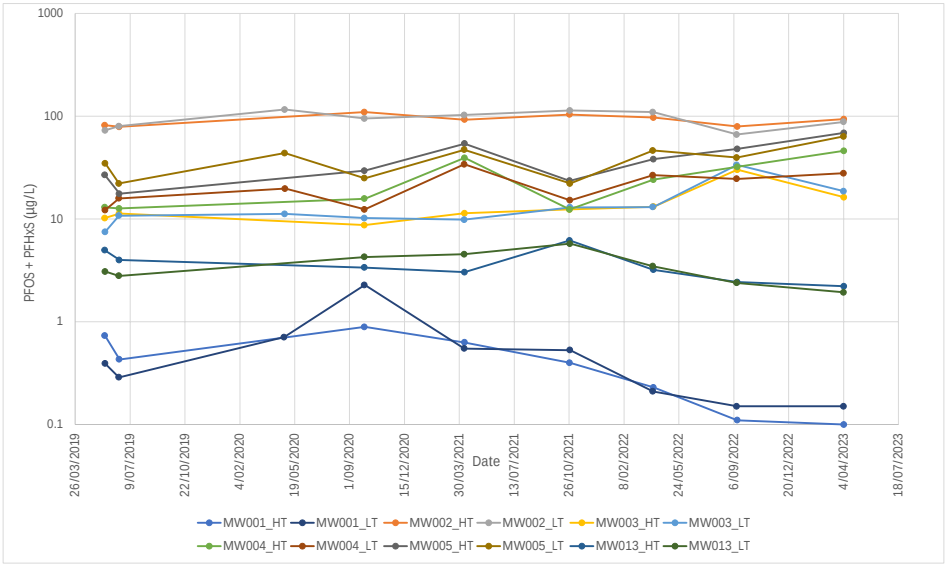
Property ID	Location ID	Sample Date	Sample Time	Sample Description	Odour	Sheen	Sample Method/Depth
HMAS Cairns							
0009	SD030	30/09/2020	14:45	sandy SILT, black, with fine to medium sands and some shells, wet	No odour	No sheen	Grab
		7/04/2021	14:40	sandy CLAY, medium plasticity, medium sands, grey, soft, shell presence, low organic content, saturated	No odour	No sheen	Grab
		27/10/2021	11:20	SAND, medium to course sands, loose, saturated, yellow to light brown, high shell content, trace coarse sub angular to sub rounded gravel.	No odour	No sheen	Grab
		4/04/2022	10:58	Sandy GRAVEL, loose, poorly graded fine angular gravels and medium to course sands, saturated, yellow to light brown, high shell content.	No odour	No sheen	Grab
		12/09/2022	15:20	Silty Sandy CLAY, soft, brown, low plasticity, with some organics (leaves and roots), wet.	No odour	No sheen	0.1 m
		05/04/2023	13:15	Silty SAND, loose, brown, subangular, fine grained, saturated	No odour	No sheen	0.1 m
0009	SD031	1/10/2020	10:45	SAND, yellow/brown, medium grained sands with some shells and shell grit throughout, wet	No odour	No sheen	Grab
		7/04/2021	14:50	clayey SAND, medium sands, brown orange, loose, shell presence, low organic content, no odour, saturated	No odour	No sheen	Grab
		27/10/2021	11:30	SAND, medium to course sands, loose, saturated, yellow to light brown, high shell content, trace coarse sub angular to sub rounded gravel.	No odour	No sheen	Grab
		4/04/2022	10:57	Sandy GRAVEL, loose, poorly graded fine angular gravels and medium to course sands, saturated, yellow to light brown, high shell content.	No odour	No sheen	Grab
		12/09/2022	15:12	Silty Sandy CLAY, soft, brown, low plasticity, with some organics (leaves and roots), wet.	No odour	No sheen	0.1 m
		05/04/2023	13:30	Silty SAND, very loose, brown, subangular, fine grained, saturated	No odour	No sheen	0.1 m
0009	SD032	1/10/2020	11:20	silty CLAY, dark grey/brown, some grey organic mottling and red mottling, trace shells, very soft (low organic content)	No odour	No sheen	Grab
		7/04/2021	15:18	clayey SILT, grey/brown, soft, trace fine sands, low organic content, organic odour, saturated	Organic odour	No sheen	Grab
		28/10/2021	07:38	sandy silty CLAY, low to medium plasticity, firm, saturated, dark brown, grey, black, medium to coarse grained sand, trace of shells, layer of algae on top (mangrove mud).	Organic odour	No sheen	Grab
		4/04/2022	12:39	Gravelly Silty CLAY, low to medium plasticity, dark brown, firm, saturated, with some fine angular gravels.	No odour	No sheen	Grab
		13/09/2022	9:04	Sandy Silty CLAY, soft, brown, low plasticity, fine to medium sub-angular to sub-rounded sand, with organics (leaves and roots), saturated.	No odour	No sheen	0.1 m
		05/04/2023	16:50	Silty CLAY, very soft, brown, medium plasticity with fin grained, subangular sand, saturated	No odour	No sheen	0.1 m
0009	SD033	1/10/2020	11:40	silty CLAY, dark grey/black, with some sub rounded medium grain gravels, very soft (medium organic content)	No odour	No sheen	Grab
		7/04/2021	15:30	clayey SILT, grey/black, soft, trace fine sand, high organic content, saturated	No odour	No sheen	Grab
		28/10/2021	07:54	silty CLAY, low to medium plasticity, soft, saturated, dark brown to grey, layer of algae (mangrove mud).	No odour	No sheen	Grab
		4/04/2022	12:52	Gravelly Silty CLAY, low to medium plasticity, dark brown, firm, saturated, with some fine angular gravels.	No odour	No sheen	Grab
		13/09/2022	9:30	Sandy Silty CLAY, soft, brown, low plasticity, fine to medium sub-angular to sub-rounded sand, with organics (leaves and roots), saturated.	No odour	No sheen	0.1 m
		05/04/2023	17:00	Silty CLAY, very soft, brown/black, medium plasticity with fin grained, subangular sand, saturated	No odour	No sheen	0.1 m
0009	SD034	1/10/2020	12:10	sandy CLAY, dark grey/brown, fine sands, some medium subrounded gravels, some reddish brown mottles	No odour	No sheen	Grab
		7/04/2021	11:35	sandy gravelly SILT and sandy gravelly CLAY, low plasticity with coarse medium grained gravels, dark grey/brown, soft, some organics and shell grit, medium organic content, wet	No odour	No sheen	Grab
		27/10/2021	12:00	silty CLAY, low to medium plasticity, firm, saturated, dark brown, layer of algae on top (mangrove mud).	Organic odour	No sheen	Grab
		4/04/2022	12:24	Gravelly Silty CLAY, low to medium plasticity, dark brown, firm, saturated, with some fine angular gravels.	No odour	No sheen	Grab
		12/09/2022	14:07	Silty CLAY, soft, brown, low plasticity, highly organic (leaves and roots), wet.	No odour	No sheen	0.1 m
		05/04/2023	14:08	Silty CLAY, very soft, brown, medium plasticity with fin grained, subangular sand, saturated	No odour	No sheen	0.1 m
0009	SD035	1/10/2020	12:00	silty sandy CLAY, dark grey/brown, fine sands, some medium grain gravels and subrounded cobbles, trace shells (low organic content)	No odour	No sheen	Grab
		7/04/2021	11:46	silty gravelly CLAY, medium plasticity, grey/brown, soft	Organic odour	No sheen	Grab
		27/10/2021	12:14	silty CLAY, low to medium plasticity, firm, saturated, dark brown, layer of algae on top (mangrove mud).	Organic odour	No sheen	Grab
		4/04/2022	12:08	Gravelly Silty CLAY, low to medium plasticity, dark brown, firm, saturated, with some fine angular gravels.	No odour	No sheen	Grab
		12/09/2022	14:35	Gravelly CLAY, soft, brown, low plasticity, medium sub-angular gravels, highly organic (leaves and roots), wet.	No odour	No sheen	0.1 m
		05/04/2023	14:24	Silty CLAY, very soft, brown, medium plasticity with fin grained, subangular sand, saturated	No odour	No sheen	0.1 m
Former WWII RAN Fuel Installation							
0009	SD036	1/10/2020	09:00	CLAY, dark grey, with some medium grain angular gravels, wet (low organic content)	No odour	No sheen	Grab
		7/04/2021	08:29	gravelly CLAY, medium to coarse angular gravels, low to medium plasticity, grey brown, high organic content, decaying leaves and organic matter	No odour	No sheen	Grab
		27/10/2021	08:14	silty CLAY, low plasticity, firm, moist, dark brown (mangrove mud).	No odour	No sheen	Grab
		8/12/2021	08:45	silty CLAY, medium plasticity, wet, grey/brown, soft. Contained organic content.	No odour	No sheen	Trowel
		4/04/2022	7:48	Silty CLAY, high plasticity, dark brown, soft, wet, with some organics (rootlets)	No odour	No sheen	Grab
		12/09/2022	12:03	Silty CLAY, soft, brown, low plasticity, highly organic (leaves and roots), wet.	No odour	No sheen	0.1 m
		05/04/2023	10:00	Silty CLAY, very soft, brown, medium plasticity, saturated	No odour	No sheen	0.1 m
0009	SD100	1/10/2020	08:00	gravelly CLAY, reddish brown, fine to coarse sub-angular gravels and sands, moist, some sub angular cobbles	No odour	No sheen	Grab
		7/04/2021	09:05	silty clayey GRAVEL, medium to coarse angular gravels, yellowish brown, saturated, loose	No odour	No sheen	Grab
		27/10/2021	08:53	silty CLAY, low to medium plasticity, firm, wet, dark brown.	No odour	No sheen	Grab
		4/04/2022	9:20	Silty CLAY, high plasticity, dark grey to brown, firm, wet, with some organics (rootlets and leaves)	No odour	No sheen	Grab
		13/09/2022	15:58	Sandy CLAY, soft, grey, low plasticity, medium sun-angular sand, wet.	No odour	No sheen	0.1 m
		05/04/2023	11:40	Silty CLAY, very soft, brown, medium plasticity, saturated	No odour	No sheen	0.1 m
0009	SD101	1/10/2020	08:10	silty GRAVEL, dark grey/brown, medium grain angular to sub-angular gravels, wet (high organic content)	No odour	No sheen	Grab
		7/04/2021	09:10	GRAVEL, fine to medium angular gravels, grey, loose	No odour	No sheen	Grab
		27/10/2021	09:10	sandy GRAVEL, fine angular gravel, dark brown, orange, light brown gravels, medium to course sands, loose, saturated , trace organics (roots).	No odour	No sheen	Grab
		4/04/2022	9:23	Sandy GRAVEL, loose, poorly graded fine angular gravel, dark brown, medium to course sands, saturated, with a trace of organics (roots and leaves).	No odour	No sheen	Grab
		13/09/2022	15:41	Gravelly Clayey SAND, loose, light brown to brown, fine to medium sub-rounded sand, fine gravel, with organics (leaves and roots), saturated.	No odour	No sheen	0.1 m
		05/04/2023	11:20	Sandy GRAVEL, Loose, grey, fine to coarse, angular to subangular grained. Sand.	No odour	No sheen	0.1 m

Table T6: Sediment Analytical Results

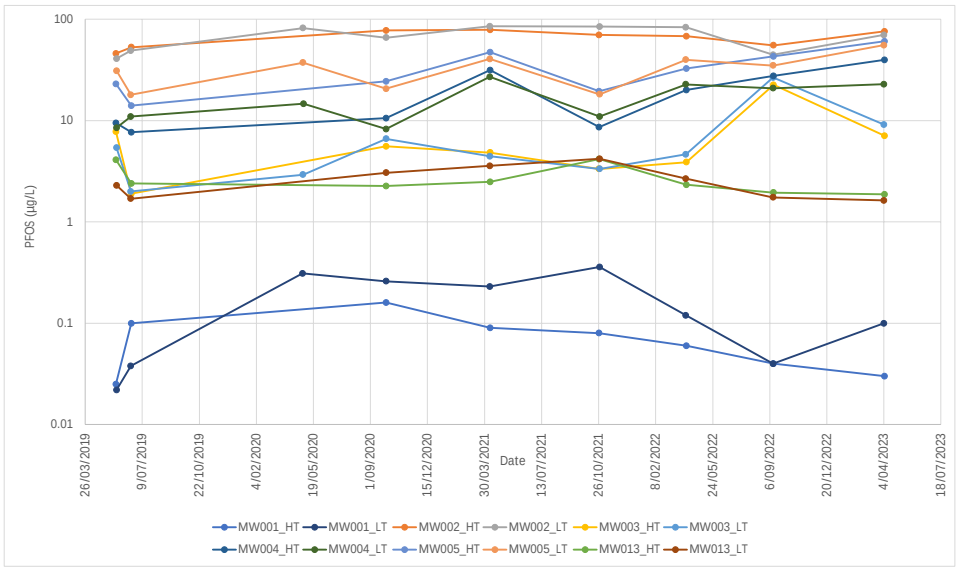
				(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids											Perfluoroalkyl Sulfonic Acids					PFAS Sums	
				4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctanoic Acid (PFOA)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononanoic acid (PFNA)	Perfluoropentanoic acid (PFPeA)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFOS+PFHxS	Sum of PFAS
			Units	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	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.0005	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Property ID	Location ID	Sample ID	Date																													
HMAS Cairns																																
0009	SD030	HCSW2_SD	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		HCSW2_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.02	0.02	<0.05
		0009_SD020_200930	30/09/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	0.0026	0.003	0.003
		0009_SD030_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	0.0006	0.0115	0.0121	0.0129
		0009_SD030_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	0.0047	0.0047	0.005
		0009_SD030_220404	4/04/2022	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001	<0.0002	0.0076	0.0076	0.0094
		0009_SD030_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	0.0039	0.0046	0.0046
		0009_SD030_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0034	0.0036	0.0036
0009	SD031	HCSW3_SD	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		HCSW3_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		0009_SD021_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001	0.001	0.001
		0009_SD031_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	0.0024	0.0024	0.0027
		0009_SD031_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002	0.002	0.002
		0009_SD031_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0004	0.0243	0.0247	0.025
		0009_SD031_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0046	0.0049	0.0049
		0009_SD031_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0003	0.0003	0.0046	0.0049	0.0049
0009	SD032	HCSW01_190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		HCSW1_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		0009_SD019_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	0.0006	0.0006
		0009_SD032_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0024	0.0024	0.0024
		0009_SD032_211028	28/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003
		0009_SD032_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001	0.001	0.001
		0009_SD032_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0014	0.0014	0.0014
		0009_SD032_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0014	0.0014	0.0014
0009	SD033	HCSW05_190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		HCSW4_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		0009_SD022_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	0.0005	0.0005
		0009_SD033_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	0.0005	0.0005
		0009_SD033_211028	28/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	0.0005	0.0005
		0009_SD033_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	0.0006	0.0006
		0009_SD033_220913	13/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	0.0004	0.0004
		0009_SD033_230405	5/04/2023	<0.0005	0.0607	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	0.0008	0.0615
0009	SD034	HCSW06_190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		HCSW5_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		0009_SD023_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	0.0006	0.0006
		0009_SD034_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.001	0.0012	0.0012	0.0012
		0009_SD034_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	0.0006	0.0006
		0009_SD034_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002	0.002	0.0022	
		0009_SD034_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	0.0005	0.0005
		0009_SD034_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0015	0.0015	0.0015
0009	SD035	HCSW06_20190404_SD	4/04/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		HCSW6_SD_0.0-0.1_190617	17/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		0009_SD024_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	0.0007	0.0007
		0009_SD035_210407	7/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0009	0.0009	0.0009
		0009_SD035_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	0.0007	0.0007
		0009_SD035_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0016	0.0016	0.0018
		0009_SD035_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0019	0.0019	0.0019
		0009_SD035_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0009	0.0009	0.0009
Former WWII RAN Fuel Installation																																
0009	SD036	SD08_190513	13/05/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		SW08_SD_0-0.1	18/06/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		0009_SD008_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		0009_SD036_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		0009_SD036_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	0.0006	0.0008
		0009_SD036_211208	8/12/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	0.0007	0.0009
		0009_SD036_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	0.0003	<0.001	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	0.0008	0.0011
		0009_SD036_220912	12/09/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0002	0.0002
		0009_SD036_230405	5/04/2023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	0.0007	0.0009
0009	SD100	SW20_190912_SD	12/09/2019	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
		0009_SD100_201001	1/10/2020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		0009_SD100_210408	8/04/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0003	0.0003	0.0003	0.0003
		0009_SD100_211027	27/10/2021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	0.0006	0.0006
		0009_SD100_220404	4/04/2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	0.0002

Appendix D

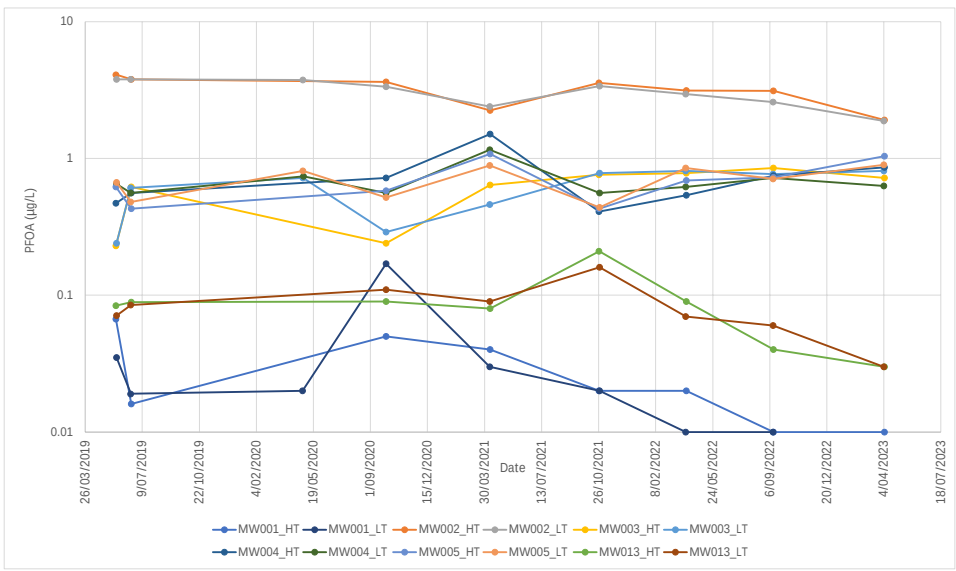
Graphs



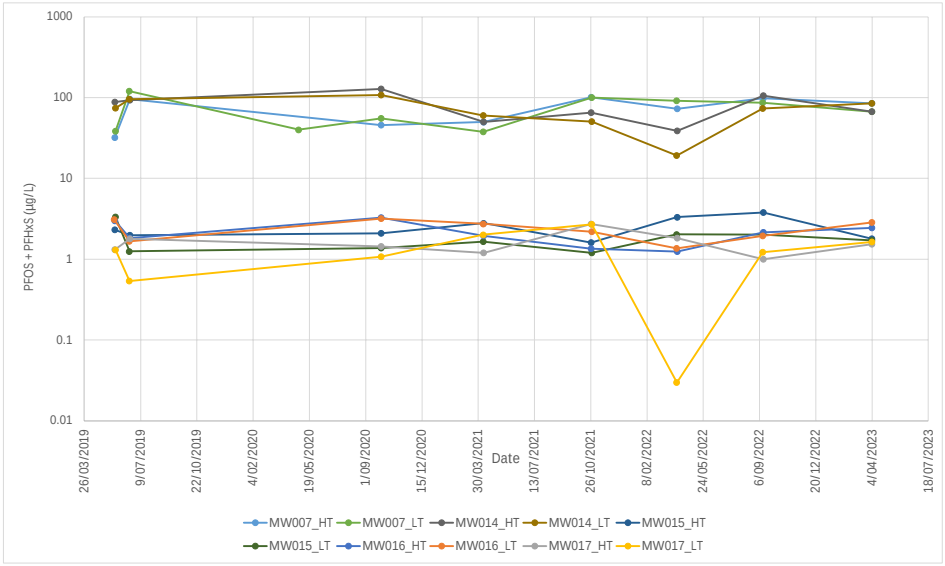
Graph 1: PFOS+PFHxS concentrations - HMAS Cairns - Defence Fuel Installation



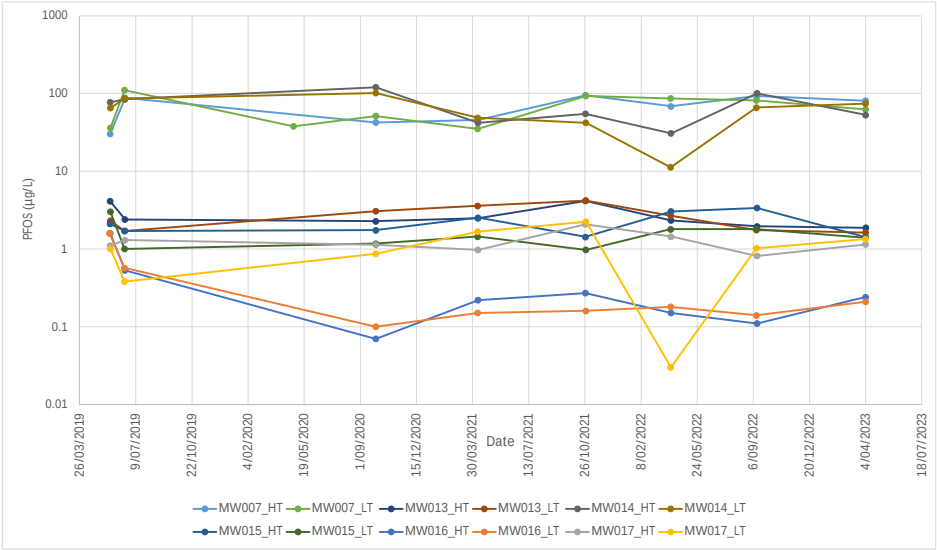
Graph 2: PFOS concentrations - HMAS Cairns - Defence Fuel Installation



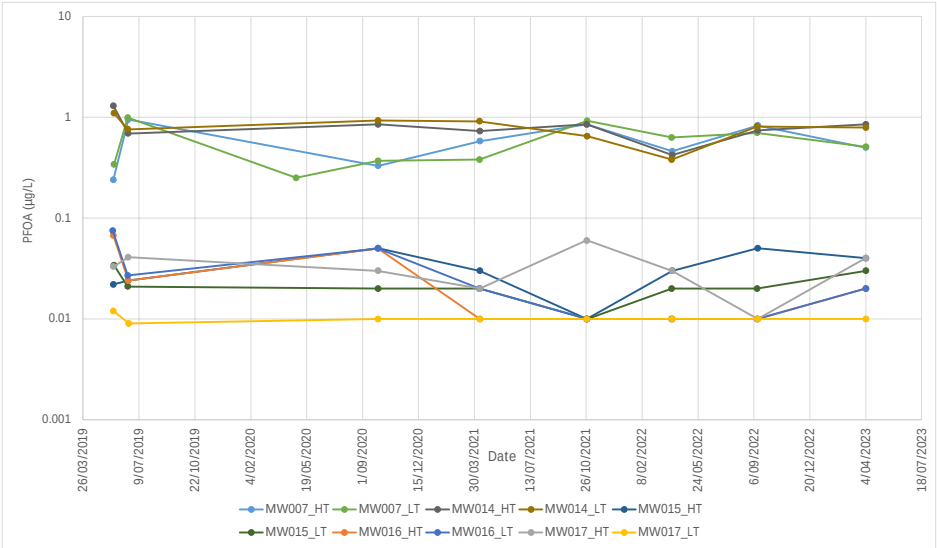
Graph 3: PFOA concentrations - HMAS Cairns - Defence Fuel Installation



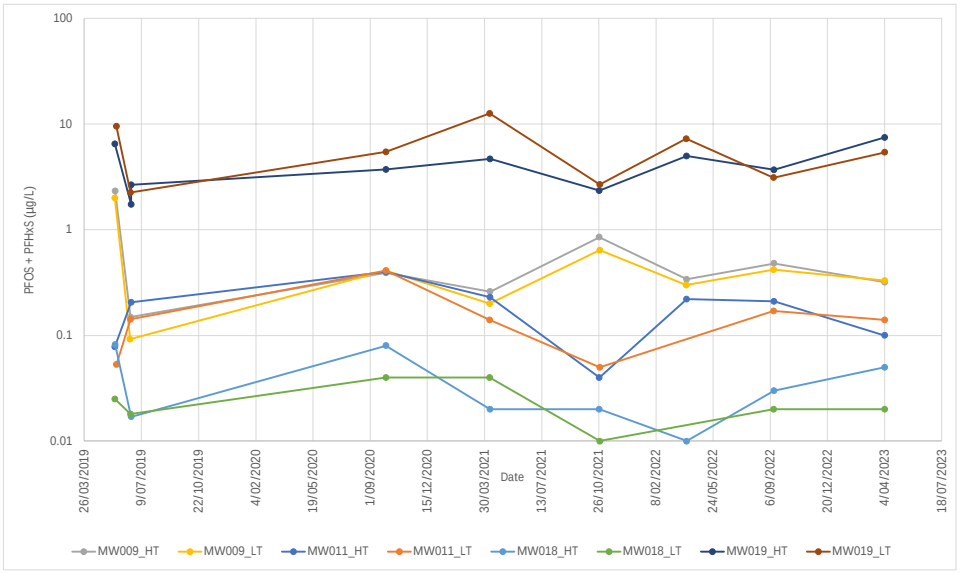
Graph 4: PFOS+PFHxS concentrations - HMAS Cairns - North of Building 0016



Graph 5: PFOS concentrations - HMAS Cairns - North of Building 0016

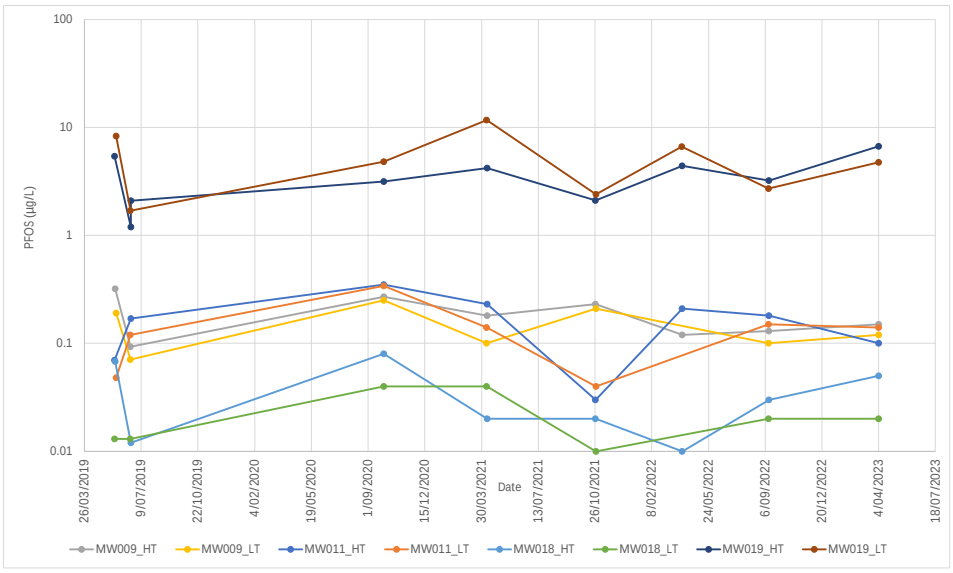


Graph 6: PFOA concentrations - HMAS Cairns - North of Building 0016



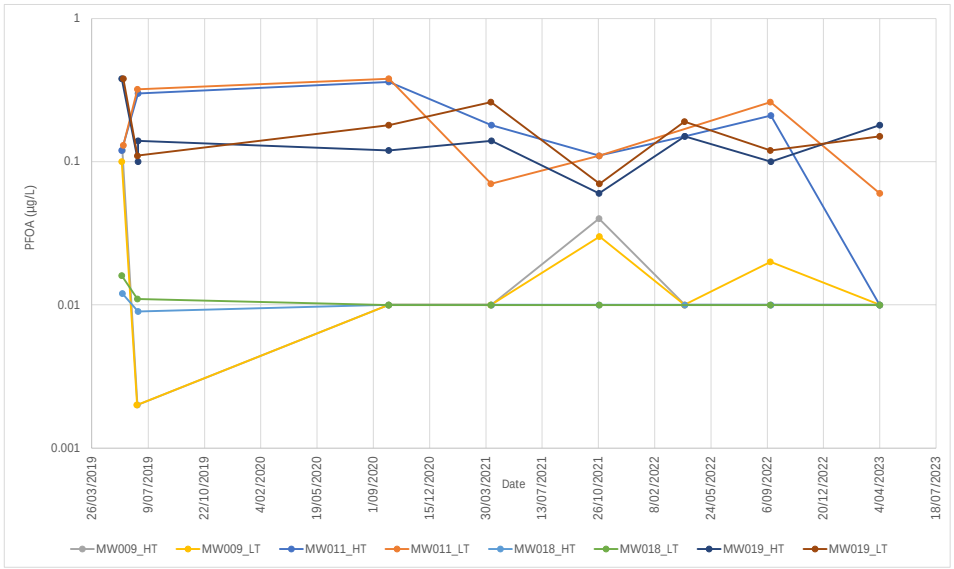
AECOM

Graph 7: PFOS+PFHxS concentrations - HMAS Cairns - South of Building 0016



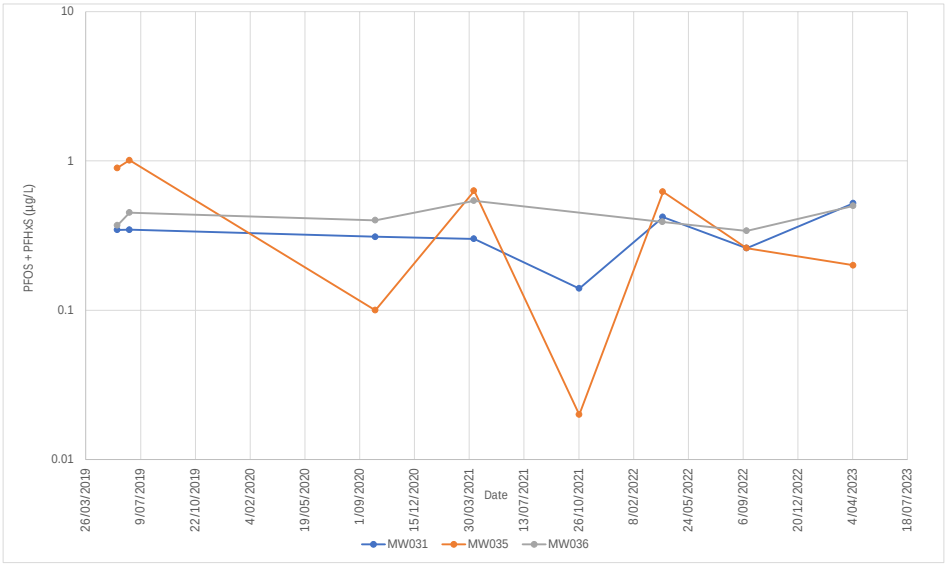
AECOM

Graph 8: PFOS concentrations - HMAS Cairns - South of Building 0016

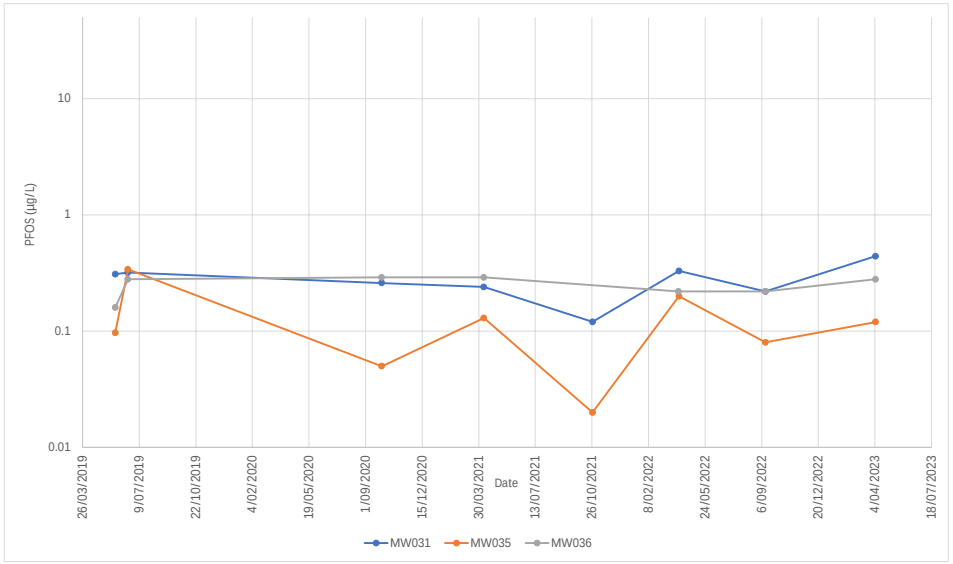


AECOM

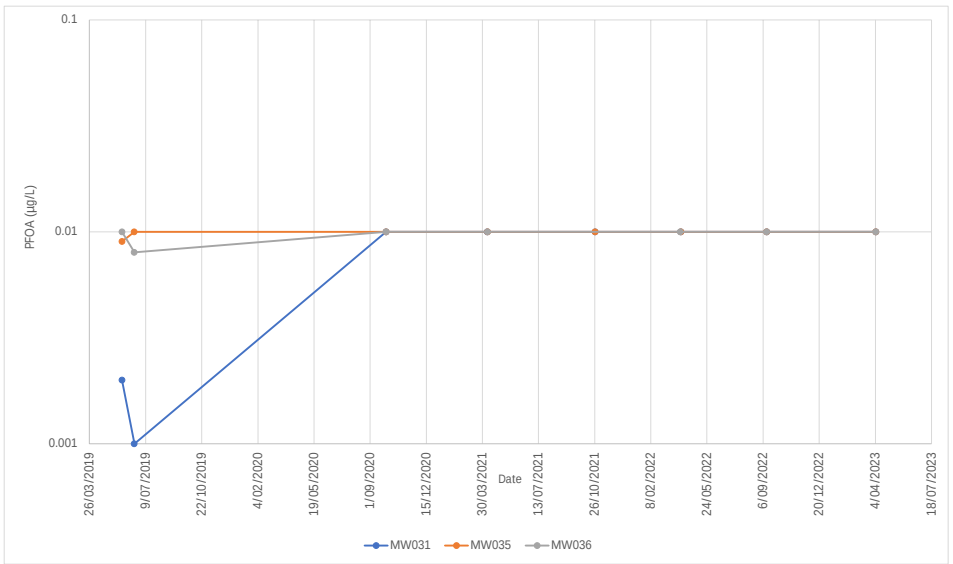
Graph 9: PFOA concentrations - HMAS Cairns - South of Building 0016



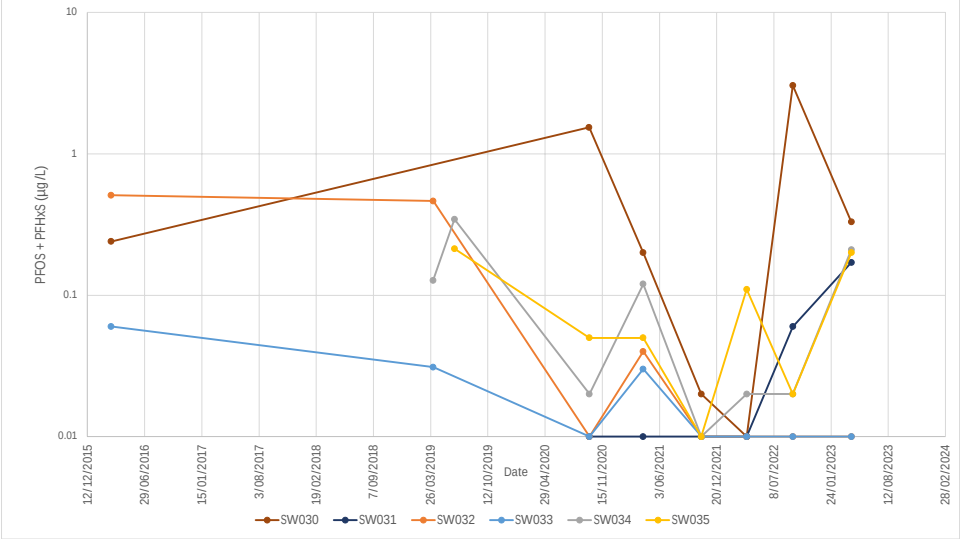
Graph 10: PFOS+PFHxS concentrations - Former WWII RAN Fuel Installation



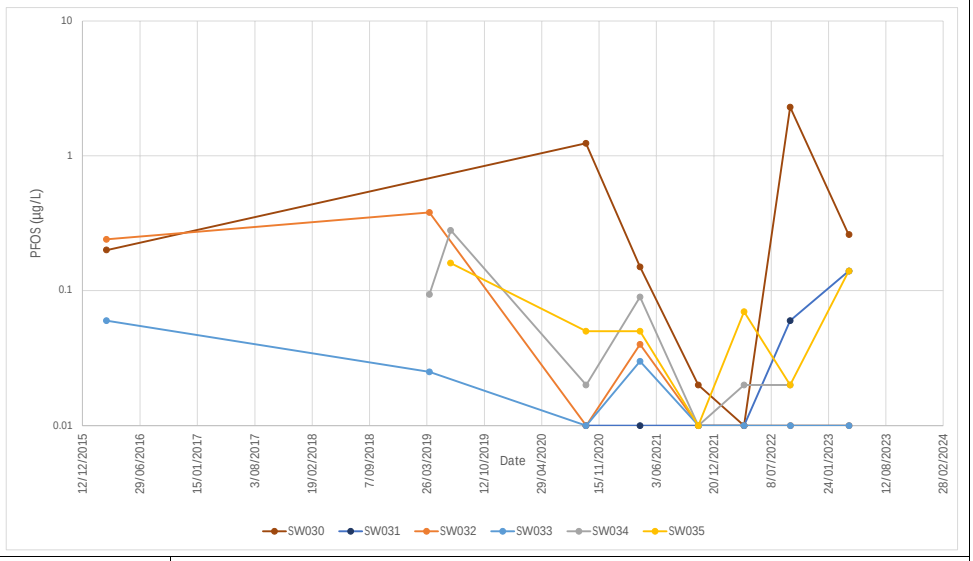
Graph 11: PFOS concentrations - Former WWII RAN Fuel Installation



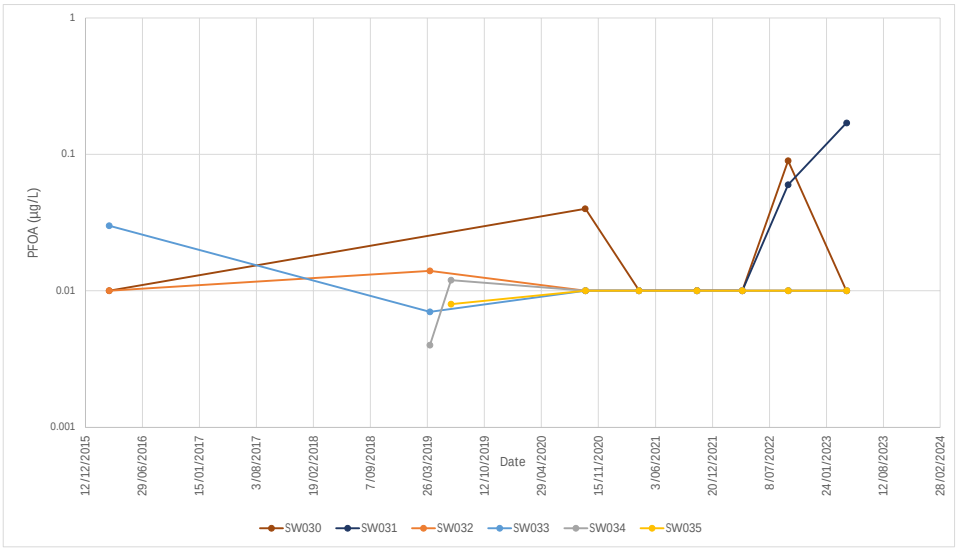
Graph 13: PFOA concentrations - Former WWII RAN Fuel Installation



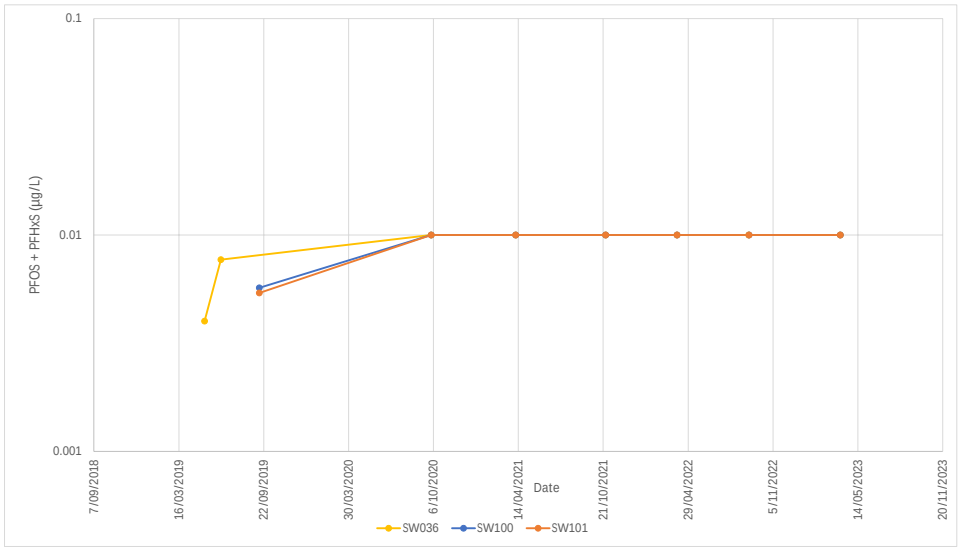
Graph 13: PFOS + PFHxS concentrations - HMAS Cairns



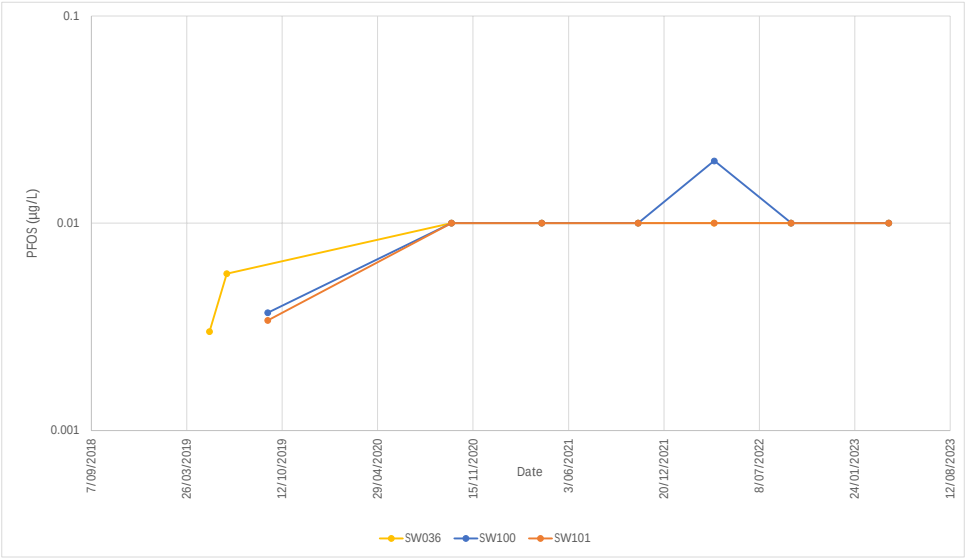
Graph 14: PFOS concentrations - HMAS Cairns



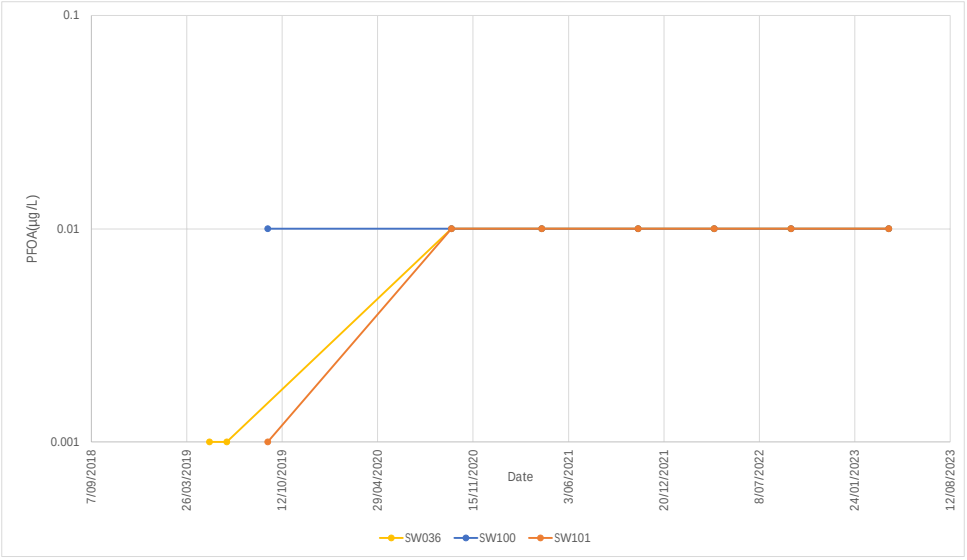
Graph 15: PFOA concentrations - HMAS Cairns



Graph 16: PFOS + PFHxS concentrations - Former WWII RAN Fuel Installation



Graph 17: PFOS concentrations - Former WWII RAN Fuel Installation



Graph 18: PFOA concentrations - Former WWII RAN Fuel Installation

Appendix E

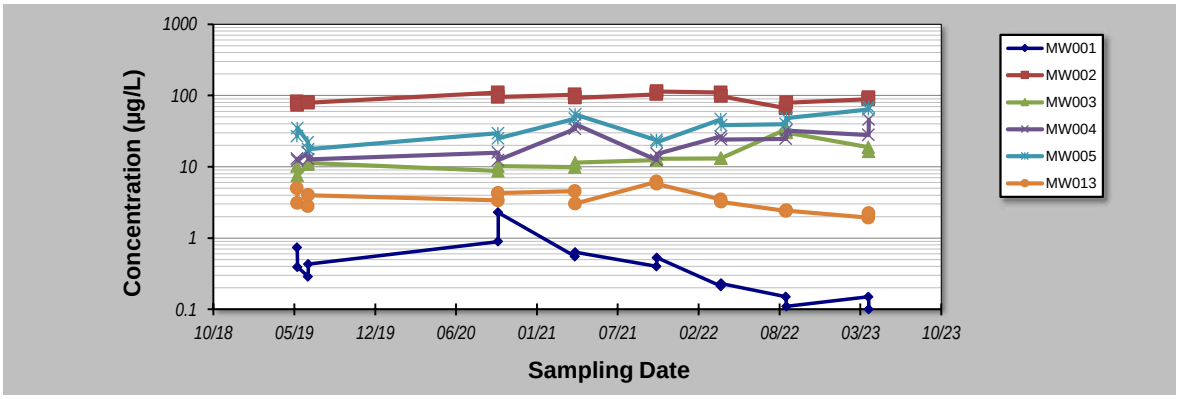
Mann Kendall Analysis

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 3-Aug-23
Facility Name: HMAS Cairns - DFI Source Area
Conducted By: [redacted]

Job ID: 60612487
Constituent: PFOS+PFHxS
Concentration Units: µg/L

Sampling Point ID:	MW001	MW002	MW003	MW004	MW005	MW013	
Sampling Event	Sampling Date	PFOS+PFHXS CONCENTRATION (µg/L)						
1	May-19	0.735	82	10.2	13	26.8	4.97	
2	May-19	0.392	73	7.5	12.2	34.8	3.09	
3	Jun-19	0.288	80	10.8	15.9	22.1	2.8	
4	Jun-19	0.43	79	11.3	12.7	17.6	4	
5	Sep-20	0.89	110	8.74	15.8	29.5	3.37	
6	Sep-20	2.28	95.2	10.2	12.4	25	4.27	
7	Apr-21	0.55	103	9.88	34	47.3	4.55	
8	Apr-21	0.63	92.7	11.4	39.4	54.2	3.04	
9	Oct-21	0.4	104	12.4	12.4	23.6	6.16	
10	Oct-21	0.53	114	13	15.2	22.2	5.74	
11	Apr-22	0.21	110	13.1	26.7	46.4	3.47	
12	Apr-22	0.23	97.4	13.2	24.2	38.2	3.21	
13	Sep-22	0.15	66.3	33.6	24.6	39.7	2.39	
14	Sep-22	0.11	79.5	30.2	32.2	48.1	2.43	
15	Apr-23	0.15	88.3	18.7	27.9	63.4	1.93	
16	Apr-23	0.1	93.9	16.3	45.9	68.8	2.21	
17								
18								
19								
20								
Coefficient of Variation:		1.05	0.16	0.51	0.47	0.41	0.35	
Mann-Kendall Statistic (S):		-67	13	87	57	58	-42	
Confidence Factor:		99.9%	70.3%	>99.9%	99.5%	99.6%	96.8%	
Concentration Trend:		Decreasing	No Trend	Increasing	Increasing	Increasing	Decreasing	



Notes:

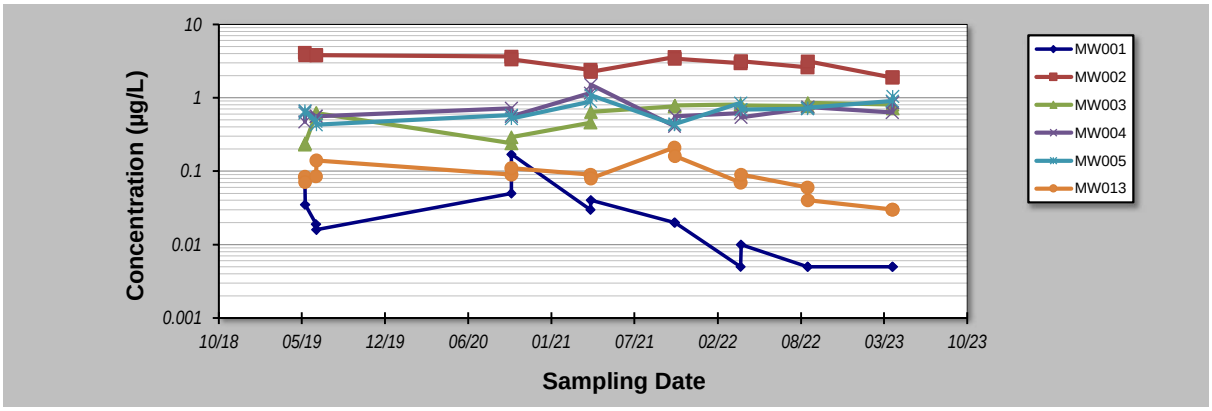
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 3-Aug-23
Facility Name: HMAS Cairns - DFI Source Area
Conducted By: [redacted]

Job ID: 60612487
Constituent: PFOA
Concentration Units: µg/L

Sampling Point ID:	MW001	MW002	MW003	MW004	MW005	MW013	
Sampling Event	Sampling Date	PFOA CONCENTRATION (µg/L)						
1	May-19	0.067	4.1	0.23	0.47	0.62	0.084	
2	May-19	0.035	3.8	0.24	0.65	0.67	0.071	
3	Jun-19	0.019	3.8	0.61	0.56	0.48	0.085	
4	Jun-19	0.016	3.8	0.62	0.56	0.43	0.14	
5	Sep-20	0.05	3.63	0.24	0.72	0.58	0.09	
6	Sep-20	0.17	3.35	0.29	0.56	0.52	0.11	
7	Apr-21	0.03	2.4	0.46	1.16	0.89	0.09	
8	Apr-21	0.04	2.25	0.64	1.51	1.08	0.08	
9	Oct-21	0.02	3.57	0.76	0.41	0.43	0.21	
10	Oct-21	0.02	3.38	0.78	0.56	0.44	0.16	
11	Apr-22	0.005	2.96	0.81	0.62	0.85	0.07	
12	Apr-22	0.01	3.14	0.78	0.54	0.69	0.09	
13	Sep-22	0.005	2.59	0.77	0.72	0.71	0.06	
14	Sep-22	0.005	3.12	0.85	0.75	0.73	0.04	
15	Apr-23	0.005	1.88	0.81	0.63	0.9	0.03	
16	Apr-23	0.005	1.91	0.72	0.86	1.04	0.03	
17								
18								
19								
20								
Coefficient of Variation:		1.31	0.23	0.38	0.39	0.31	0.53	
Mann-Kendall Statistic (S):		-71	-81	81	31	45	-42	
Confidence Factor:		100.0%	>99.9%	>99.9%	91.0%	97.7%	96.8%	
Concentration Trend:		Decreasing	Decreasing	Increasing	Prob. Increasing	Increasing	Decreasing	



Notes:

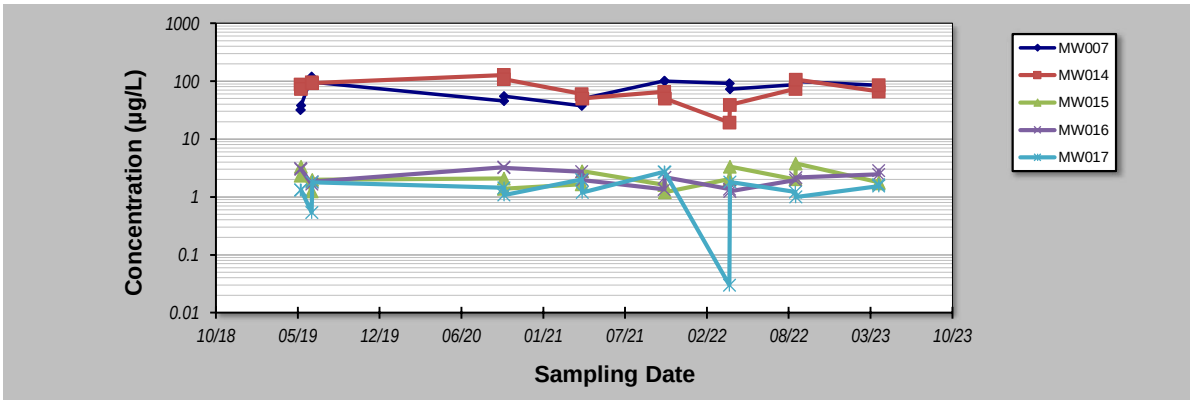
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 3-Aug-23
Facility Name: HMAS Cairns - On-Base North Source Area
Conducted By: [redacted]

Job ID: 60612487
Constituent: PFOS+PFHxS
Concentration Units: µg/L

Sampling Point ID:	MW007	MW014	MW015	MW016	MW017		
Sampling Event	Sampling Date	PFOS+PFHXS CONCENTRATION (µg/L)						
1	May-19	32	88	2.32	3.1	1.32		
2	May-19	38.3	73.9	3.33	3	1.31		
3	Jun-19	119.9	95.7	1.25	1.67	0.54		
4	Jun-19	95.8	92.8	1.98	1.83	1.8		
5	Sep-20	45.5	128	2.09	3.27	1.44		
6	Sep-20	55.2	108	1.38	3.18	1.08		
7	Apr-21	37.6	60	1.65	2.74	2.01		
8	Apr-21	49.8	50	2.79	1.94	1.2		
9	Oct-21	101	65.3	1.61	1.35	2.72		
10	Oct-21	100	50.4	1.20	2.19	2.7		
11	Apr-22	91.5	19.3	2.03	1.37	0.03		
12	Apr-22	72.9	38.8	3.32	1.25	1.82		
13	Sep-22	86.6	73.6	2.02	1.94	1.22		
14	Sep-22	98.4	106	3.78	2.16	1		
15	Apr-23	84.6	66.8	1.79	2.44	1.54		
16	Apr-23	67.2	84.9	1.71	2.86	1.64		
17								
18								
19								
20								
Coefficient of Variation:		0.37	0.38	0.36	0.30	0.47		
Mann-Kendall Statistic (S):		22	-24	0	-19	8		
Confidence Factor:		82.5%	84.7%	48.2%	78.8%	62.2%		
Concentration Trend:		No Trend	Stable	Stable	Stable	No Trend		



Notes:

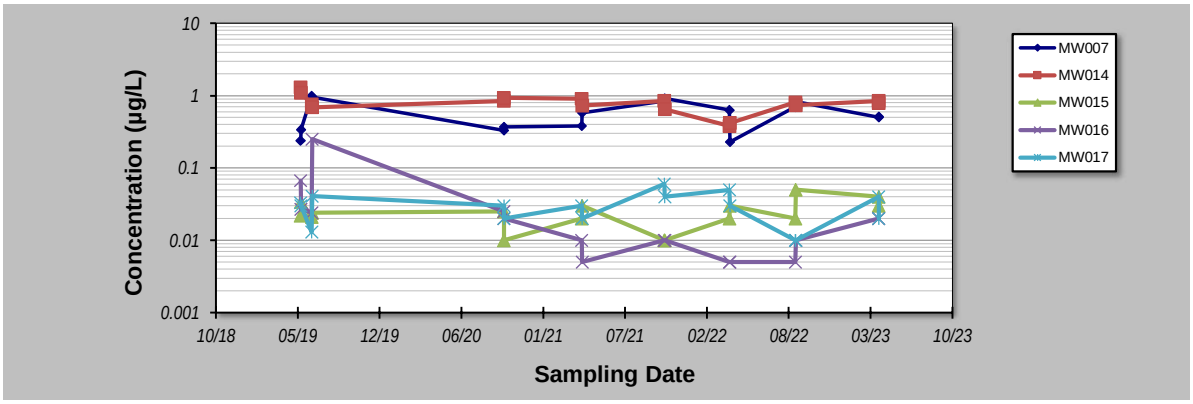
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 3-Aug-23
Facility Name: HMAS Cairns - On-Base North Source Area
Conducted By: [redacted]

Job ID: 60612487
Constituent: PFOA
Concentration Units: µg/L

Sampling Point ID:	MW007	MW014	MW015	MW016	MW017		
Sampling Event	Sampling Date	PFOA CONCENTRATION (µg/L)						
1	May-19	0.24	1.3	0.022	0.067	0.033		
2	May-19	0.34	1.1	0.034	0.027	0.03		
3	Jun-19	0.99	0.76	0.021	0.024	0.013		
4	Jun-19	0.95	0.69	0.024	0.25	0.041		
5	Sep-20	0.33	0.85	0.025	0.025	0.03		
6	Sep-20	0.37	0.93	0.01	0.02	0.02		
7	Apr-21	0.38	0.91	0.02	0.01	0.03		
8	Apr-21	0.58	0.73	0.03	0.005	0.02		
9	Oct-21	0.85	0.85	0.01	0.01	0.06		
10	Oct-21	0.92	0.65	0.01	0.01	0.04		
11	Apr-22	0.63	0.38	0.02	0.005	0.05		
12	Apr-22	0.23	0.42	0.03	0.005	0.03		
13	Sep-22	0.7	0.81	0.02	0.005	0.01		
14	Sep-22	0.83	0.74	0.05	0.01	0.01		
15	Apr-23	0.5	0.85	0.04	0.02	0.04		
16	Apr-23	0.51	0.79	0.03	0.02	0.02		
17								
18								
19								
20								
Coefficient of Variation:		0.45	0.28	0.44	1.87	0.48		
Mann-Kendall Statistic (S):		14	-39	17	-53	-13		
Confidence Factor:		71.8%	95.7%	76.1%	99.1%	70.3%		
Concentration Trend:		No Trend	Decreasing	No Trend	Decreasing	Stable		



Notes:

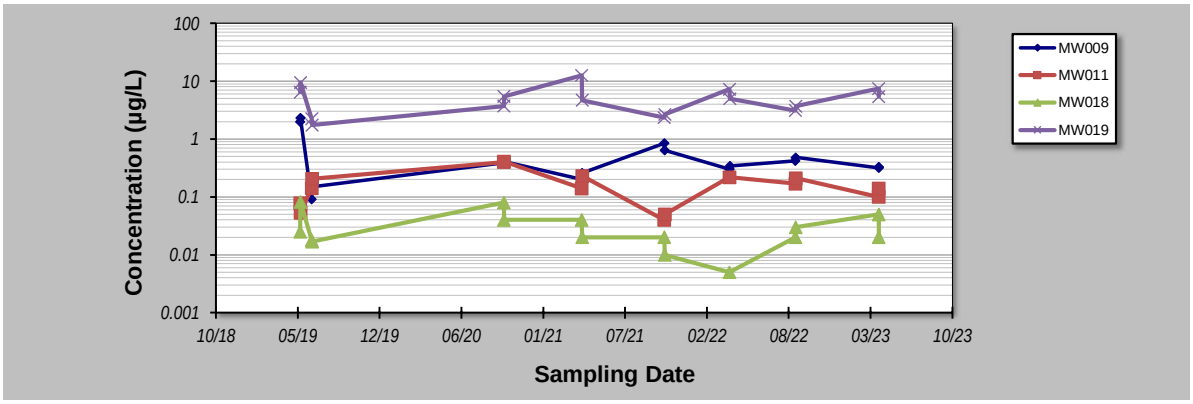
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 3-Aug-23
Facility Name: HMAS Cairns - On-Base South Source Area
Conducted By: [redacted]

Job ID: 60612487
Constituent: PFOS+PFHxS
Concentration Units: µg/L

Sampling Point ID:	MW009	MW011	MW018	MW019			
Sampling Event	Sampling Date	PFOS+PFHXS CONCENTRATION (µg/L)						
1	May-19	1.99	0.078	0.025	6.5			
2	May-19	2.32	0.053	0.082	9.5			
3	Jun-19	0.092	0.142	0.018	2.25			
4	Jun-19	0.149	0.206	0.017	1.74			
5	Sep-20	0.39	0.4	0.08	3.71			
6	Sep-20	0.41	0.41	0.04	5.45			
7	Apr-21	0.2	0.14	0.04	12.6			
8	Apr-21	0.26	0.23	0.02	4.68			
9	Oct-21	0.85	0.04	0.02	2.34			
10	Oct-21	0.64	0.05	0.01	2.68			
11	Apr-22	0.3	0.22	0.005	7.26			
12	Apr-22	0.34	-	-	4.98			
13	Sep-22	0.42	0.17	0.02	3.11			
14	Sep-22	0.48	0.21	0.03	3.7			
15	Apr-23	0.32	0.1	0.05	7.45			
16	Apr-23	0.33	0.14	0.02	5.4			
17								
18								
19								
20								
Coefficient of Variation:		1.08	0.66	0.73	0.56			
Mann-Kendall Statistic (S):		2	0	-16	8			
Confidence Factor:		51.8%	48.0%	76.7%	62.2%			
Concentration Trend:		No Trend	Stable	Stable	No Trend			



Notes:

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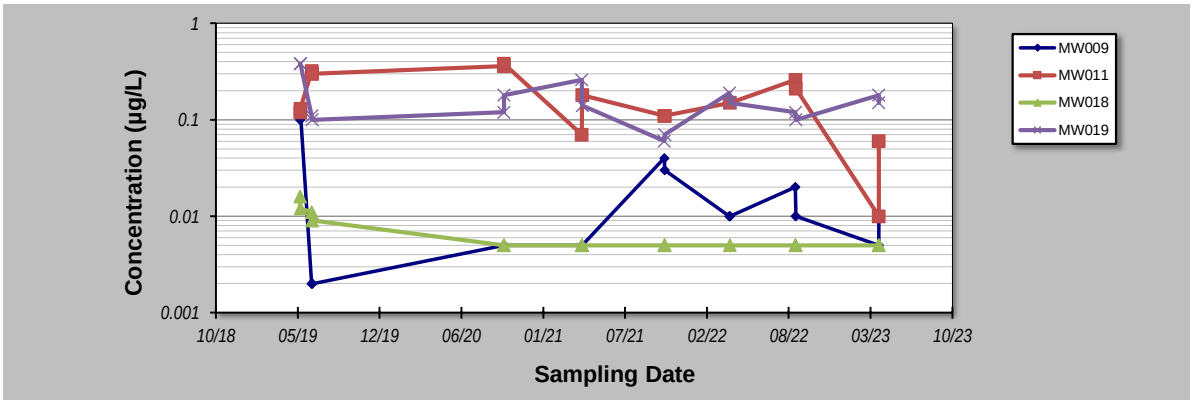
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 3-Aug-23
Facility Name: HMAS Cairns - On-Base South Source Area
Conducted By: [redacted]

Job ID: 60612487
Constituent: PFOA
Concentration Units: µg/L

Sampling Point ID:	MW009	MW011	MW018	MW019			
Sampling Event	Sampling Date	PFOA CONCENTRATION (µg/L)						
1	May-19	0.1	0.12	0.016	0.38			
2	May-19	0.12	0.13	0.012	0.38			
3	Jun-19	0.002	0.32	0.011	0.11			
4	Jun-19	0.002	0.3	0.009	0.1			
5	Sep-20	0.005	0.36	0.005	0.12			
6	Sep-20	0.005	0.38	0.005	0.18			
7	Apr-21	0.005	0.07	0.005	0.26			
8	Apr-21	0.005	0.18	0.005	0.14			
9	Oct-21	0.04	0.11	0.005	0.06			
10	Oct-21	0.03	0.11	0.005	0.07			
11	Apr-22	0.01	-	-	0.19			
12	Apr-22	0.01	0.15	0.005	0.15			
13	Sep-22	0.02	0.26	0.005	0.12			
14	Sep-22	0.01	0.21	0.005	0.1			
15	Apr-23	0.005	0.01	0.005	0.18			
16	Apr-23	0.01	0.06	0.005	0.15			
17								
18								
19								
20								
Coefficient of Variation:		1.50	0.62	0.51	0.57			
Mann-Kendall Statistic (S):		9	-26	-50	-17			
Confidence Factor:		63.9%	89.0%	99.3%	76.1%			
Concentration Trend:		No Trend	Stable	Decreasing	Stable			



Notes:

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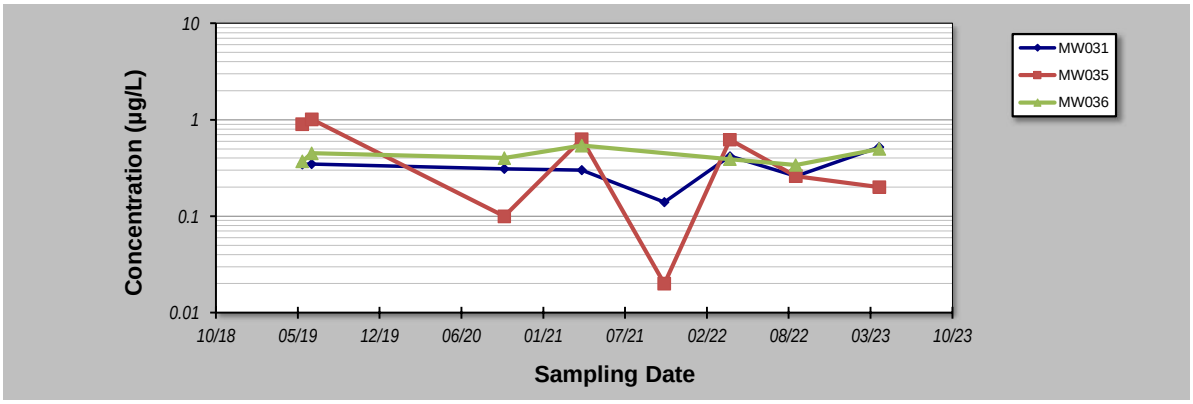
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology 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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 3-Aug-23
Facility Name: HMAS Cairns - WWII RAN Source Area
Conducted By: [redacted]

Job ID: 60612487
Constituent: PFOS+PFHxS
Concentration Units: µg/L

Sampling Point ID:	MW031	MW035	MW036				
Sampling Event	Sampling Date	PFOS+PFHXS CONCENTRATION (µg/L)						
1	May-19	0.345	0.897	0.37				
2	Jun-19	0.346	1.01	0.45				
3	Oct-20	0.31	0.1	0.4				
4	Apr-21	0.3	0.63	0.54				
5	Oct-21	0.14	0.02	-				
6	Apr-22	0.42	0.62	0.39				
7	Sep-22	0.26	0.26	0.34				
8	Apr-23	0.52	0.2	0.5				
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.34	0.80	0.17				
Mann-Kendall Statistic (S):		0	-12	1				
Confidence Factor:		45.2%	91.1%	50.0%				
Concentration Trend:		Stable	Prob. Decreasing	No Trend				



Notes:

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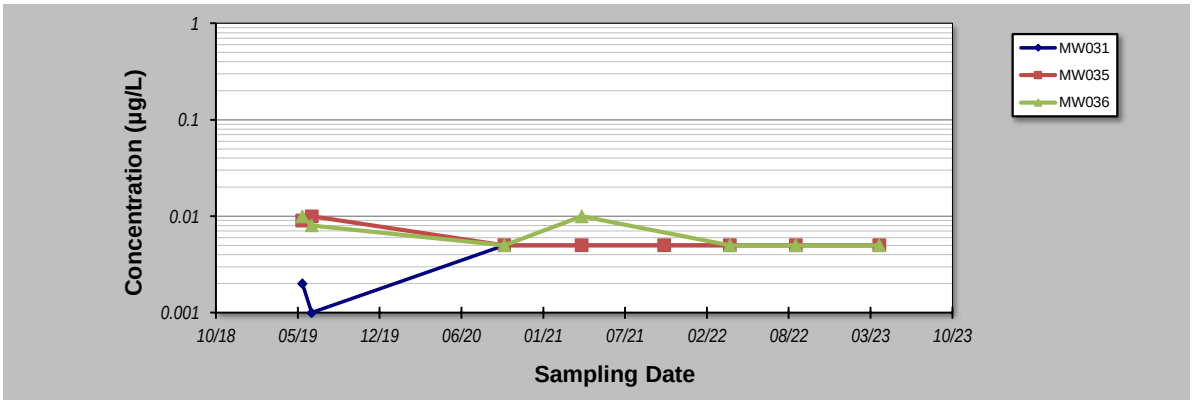
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 3-Aug-23
Facility Name: HMAS Cairns - WWII RAN Source Area
Conducted By: [redacted]

Job ID: 60612487
Constituent: PFOA
Concentration Units: µg/L

Sampling Point ID:	MW031	MW035	MW036				
Sampling Event	Sampling Date	PFOA CONCENTRATION (µg/L)						
1	May-19	0.002	0.009	0.01				
2	Jun-19	0.001	0.01	0.008				
3	Oct-20	0.005	0.005	0.005				
4	Apr-21	0.005	0.005	0.01				
5	Oct-21	0.005	0.005					
6	Apr-22	0.005	0.005	0.005				
7	Sep-22	0.005	0.005	0.005				
8	Apr-23	0.005	0.005	0.005				
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.40	0.34	0.35				
Mann-Kendall Statistic (S):		11	-11	-10				
Confidence Factor:		88.7%	88.7%	90.7%				
Concentration Trend:		No Trend	Stable	Prob. Decreasing				



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