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AECOM

Ongoing Monitoring Report (July 2022 - June 2023)

PFAS OMP - Singleton Military Area

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PFAS Ongoing Monitoring Program
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PFAS OMP - Singleton Military Area

Client: Department of Defence

ABN: 68706814312

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List of Acronyms

Acronym	Term
ADWG	Australian Drinking Water Guidelines
AECOM	AECOM Australia Pty Ltd
AFFF	Aqueous Film Forming Foam
ALG	Alternate Landing Ground
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure
BoM	Bureau of Meteorology
CSM	Conceptual Site Model
Defence	Department of Defence
DNSDC	Defence National Storage and Distribution Centre
DoH	Department of Health
DSI	Detailed Site Investigation
FSANZ	Food Standards Australia New Zealand
FFTA	Former Firefighting Training Area
GW	Groundwater
GWE	Groundwater Elevation
HEPA	Heads of Environment Protection Authority
HHERA	Human Health and Ecological Risk Assessment
HLG	Helicopter Landing Ground
LOR	Limit of Reporting
MW	Monitoring Well
NEMP	National Environmental Management Plan
NHMRC	National Health and Medical Research Council
NSW	New South Wales
OMP	Ongoing Monitoring Plan
OMR	Ongoing Monitoring Report
PFAS	Per- and poly-fluoroalkyl substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PFHxS	Perfluorohexanesulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control
SAQP	Sample and Analysis Quality Plan
STA	Singleton Training Area
STP	Sewage Treatment Plant

Acronym	Term
SW	Surface Water
SWL	Standing Water Level
TDI	Tolerable Daily Intake

List of Units

Units	Term
˚C	Degrees Celsius
µg/L	Micrograms per litre
µS/cm	MicroSiemens per centimetre
g	Grams
km	Kilometre
L	Litres
m	Metre
mAHD	metres relative to Australian Height Datum
mbgs	Metres below ground surface
mbTOC	Metres below top of casing
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) for monitoring of per- and poly-fluoroalkyl substances (PFAS) at the Singleton Military Area (the 'Site') in New South Wales (NSW).

Objective

The objective of the OMP is to set out a program of monitoring to continue to assess the 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 an identified potentially elevated risk to a receptor(s), or potential future risk to a receptor(s). Assessing changes in the distribution, concentration, and transport of PFAS against appropriate guideline values provides:

- An evidence base for targeted and effective risk management decision making, for the purpose of protecting human health and environmental receptors; and
- An early warning that additional management of PFAS contamination may be warranted in areas not currently understood to be affected by PFAS.

Monitoring Scope

AECOM completed two monitoring events of groundwater, surface water and sediment between July 2022 and June 2023 in accordance with the sampling and analysis quality plan (SAQP) developed by AECOM (2023a). This monitoring targeted PFAS, namely perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA) and perfluorohexanesulfonic acid (PFHxS). It included selected locations on-Site and in surrounding off-Site areas.

Groundwater Results

Groundwater Flow Directions

Based on data collected during the targeted gauging round on 19 July 2022, the inferred local groundwater flow direction was to the north northeast towards the Hunter River. The flow directions are consistent with previous observations during the Detailed Site Investigation (DSI) (AECOM, 2019) and OMP monitoring events.

PFAS Concentrations

Monitoring results indicated that overall, the concentrations of PFAS in groundwater were generally consistent with previous results, with the highest PFAS concentrations detected at monitoring wells located near the identified PFAS source areas. There were first-time detections of PFAS in MW126 and MW188D located off-Site on northern boundary, and in MW124 located off-Site to the north. New maximum concentrations of PFAS were reported in MW048 at Defence National Storage and Distribution Centre (DNSDC), in MW126 located off-Site on northern boundary, in MW124 located off-Site to the north, and in MW132 located off-Site to the north east.

Surface Water Results

The results were consistent with the DSI (AECOM, 2019) findings with the highest concentrations occurring in Sub-Catchment A, located close to source areas. Elevated concentrations were also reported at down-gradient locations, off-Site to the northwest, within Singleton Sewage Treatment Plant (STP) effluent and surface water locations near the STP. There were first-time detections of PFAS in six surface water locations (SW032, SW035, SW036, SW114, SW115 and SW554) located on-Site. There was also a first-time detection of PFOA in the off-Site waste water location (OTH006). New maximum PFAS concentrations were reported in two surface water locations (SW002 and SW026) located on-Site.

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.

Sediment Results

As per the surface water results, the sediment results were consistent with the DSI findings (AECOM, 2019) with the highest concentrations near the source areas. There were first-time detections of PFAS in six on-Site sediment locations (SD002, SD040, SD114, SD115, SD116 and SD555) and two off-Site sediment locations (SD047 and SD540 at the off-Site STP). New maximum PFAS concentrations were reported in seven on-Site sediment locations (SD005, SD032, SD046, SD047, SD055, SD115 and SD555) and three off-Site sediment locations (SD047, SD080 and SD539) to the north west and at the off-Site STP.

Interpretive Assessment

PFAS concentrations within the on-Site and off-Site groundwater, surface water and sediment were similar to historical results.

There was no increasing or decreasing trends identified in PFAS concentrations in groundwater.

Where there were new exceedances, new maximum or new minimum results of PFAS concentrations in groundwater or surface water, the results were within an order of magnitude of historical results.

Based on the data to date there was no discernible trend in sediment concentrations identified, with most locations with three or more results showing a fluctuating pattern.

However, it is noted that an increase in the concentrations of PFOS+PFHxS were reported in four surface water locations (SW002, SW026, SW032 and SW034) within Sub-Catchment A (on-Site), when compared to previous monitoring events. Further monitoring of these locations is required to assess whether there is an increasing trend or simply just fluctuations in concentrations, which may be attributable to seasonal rainfall.

Conceptual Site Model and Risk Summary

The Conceptual Site Model (CSM) was developed during the DSI (AECOM, 2019) and is summarised in Section 4 of the PFAS Management Area Plan (PMAP). The CSM describes where PFAS is sourced from, how it is transported in surface water and groundwater, and how it may affect people and environments off-Site.

The data in this report shows that concentrations of PFAS within groundwater, surface water and sediment remain consistent with previous monitoring, with new maximum concentrations limited in magnitude compared with historic observations, therefore there is no change to the CSM and no evidence that the overarching risk profile has changed based on the current land use on-Site and off-Site.

Conclusions

Overall, the concentrations of PFAS in groundwater were generally consistent with historical results, with stable or no potential trends shown over the existing dataset to date. Where new maximum concentrations were present, increases in PFAS concentrations had previously been observed. The new maximums remained within an order of magnitude of these historic maximum observations. Further rounds of data are required to enable trend analysis at many of the locations.

PFAS concentrations in surface water and sediment were generally consistent with historical results. Increases and new maximum concentrations that were reported remained within an order of magnitude of historical observations for the respective locations. Additionally, where an increase in the PFOS+PFHxS concentrations were reported within Sub-Catchment A (on-Site), further monitoring is required to assess whether there is an increasing trend.

The CSM was reviewed, and no changes were identified to PFAS source, pathway or receptors at the Site and off-Site areas. It is noted that the Former Cantonment Fire Station and associated outbuildings were demolished prior to the July 2022 event which included PFAS impacted building material (concrete and asphalt hardstand). The in-situ soils remaining at this location were sampled, concluding no further works were required due to the low levels of PFAS reported. A mass flux assessment is currently underway to quantify PFAS mass movement through surface water and groundwater at the site. Conclusions of this investigation will be used to update the CSM.

Based on the data, AECOM considers that the conclusions made in the DSI (AECOM, 2019) still apply and that the CSM and interpretive analysis supports the known risk profile.

AECOM considers that the data collected during the monitoring period is representative of site conditions at the time of sampling and suitable for meeting the objectives of the OMP.

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) for the Singleton Military Area (the 'Site') in New South Wales (NSW). The location of the Site and surrounding areas is shown in **Figure F1** in **Appendix A**.

In order to meet the objectives of the OMP the monitoring targeted PFAS in groundwater, surface water and sediment at selected locations on-Site and off-Site areas in accordance with the *Sampling and Analysis Quality Plan* (SAQP) (AECOM, 2023a).

This Ongoing Monitoring Report (OMR) has been prepared in accordance with the *PFAS OMP Annual Interpretive Report Guidance* (Version 0.4) issued in October 2022 (Defence, 2022) based on monitoring data collected between July 2022 and June 2023 (herein referred to as the monitoring period).

1.1 Purpose and Objective

The objective of the monitoring program set out in the OMP (Defence, 2021a) is to provide information on changes in nature and extent of PFAS within the environment from the time of OMP implementation (i.e. 2021).

Assessing changes in the distribution, concentration, and transport of PFAS against appropriate guideline values provides:

- evidence base for targeted and effective risk management decision making, for the purpose of protecting human health and environmental receptors; and
- early warning that additional management of PFAS contamination may be warranted in areas not currently understood to be affected by PFAS.

The ongoing monitoring will also provide data to support PFAS Management Area Plan (PMAP) (Defence, 2021b) actions, and inform any change to risk profile and recommendations for triggers to review the OMP or the PMAP.

1.2 Scope

The scope of works for this OMR included assessing changes to the distribution of PFAS over the monitoring period and if these changes have implications for the understanding of the Conceptual Site Model (CSM) and the risk profile with respect to PFAS impacts from Site. This included the evaluation of data reported in the following factual reports:

- *Sampling Event Factual Report, July 2022. PFAS OMP – Singleton Lone Pine Barracks (Site ID 0356).* 6 December 2022 (AECOM, 2022).
- *Sampling Event Factual Report, January 2023. PFAS OMP – Singleton Lone Pine Barracks (Site ID 0356).* 19 April 2023 (AECOM, 2023b).

These reports are included in **Appendix E**.

2.0 Site Setting

2.1 Site Description

The Site identification and setting as presented in the Detailed Site Investigation (DSI) (AECOM, 2019) and PMAP) (Defence, 2021b), and publicly available information are summarised in **Table 1** below.

Table 1 Site Identification and Setting Summary

Element	Description
Site ID	0356
Site Location	The Site is located approximately 8 km south of the township of Singleton, in the vicinity of Newcastle, NSW. The Site is shown on **Figure F1** in **Appendix A**.
Regional Meteorology	The climate at the Site is characterised as temperate, with cool winters and warm summers. Winter months (May – October) are typically drier than summer months (November – April). The Bureau of Meteorology (BoM) at Singleton Military Defence Area (station number: 061430) has recorded the climate statistics on Site since 2017, presenting a record of approximately 7 years. The following is a historic summary of temperature and rainfall data from this station: • Mean monthly maximum temperatures have varied from 16.7°C in July to 28.6°C in January • Mean rainfall at the Site is 713.6 mm per annum. • Mean monthly rainfall is highest between October and March, averaging 87.92 mm per month, and lowest from May to July averaging 25.74 mm per month. • The annual rainfall between January 2022 and January 2023 was 1154.2 mm*, wetter than the average for the Site.
Topography and Hydrology	The Site is dominated by moderate to gently sloping inclines and hills, with the foothills of the Broken Back Ranges rising steeply at the southern extent of the Site. The Site and its surrounds are located in the central lowlands along the Hunter River and characterised by undulating to rolling hills and inclines on weak sedimentary rocks. The Site comprises several drainage lines that ultimately drain north and east towards the Hunter River (located approximately 2 kilometres north of the Site boundary). The primary on-Site drainage lines include: • Mudies Creek and Emigrant Creek along the western and eastern boundaries of the Dochra Airfield • a number of creeks emanating from the southern area of the Site, note that based on non-detection of PFAS and lack of identified source areas, these waterways were not considered further during the DSI • Doughboy Hollow Creek, which traverses the Site and runs to the north. The off-Site areas comprise a number of water bodies including private dams and smaller drainage lines located on residential properties. The Sewage Treatment Plant (STP) to the north of the Site receives wastewater from both the Site and wider Singleton township. The wetland east of the STP is understood to have hydraulic connectivity with groundwater present within the Hunter River alluvial floodplain at Whittingham. Therefore, surface water that

Element	Description
	migrates from Doughboy Hollow Creek to the wetland area east of the STP may provide recharge of groundwater present in the Hunter River alluvial floodplain. The previous investigations indicated that the major surface water bodies to be ephemeral, and flow in response to rainfall, with no base flow component connected to the groundwater. Additionally, there is potential for surface water to recharge groundwater in the area. The DSI (AECOM, 2019) divided the catchments of the Cantonment into three sub-catchments (as presented on **Figure F3** in **Appendix A**) as follows: • **Sub-Catchment A**: Northern portion of the Cantonment. The primary drainage line is an un-named tributary of Doughboy Hollow Creek which flows in a northerly direction and discharges off-site at the northern Cantonment boundary. In addition to runoff via the un-named tributary of Dough Boy Hollow Creek, surface water runoff from the Cantonment during heavy rainfall events may occur via overland flow. • **Sub-Catchment B**: Central portion of the Cantonment. The primary drainage line is an un-named tributary of Doughboy Hollow Creek which flows in a north-westerly direction and discharges off-site at the western Cantonment boundary down-gradient of the Helicopter Landing Ground (HLG). • **Sub-Catchment C**: Southern portion of the Cantonment. The primary drainage line is the main watercourse of Doughboy Hollow Creek which flows in a north westerly direction and discharges off-site at the western Cantonment boundary in the vicinity of the landfill and former flame thrower range.
Geology and Hydrogeology	The Site and surrounding areas are located within the northern part of the Sydney Basin which is characterised by Permian and Triassic aged sedimentary rock. The lithology underlying the Site is Narrabeen Group which is composed of sandstone with some conglomerate, claystone, and shale. Some less prominent rocks present in the area include quartzose sandstone of the Hawkesbury Sandstone, siltstone, and tuff. Coal measures are also extensive consisting of black coal interbedded with sandstone, shale mudstone, conglomerate with minor chert and tuff. The soils within the low-lying areas of the Site consist primarily of alluvial soils, yellow and red podzolic soils. Towards the southern extent of the Site where elevation is higher, the soil profiles are thinner and are classified as shallow soils. The hydrogeology of the Site can be summarised into four notable subunits. • The **perched groundwater unit** is an unconfined discontinuous perched zone within the sediments flanking creeks. Groundwater is present within the alluvium/colluvium flanking major water courses across the Site. Recharge is mainly from rainfall and the zone periodically dries out following extended periods of low rainfall. • The **alluvial groundwater unit** presents groundwater in the low-lying part of the Site, within the alluvial sediments of the Hunter River floodplain. It is an unconfined aquifer and recharges predominantly from surface water. This zone has suitable yield used for irrigation, agriculture, and farming. • In the weathered zone of the Permian bedrock lies the **shallow groundwater unit** where its presence is reliant on rainfall. The groundwater is perched above geological zones of low hydraulic

Element	Description
	conductivity such as clay or shale lenses within the bedrock. Groundwater quality within this unit is generally poor due to the leaching of salts from the Permian bedrock, which has been confirmed by the DSI (AECOM, 2019) and sampling under the OMP. • The **deep groundwater unit** forms the regional aquifer underlying the Site. Rock porosity and the interconnection of void space highly dictates the flow of groundwater through this aquifer, followed by structural features in the rock. The previous investigations and monitoring have indicated groundwater flows in a general northerly direction towards the Hunter River.
Flora and Fauna	The species or species habitat which are known to occur at the Site and are listed as threatened species (under EPBC Protected Matters Search Tool as reported in the OMP) are as follows: • Birds: the regent honeyeater and swift parrot are critically endangered • Mammals: the spot-tailed quoll is endangered • Plants: *Euphrasia arguta* (annual herb) and *Prasophyllum sp. Wybong* (terrestrial orchid) are critically endangered • Reptiles: the broad-headed snake is vulnerable. The following fauna were observed within the former Investigation Area during DSI: • Numerous birds, including small eagles, falcons, black cockatoos and tawny frogmouth owls, wedge-tailed eagle, Noisy miner, Australian raven, Australian wood duck, Yellow-tailed black cockatoo • Kangaroos • Wild horses • Wild dogs, wild boars and foxes • Tadpoles and frogs • Goannas, lace monitors • Frilled-neck lizard • Red-bellied black snake • Possum • Small tortoise • Turtle • Crab legs.
Land Uses Surrounding the Site	The current land uses of the surrounding off-Site areas are as follows: • Grazing land and the floodplain areas of Whittingham and Glenridding, as well as a STP owned by Singleton Council are located to the north. The Whittingham Fire Station and Airstrip are located 1 kilometre and 1.3 kilometres northeast, respectively. • The Pokolbin State Forest and the Broken Back Range are located to the south of the Site. Hunter Valley vineyards are located further southeast of the Site.

Element	Description
	• A mix of rural and semirural land holdings including sparsely wooded open land and pastureland is to the east. The Hunter River lies to the northeast, irrigating the croplands on the floodplains. • Grazing land and irrigated cropland within the floodplains of the Hunter River are located immediately west of the Site.

Notes: *There was a data gap in daily rainfall data between 20 May 2022 and 12 July 2022 at the Singleton Military Defence Area (station number: 061430). Data for this period was obtained from the next closest weather station (no. 0601092) located at Eldersie, approximately 20 km from the Site.

2.2 Management Area

The term 'Management Area' applies to two distinct areas:

- **On-Site Management Area**: which includes on-Site areas where the PFAS sources were identified as follows:
  - Lone Pine Barracks:
    - Former Cantonment Fire Station and surrounding area
    - Defence National Storage and Distribution Centre (DNSDC)
    - Alternate Landing Ground (ALG) and Associated Former Firefighting Training Area (FFTA)
    - HLG
  - Singleton Training Area (STA)
    - Dochra Airfield.
- **Off-Site Management Area**: which includes private properties to the north, northwest and north east of the Site.

The on-Site Management Area is shown on **Figure F1** in **Appendix A**.

2.3 PFAS Source Areas

Source areas can be primary or secondary. Primary sources are generally areas of PFAS contamination where aqueous film forming foam (AFFF) was used or stored, for example a fire training area. Secondary sources are areas where PFAS accumulates and then continues to feed into the environment. PFAS can travel from a source to human or environmental receptors by surface water and groundwater. These are referred to as "migration pathways".

The OMP (Defence, 2021a) provides a list of primary and secondary PFAS source areas that were identified in the DSI (AECOM, 2019), as summarised below:

- On-Site PFAS Source Areas:
  - Former Cantonment Fire Station and fire training pits (PFAS in soil, surface water, groundwater and concrete)
  - DNSDC (PFAS in soil, groundwater, surface water and sediment])
  - ALG (PFAS in soil, surface water and sediment)
  - Dochra Airfield (PFAS in soil, groundwater, surface water and sediment)
  - HLG (PFAS in soil, groundwater, surface water and sediment).
- There is the potential that off-Site activities and/or businesses may have used or generated wastes containing PFAS.

3.0 Sampling and Analytical Methodology

3.1 Sampling Methodology

The SAQP (AECOM, 2023a) outlines the proposed schedule and rationale for sampling, prescribing the method for groundwater, surface water and sediment sampling from across the on-Site and off-Site Management Areas to be undertaken on a biannual (six-monthly) basis for an initial period of three years, with selected locations sampled either biannually, annually (once per year) or biennially (every second year). The monitoring also includes sampling of the wastewater from the off-Site STP.

The SAQP provides the list of locations to be sampled during each sampling event, along with the sampling methodology for each of the media, and the Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs).

The SAQP (AECOM, 2023a) used during the January 2023 event has been included in **Appendix D**.

A summary of the OMP monitoring events completed in general accordance with the SAQP during the monitoring period is provided in **Table 2**.

Table 2 Summary of Monitoring Events

Monitoring Event (Sampling dates)	Scope as per SAQP	Samples Collected	Analysis
July 2022 (Biennial event) (19 - 22 July 2022)	**On-Site**		PFAS extended suite
	13 SW samples	13 SW samples	
	19 GW samples	17 GW samples	
	13 SD samples	13 SD samples	
	Off-Site		
	7 SW samples	7 SW samples	
	1 OTH sample	1 OTH sample	
	12 GW samples	9 GW samples	
	7 SD samples	7 SD samples	
January 2023 (Biannual event) (17 - 19 January 2023)	**On-Site**		PFAS extended suite
	13 SW samples	8 SW samples	
	4 GW samples	3 GW samples	
	13 SD samples	13 SD samples	
	Off-Site		
	7 SW samples	6 SW samples	
	1 OTH sample	1 OTH Sample	
	7 SD samples	6 SD samples	

Notes:
SW = surface water; GW = groundwater, SD = sediment, OTH = effluent
PFAS extended suite is outlined in Table 3-9, Section 3.5 of the OMP (Defence, 2021a).

Some locations could not be sampled during the sampling events. Impediments and changes to the proposed sampling locations encountered during the monitoring period are detailed in **Section 3.2**.

3.2 Deviations from SAQP

Deviations from the scope outlined in the SAQP for the monitoring period are summarised in **Table 3** below. Note that the deviations are as per those presented in the factual reports listed in **Section 1.2** and provided in **Appendix E**.

Table 3 Deviations from SAQP during the monitoring period

SAQP Requirement	Sampling Event Deviation	Impact of deviation on data set
Biennial sampling – July 2022		
31 groundwater locations are identified to be sampled as part of the biennial sampling event.	On-Site monitoring well MW012 was not able to be located and likely to have been destroyed during the demolition of the former Cantonment Fire Station, and therefore not sampled.	AECOM does not consider the lack of sampling from this location to constitute a significant data gap as the existing monitoring well network (MW008, MW011 and MW167) provides sufficient coverage of this area.
	On-Site monitoring well MW049 was dry and therefore not sampled. Monitoring well MW104 had an insufficient volume of water present to collect a sample.	The lack of water available at these locations was not unexpected given these monitoring wells were installed to target the shallow/perched groundwater, and MW049 previously sampled in 2018 and 2019, whereas MW104 has not been sampled. Therefore, AECOM does not consider the lack of water for sampling at these locations to impact upon the objectives of the OMP.
	The gatic cover of monitoring well MW056 (off-Site location on private property) was unable to be opened as one of the bolts had a damaged thread, and therefore not sampled.	The lack of sampling at this location presents a potential data gap in monitoring the extent of PFAS in groundwater off-Site to the east of the Lone Pine Barracks. While MW056 was not required to be sampled in the following sampling event in January 2023, it was subsequently accessed and sampled in July 2023. Note that data from subsequent sampling events will be reported under a separate cover.

SAQP Requirement	Sampling Event Deviation	Impact of deviation on data set
	Monitoring wells MW129 and MW139 (off-Site locations on private properties) were not accessed for sampling as the landowner denied access.	The lack of sampling data at these locations presents a potential data gap in monitoring the extent of PFAS in groundwater off-Site to the north east, particularly given the first-time detection of perfluorooctanesulfonic acid (PFOS) at MW124 (located up-gradient of MW129 and MW139). Note that both MW129 and MW139 were not required to be sampled in the following sampling event in January 2023. While MW139 was subsequently accessed and sampled in July 2023, access to MW129 was unsuccessful during that event. AECOM will attempt to engage with the private property owners for MW129 ahead of the next scheduled event.
Sample OTH006 will be collected using a long handled, PFAS-free stainless steel sampling pole.	Sample OTH006 (off-Site wastewater sampling location) was collected using a dedicated, disposable bailer as it was determined by the sampling team to be a safer methodology which did not require decontamination.	The change in methodology does not impact the upon the reliability of the data given that the revised SAQP (AECOM, 2023a) was updated to include sampling at OTH006 to be carried out using a dedicated disposable bailer.
Surface water and sediment samples to be collected from dedicated monitoring locations.	On-Site co-located surface water and sediment samples (SW115 and SD115) were collected approximately 10 meters (m) upstream from the proposed location due to the presence of a fence along the northern boundary of the Site.	These locations were identified as proposed new locations in the SAQP and given this was the first time this location has been sampled, there is no impact on comparability to the existing dataset. The updated coordinates used for SW115 and SD115 during this sampling event has been adopted for the OMP.
Landholder bores to be sampled using low flow techniques, as they are not purpose built for groundwater monitoring.	The low flow sampling method was not appropriate at MW188S and MW188D (off-Site locations on private property), given that there was an insufficient head of water present in the wells for the pump to operate. As a result, samples MW188S and MW188D were collected using dedicated, disposable bailers.	Given that the PFAS concentrations reported in MW188S were similar to historical results, AECOM considers that the change in sampling methodology at this location did not impact the reliability of the data. However, MW188D reported a first-time detection of PFOS at the laboratory limit of reporting (LOR) (0.02 ug/L), which was confirmed by the laboratory through re-analysis. Given the detection was at LOR, it is not clear

SAQP Requirement	Sampling Event Deviation	Impact of deviation on data set
		whether the new first-time detection is associated with the change in sampling methodology. While MW188D was not required to be sampled in the following sampling event in January 2023, it was subsequently accessed and sampled in July 2023. Note that data from subsequent sampling events will be reported under a separate cover.
At locations where low flow sampling methodology has been adopted, samples are to be collected following parameters stabilisation.	During the purging of groundwater well MW126 (off-Site location on private property), the low volume and slow recharge of water in the well impacted the operation of equipment, resulting in the sample being collected prior to the stabilisation of parameters.	Sample MW126 reported a first-time detection of PFOS at the laboratory LOR (0.02 µg/L), which was confirmed by the laboratory through reanalysis. It is unknown whether this first-time detection is attributed to the change in sampling methodology, however AECOM will continue to monitor concentrations in this location over time to establish whether a trend is present.
Surface water and sediment sample location codes are outlined in Table 6 of SAQP.	On-Site co-located surface water and sediment location SW113 / SD113 had been incorrectly named in the OMP (Defence, 2021a) as an existing entry for SD113 was identified in Defence ESdat. To mitigate the duplication of location codes in Defence ESdat, AECOM renamed the location codes to SW116 and SD116.	No impacts to the data set as this was the first time this location had been sampled under the OMP.
Biannual sampling - January 2023		
Collect samples and associated field parameters, from 4 scheduled groundwater sampling locations.	On-Site groundwater monitoring well MW104 was dry during the sampling event, and therefore not sampled. Geochemical parameters were not collected from on-Site groundwater monitoring well MW110 due to insufficient water in the HydraSleeve™.	The lack of sampling data at MW104 is not considered to have a significant impact on the dataset, or present a significant data gap, as a nearby well (MW110) was sampled, which targets the same shallow aquifer, and located along the Northern Cantonment Boundary. The lack of geochemical parameters at MW110 is not considered to have a significant impact on the outcomes of the monitoring program.

SAQP Requirement	Sampling Event Deviation	Impact of deviation on data set
Collect samples and associated field parameters from 20 scheduled surface water locations.	On-Site surface water location SW005 was dry and could not be sampled during this sampling event.	The lack of sampling data represents a data gap as there are no other surface water sample locations along Mudies Creek. It is noted, however, that both sampling locations at Mudies Creek (SW005) and Emigrant Creek (SW004) assess for potential run-off from the Dochra Airfield into the off-Site environment. SW004 was able to be sampled during this sampling event.
	On-Site surface water locations SW114, SW115, SW116 and SW555 were dry and could not be sampled during this sampling event.	The lack of sampling data at these locations is not considered to have a significant impact on the dataset, or present a significant data gap, given that it confirms that the source>receptor>pathway linkages for PFAS in surface water were incomplete at the time of sampling. While SW114, SW115 and SW116 remained dry during the following sampling event in July 2023, SW555 was able to be sampled in July 2023. AECOM will attempt to sample these locations again during subsequent sampling events. Note that data from subsequent sampling events will be reported under a separate cover.
	Off-Site surface water location SW554 was unable to be accessed and could not be sampled during this sampling event. Current ownership of the property in which this sample is located is currently unknown.	The lack of sampling data is not considered to have a significant impact on the dataset, or present a significant data gap, as a nearby surface water location (SW553) was sampled downstream of this location, targeting the Doughboy Hollow Creek Catchment / Whittingham floodplains north of the Site, in the vicinity of the Singleton Sewage Treatment Plan.
Collect samples from 20 scheduled sediment locations.	Off-Site sediment location SD540 was unable to be accessed and could not be sampled during this sampling event. Current ownership of the property in which this sample is located is currently unknown.	The lack of sampling data is not considered to have a significant impact on the dataset, or present a significant data gap, as a nearby sediment location (SD539) was sampled downstream of this location, targeting the Doughboy Hollow Creek Catchment / Whittingham

SAQP Requirement	Sampling Event Deviation	Impact of deviation on data set
		floodplains north of the Site, in the vicinity of the Singleton Sewage Treatment Plan.

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**.

Data validation procedures employed in the assessment of the field and laboratory Quality Assurance and Quality Control (QA/QC) data, completed as per Section 3.2 of the SAQP (AECOM, 2023), 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 (i.e. >95% of the data was suitable for use and DQIs passed acceptance criteria) for the purpose of the factual reports and this OMR.

All data collected during the monitoring period was reviewed and uploaded to the Defence ESdat database in accordance with the Defence Contamination Management Manual (DCMM) requirements.

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], 2000), Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. At the time of preparing this report, guidance documents were available in Australia including:

- HEPA, 2020. PFAS NEMP Version 2.0. January 2020
- Department of Health (DoH), 2017. Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017. This document is based on the works undertaken by Food Standards Australia New Zealand (FSANZ) in 2017 (FSANZ 2017).
- National Health and Medical Research Council (NHMRC), 2019. Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water. August 2019
- National Environment Protection Council (NEPC), 2013. National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM) Schedule B1, 1999 as amended in 2013.

The adopted PFAS screening criteria to assess the surface water and groundwater data generated as part of the monitoring are presented in **Table 4** (Human Health) and **Table 5** (Ecological). Note that the HEPA NEMP 2.0 (2020) does not provide screening criteria for PFAS in sediments.

Table 4 PFAS Criteria Summary: Human Health

Media	Pathway	Compound	Criteria	Comment / Reference
Water – groundwater	Drinking water	Perfluorooctanesulfonic acid and perfluorohexanesulfonic acid (PFOS+PFHxS)	0.07 µg/L	The values presented in the PFAS NEMP (HEPA, 2020) are from DoH (2017) which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the tolerable daily intake (TDI) for PFOS and PFOA from FSANZ (2017) and the methodology described in Chapter 6.3.3 of the NHMRC Australian Drinking Water Guidelines (ADWG, 2022) to determine drinking water values. *Groundwater results will be compared to these criteria.*
		Perfluorooctanoic acid (PFOA)	0.56 µg/L	

Media	Pathway	Compound	Criteria	Comment / Reference
Water – surface water	Recreational use	PFOS+PFHxS	2 µg/L	In August 2019, NHMRC released guidance on the assessment of PFAS in surface water. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events/year) to calculate an annual ingestion rate of 30 L per year. These values were adopted by the HEPA NEMP 2.0 (2020). *Surface water results will be compared to these criteria.*
		PFOA	10 µg/L	

Table 5 PFAS Criteria Summary: Ecological

Media	Pathway	Compound	Criteria	Comment/Reference
Water – surface water and groundwater	*Freshwater*	*PFOS*	*0.00023 µg/L*	The values are from the PFAS NEMP (HEPA, 2020) which endorsed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality. The 99% species protection level has been applied for high value conservation systems. This approach is *generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. It is proposed that the laboratory LOR is adopted for the purposes of preliminary screening of analytical water results, rather than sole use of the criteria value.* *Groundwater and surface water results will be compared to these criteria.*
		PFOA	*19 µg/L*	

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

6.0 Contextual and Ancillary Information

6.1 PFAS Projects

AECOM is not aware of any PMAP (Defence, 2021b) actions being completed during the monitoring period.

6.2 Infrastructure Projects

It is noted that prior to the monitoring period (in 2022) the Former Cantonment Fire Station was demolished including removal of the associated outbuildings and concrete slabs. It is understood no associated soil remediation occurred as part of the scope of the demolition works.

The demolition works were completed following the data gap investigation which was undertaken in 2021 and reported in EDP Consultants Pty Ltd (EDP) (2022). The EDP (2022) findings included the following:

- PFAS was reported in fill and natural soils to a depth of 3.0 m below ground level. Where detected, PFOS+PFHxS concentrations in soil ranged between 0.0056 mg/kg and 7.43 mg/kg, with the highest concentration between surface and 0.5 m below ground level, and decreasing in deeper soils. Vertical delineation of the PFAS in soil was not determined.
- PFAS was reported in building materials comprising the hardstand and structures.

AECOM is not aware of any other infrastructure projects being completed during the monitoring period.

6.3 Significant Weather Events

The rainfall activity during the sampling events completed within the ‘monitoring period’ are summarised in **Table 6** below. The data is from the BoM monitoring station located at Singleton Military Defence Area (Station ID 061430).

The occurrence of wet weather events (days with rainfall > 15 mm) is also provided in **Table 6**. There was a total of 22 wet weather events, which included five rainfall events over 40 mm recorded within the monitoring period.

Figure 1 below presents the data for the monitoring period against historical ranges on record since the weather station began operation in 2017.

Figure 1 Recorded Rainfall (Monitoring Period) Against Historic Average

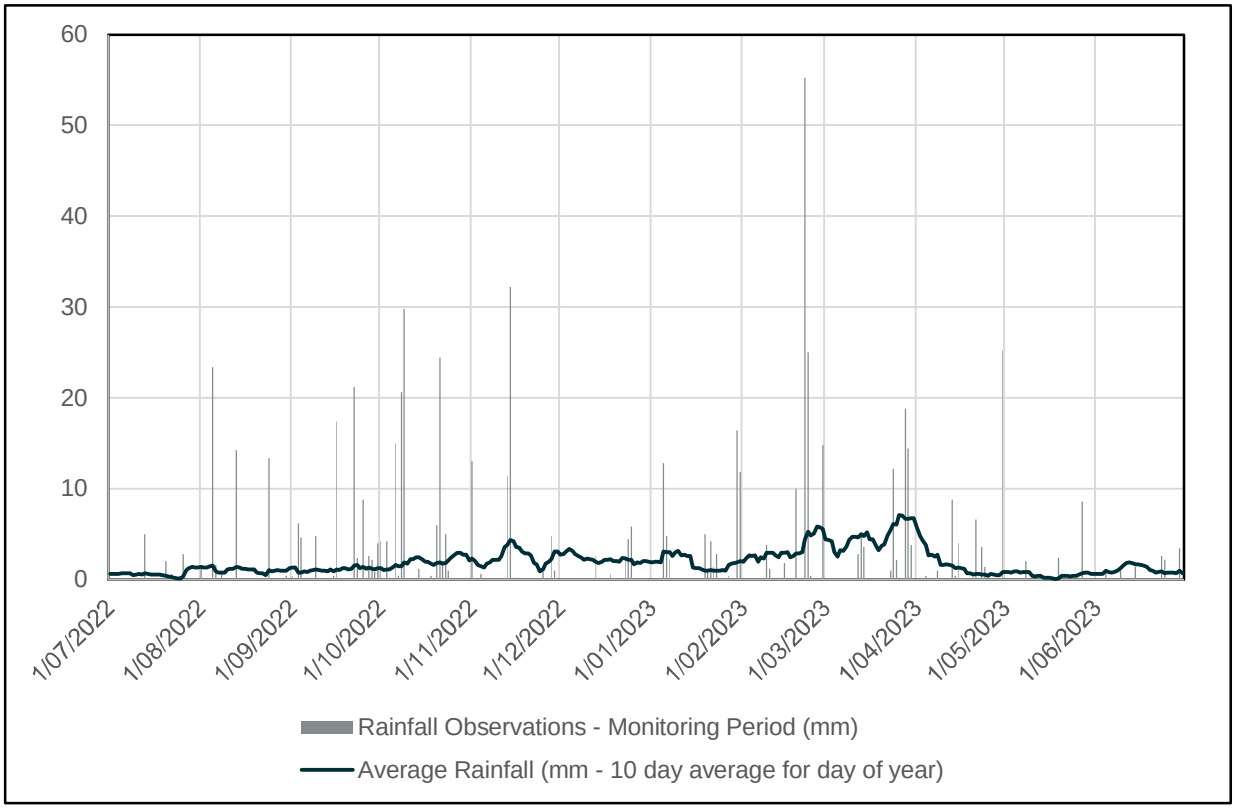


Table 6 Rainfall during sampling events

Sampling Event and Date	Recorded rainfall (mm) (BoM, 2023) during sampling event	Wet weather events during the monitoring period (days with rainfall >15 mm)*
July 2022 (Biennial Sampling) (19-22 July 2022)	0.8 mm	16 wet weather events in 6 months prior to the sampling event, 5 of which were >40 mm
January 2023 (Biannual Sampling) (17-19 January 2023)	5 mm	7 wet weather events in 6 months prior to the sampling event

Note: There was a data gap in daily rainfall data between 20 May 2022 and 12 July 2022 at the Singleton Military Defence Area (station number: 061430). Data for this period was obtained from the next closest weather station (no. 0601092) located at Eldersie (approximately 20 km from the Site).

As noted in **Table 1** in **Section 2.1** the annual rainfall at the Site was 1154.2 mm, compared to 713.6 mm per annum average for the monitoring station. Rainfall was significantly higher than the average, following a series of significant rainfall events in March 2022 and July 2022.

It is noted that one of the significant rainfall events (totally 218 mm over a five-day period) occurred 10 days prior to the July 2022 sampling event. In the 10 days between the significant weather event and the July 2022 sampling event there was a further 16.6 mm of rainfall.

Additionally, there was a total of 30 mm of rain in the 10 days prior to the January 2023 sampling event.

7.0 Monitoring Data Summary

As part of the OMP, the following two scheduled monitoring events were completed by AECOM over the monitoring period:

- 19 to 22 July 2022 (July 2022, AECOM, 2022b)
- 17 to 19 January 2023 (January 2023, AECOM, 2023b)

The sample locations are shown on **Figure F2** to **Figure F4** in **Appendix A** and results are summarised in the following sections and on **Figure F5** to **Figure F16**. Groundwater elevations for the shallow and deep aquifer are shown on **Figure F17** and **Figure F18**, respectively, in **Appendix A.**

The monitoring and analytical results are provided in **Table T1** to **Table T7** in **Appendix B**.

In addition to the OMP data, AECOM also considered the historical data for the Site and off-Site areas that are available in the Defence database.

7.1 Groundwater Results

7.1.1 Groundwater Field Observations

Groundwater field observations, including groundwater elevation and parameters, are provided in **Table T1** and **Table T2** in **Appendix B** and are summarised below.

July 2022

- Groundwater colour typically ranged from clear to light grey, brown, and light yellow. Black/grey groundwater colour was noted at MW071, MW109, MW188S and MW188D.
- Medium to high turbidity was observed in monitoring wells MW052, MW071, MW073, MW128 and MW188D.
- Organic odours were noted at MW048, MW059, MW071 and MW167.
- Sulphurous odours were noted at MW050, MW109 and MW118.
- No sheens were observed at locations visited.
- The wells were noted to be in good condition at the locations visited, with the exception of MW012, which could not be located and likely to be destroyed and therefore not be sampled.

January 2023

- Groundwater colour was light grey at locations visited.
- Turbidity ranged from low to medium turbidity with no odour or sheen.
- The wells were noted to be in good condition at the locations visited.

7.1.2 Groundwater Elevations

The standing water level (SWL) was measured in all monitoring wells, prior to sampling for each sampling event and during a targeted gauging round conducted during the July 2022 sampling event, to evaluate Groundwater Elevation (GWE). The SWL and GWE from the July 2022 and January 2023 events are presented in **Table T1** in **Appendix B** and summarised by area in **Table 7** and **Table 8** below, for the shallow and deep aquifers, respectively.

Table 7 Summary of groundwater elevations: shallow aquifer

Gauging Event	No. Wells	Min. SWL (mbTOC)	Max. SWL (mbTOC)	Min. GWE (mAHD)	Max. GWE (mAHD)
On-Site – DNSDC (MW048, MW052)					
July 2022	2	1.529 (MW048)	1.693 (MW052)	67.528 (MW048)	70.370 (MW052)

Gauging Event	No. Wells	Min. SWL (mbTOC)	Max. SWL (mbTOC)	Min. GWE (mAHD)	Max. GWE (mAHD)
On-Site – Helicopter Landing Ground (MW059)					
July 2022	1	2.090 (MW059)	2.091 (MW059)	59.049 (MW059)	59.050 (MW059)
On-Site – Dochra Airfield (MW073)					
July 2022	1	10.757 (MW073)		37.153 (MW073)	
On-Site – Northern Boundary (MW104, MW110, MW115, MW118)					
July 2022	4	12.844 (MW104)	17.604 (MW118)	31.505 (MW110)	35.130 (MW118)
January 2023	1*	13.610 (MW110)		31.790 (MW110)	
Off-Site – Northern Boundary (MW126, MW128, MW188S)					
July 2022	3	9.985 (MW188S)	11.218 (MW128)	31.135 (MW188S)	32.862 (MW128)
Off-Site – North (MW121, MW124, MW187S)					
July 2022	3	8.473 (MW121)	9.855 (MW187S)	30.105 (MW124)	31.347 (MW121)
Off-Site – North East (MW056, MW129)					
July 2022	0**	n/a	n/a	n/a	n/a

Note: mAHD = metres relative to Australian Height Datum, mbTOC = metres below Top of Casing
Min = Minimum, Max = Maximum* No SWL data available for MW104, MW115 and MW118 during the January 2023 event, as MW104 was dry and MW115 and MW118 were not required to be sampled during January 2023 event.
** No SWL data available for MW056 and MW129 during the July 2022 event, as MW056 was not able to be opened and MW129 was not able to be accessed.

Table 8 Summary of groundwater elevations: deep aquifer

Gauging Event	No. Wells	Min. SWL (mbTOC)	Max. SWL (mbTOC)	Min. GWE (mAHD)	Max. GWE (mAHD)
On-Site - Former Cantonment Fire Station and FTP (MW008, MW011, MW012, MW167)					
July 2022	3*	10.009 (MW008)	10.819 (MW167)	61.831 (MW167)	64.091 (MW008)
On-Site – DNSDC (MW049, MW050)					
July 2022	1**	9.583 (MW050)	9.587 (MW050)	54.813 (MW050)	54.817 (MW050)
On-Site – Dochra Airfield (MW063, MW071)					
July 2022	2	5.664 (MW063)	8.244 (MW071)	36.837 (MW063)	39.626 (MW071)
On-Site – Northern Boundary (MW102, MW109, MW114)					
July 2022	3	12.195 (MW102)	13.877 (MW114)	32.023 (MW114)	34.625 (MW102)
January 2023	2***	12.920 (MW102)	12.942 (MW109)	32.158 (MW109)	33.900 (MW102)
Off-Site – North (MW187D)					
July 2022	1	9.533 (MW187D)		30.697 (MW187D)	

Gauging Event	No. Wells	Min. SWL (mbTOC)	Max. SWL (mbTOC)	Min. GWE (mAHD)	Max. GWE (mAHD)
Off-Site – Northern Boundary (MW188D)					
July 2022	1	12.143 (MW188D)		29.107 (MW188D)	

Note: mAHD = metres relative to Australian Height datum, mbTOC = metres below Top of Casing

Min = Minimum, Max = Maximum

* No SWL data available for MW012 during the July 2022 event as the well was not found.

** No SWL data available for MW049 during the July 2022 event as the well was dry.

*** No SWL data available from MW114 during January 2023 event as the well was not required to be sampled.

Groundwater elevations did not change significantly (±0.1 m) except for:

- MW110 which increased in elevation by 0.3 m between July 2022 and January 2023 (shallow aquifer)
- MW063 which increased in elevation by 0.4 m between July 2022 and January 2023 (deep aquifer)
- MW102 which decreased in elevation by 0.7 m between July 2022 and January 2023.

It is noted that although the wells target discrete aquifers, based on SWLs the hydraulic heads appear to be similar between deep and shallow, suggesting that there may be some seeping occurring between the shale and the shallow soil profiles, these are further supported by the geochemical parameters (refer to **Section 7.1.4**) which do not show significant variability between shallow and deep.

7.1.3 Groundwater Flow Direction

Based on the SWL and survey data collected during the targeted gauging round on 19 July 2022, the interpreted potentiometric contours indicate that the inferred local groundwater flow direction within the shallow and deep aquifers is towards the north/northeast, which is consistent with the DSI findings (AECOM, 2019). The interpreted potentiometric contours for July 2022 monitoring event are presented on **Figure F17** and **Figure F18** in **Appendix A**, for the shallow and deep wells, respectively.

As only four groundwater monitoring wells are targeted for gauging and sampling during the biannual event in January 2023, there was insufficient data to update the interpreted groundwater contours presented in July 2022.

7.1.4 Groundwater Quality Parameters

Groundwater quality parameters were measured during the collection of groundwater samples.

The stabilised readings of groundwater quality parameters from July 2022 and January 2023 are presented in **Table T2** in **Appendix B** and summarised below in **Table 9** (shallow aquifer) and **Table 10** (deep aquifer) for locations within each area. The readings indicate:

- Poorly to moderately oxygenated conditions, with generally lower oxygen conditions in the deep aquifer
- Fresh, brackish and saline groundwater conditions in the shallow aquifer and saline groundwater in the deep aquifer
- Acidic to neutral conditions in the shallow aquifer and slightly acidic to slightly alkaline conditions in the deep aquifer
- Slightly to moderately reducing conditions in all wells except for MW102 and MW109 which were moderately oxidising.

Table 9 Summary of groundwater quality parameters: shallow aquifer

Sampling Event	Dissolved Oxygen (mg/L)		Temperature (°C)		Electrical Conductivity (µS/cm)		pH (pH units)		Reduction-oxidation Potential, Corrected (mV)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
On-Site - DNSDC (MW048, MW052)										
July 2022	1.48 (MW048)	3.85 (MW052)	15.7 (MW052)	17.8 (MW048)	205.1 (MW052)	1,355 (MW048)	5.83 (MW048)	6.59 (MW052)	-110.1 (MW048)	-93.2 (MW052)
On-Site - Helicopter Landing Ground (MW059)										
July 2022	4.34 (MW059)	4.34 (MW059)	14.6 (MW059)	14.6 (MW059)	16,977 (MW059)	16,977 (MW059)	6.98 (MW059)	6.98 (MW059)	-66.2 (MW059)	-66.2 (MW059)
On-Site – Dochra Airfield (MW073)										
July 2022	2.50 (MW073)	2.50 (MW073)	19.7 (MW073)	19.7 (MW073)	21,450 (MW073)	21,450 (MW073)	6.74 (MW073)	6.74 (MW073)	-291.0 (MW073)	-291.0 (MW073)
On-Site – Northern Boundary (MW104, MW110, MW115, MW1118)										
July 2022	1.66 (MW110)	6.46 (MW118)	20.0 (MW110)	21.9 (MW118)	6,390 (MW115)	17,804 (MW110)	6.77 (MW115)	6.94 (MW118)	-170.3 (MW110)	-39.7 (MW118)
January 2023	Not collected									
Off-Site – Northern Boundary (MW126, MW128, MW188S)										
July 2022	3.44 (MW188S)	7.20 (MW128)	19.0 (MW128)	19.9 (MW126)	4,813 (MW128)	14,234 (MW188S)	6.02 (MW126)	7.22 (MW128)	-53.9 (MW188S)	-4.20 (MW126)
Off-Site – North (MW121, MW124, MW187S)										
July 2022	1.08 (MW121)	3.28 (MW187S)	18.7 (MW121)	19.9 (multiple)	255 (MW121)	15,940 (MW187S)	6.58 (MW187S)	7.11 (MW121)	-198.6 (MW121)	-120.7 (MW187S)
Off-Site – North East (MW056, MW129, MW 132)										
July 2022	5.50 (MW132)	5.50 (MW132)	13.1 (MW132)	13.1 (MW132)	3,537 (MW132)	3,537 (MW132)	6.55 (MW132)	6.55 (MW132)	-190.4 (MW132)	-190.4 (MW132)

Table 10 Summary of groundwater quality parameters: deep aquifer

Sampling Event	Dissolved Oxygen (mg/L)		Temperature (°C)		Electrical Conductivity (µS/cm)		pH (pH units)		Reduction-oxidation Potential, Corrected (mV)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
On-Site - Former Cantonment Fire Station and FTP (MW008, MW011, MW012, MW167)										
July 2022	0.64 (MW008)	0.87 (MW011)	17.1 (MW008)	19.2 (MW167)	20,177 (MW011)	24,385 (MW167)	6.30 (MW011)	7.04 (MW008)	-150.4 (MW008)	-112.3 (MW167)
On-Site – DNSDC (MW050)										
July 2022	2.39 (MW050)	2.39 (MW050)	18.8 (MW050)	18.8 (MW050)	12,254 (MW050)	12,254 (MW050)	6.61 (MW050)	6.61 (MW050)	-166.2 (MW050)	-166.2 (MW050)
On-Site – Dochra Airfield (MW063, MW071)										
July 2022	2.10 (MW071)	2.13 (MW063)	19.0 (MW071)	19.4 (MW063)	13,755 (MW071)	15,656 (MW063)	7.43 (MW071)	8.03 (MW063)	-352.6 (MW071)	-266.1 (MW063)
On-Site – Northern Boundary (MW102, MW109, MW114)										
July 2022	0.94 (MW109)	1.16 (MW102)	19.7 (MW102)	20.8 (MW109)	5,476 (MW114)	18,542 (MW102)	6.60 (MW102)	7.16 (MW114)	-204.4 (MW109)	-129.4 (MW114)
January 2023	0.00 (MW102)	0.23 (MW109)	22.6 (MW102)	26.2 (MW109)	15,851 (MW109)	21,250 (MW102)	6.53 (MW109)	6.73 (MW102)	168.7 (MW102)	240.8 (MW109)
Off-Site – North (MW188D, MW187D)										
July 2022	0.25 (MW187D)	0.25 (MW187D)	19.0 (MW187D)	19.0 (MW187D)	11,568 (MW187D)	11,568 (MW187D)	6.70 (MW187D)	6.70 (MW187D)	-237.4 (MW187D)	-237.4 (MW187D)

7.1.5 Groundwater Analytical Results

Groundwater analytical results from the monitoring period as well as relevant historical groundwater analytical results are presented in **Table T5** in **Appendix B**. Groundwater results from July 2022 and January 2023 are presented spatially on **Figure F5** to **Figure F8** in **Appendix A**. The monitoring activities are summarised in the OMP Sampling Event Factual Reports provided in **Appendix E**.

The interpretive assessment of the groundwater analytical results is discussed in **Section 8.1.1** and **Section 8.1.2**.

Additionally, historical groundwater concentrations of PFOS+PFHxS and PFOA have been displayed graphically on temporal trend graphs, by PFAS source area and areas of interest (off-Site locations), in **Appendix C** for the areas and locations shown on **Table 11**, below.

Table 11 Temporal trend graphs of groundwater locations

Graph ID	Source Areas and Areas of Interest	Screened aquifer	Groundwater locations
G1, G2	On-Site - Former Cantonment Fire Station and FTP	Deep	MW008, MW011, MW012, MW167
G3, G4	On-Site - DNSDC	Shallow	MW048, MW052
		Deep	MW049, MW050
G5, G6	On-Site - Helicopter Landing Ground	Shallow	MW059
G7, G8	On-Site - Dochra Airfield	Shallow	MW073
		Deep	MW063, MW071
G9, G10	On-Site - Northern Boundary	Shallow	MW104#, MW110, MW115, MW118
		Deep	MW102, MW109, MW114
G11, G12	Off-Site - Northern Boundary	Shallow	MW126, MW128, MW188S
		Deep	MW188D
G13, G14	Off-Site - North	Shallow	MW121, MW124, MW187S
		Deep	MW187D
G15, G16	Off-Site - North East	Shallow	MW056, MW129, MW132*, MW139*

Note:

* Private bore, sample collected from tap outlet. The depth of the bore is unknown and considered to be shallow aquifer based on the electrical conductivity readings.

location included in groupings; however, no samples were collected during the monitoring period.

A summary of groundwater results from the monitoring period is provided in **Table 12** (shallow aquifer) and **Table 13** (deep aquifer) for locations within each area.

Deviations from the historical dataset for groundwater are summarised in **Table 14** and **Table 17**.

Table 12 Summary of PFOA, PFOS and PFOS+PFHxS concentrations in groundwater – shallow aquifer

Sampling Event	No. of Samples[1]	Compound	Concentration Range (µg/L) in Sampling Event	No. of Samples[1] with Concentration > LOR	No. of Samples[1] with Exceedances of Human Health Criteria	No. of Samples[1] with Exceedances of Ecological Criteria
On-Site - DNSDC (MW048, MW052)						
July 2022	2 Primary, 2 QC	PFOA	0.02 µg/L (MW052) to 0.06 µg/L (MW048)	4	0	0
		PFOS	0.02 µg/L (multiple) to 0.38 µg/L (MW052)	4	NA	4
		PFOS+PFHxS	0.66 µg/L (MW052) to 2.70 µg/L (MW048)	4	4	NA
On-Site - Helicopter Landing Ground (MW059)						
July 2022	1 Primary	PFOA	<LOR (MW059)	0	0	0
		PFOS	<LOR (MW059)	0	NA	0
		PFOS+PFHxS	0.04 µg/L (MW059)	1	0	NA
On-Site – Dochra Airfield (MW073)						
July 2022	1 Primary	PFOA	<LOR (MW073)	0	0	0
		PFOS	<LOR (MW073)	0	NA	0
		PFOS+PFHxS	<LOR (MW073)	0	0	NA
On-Site – Northern Boundary (MW104, MW110, MW115, MW1118)						
July 2022	3 Primary	PFOA	<LOR (multiple)	0	0	0
		PFOS	<LOR (multiple)	0	NA	0
		PFOS+PFHxS	<LOR (multiple)	0	0	NA
January 2023	1 Primary	PFOA	<LOR (MW110)	0	0	0
		PFOS	<LOR (MW110)	0	NA	0
		PFOS+PFHxS	<LOR (MW110)	0	0	NA
Off-Site – Northern Boundary (MW126, MW128, MW188S)						
July 2022	3 Primary	PFOA	<LOR (multiple)	0	0	0

Sampling Event	No. of Samples[1]	Compound	Concentration Range (µg/L) in Sampling Event	No. of Samples[1] with Concentration > LOR	No. of Samples[1] with Exceedances of Human Health Criteria	No. of Samples[1] with Exceedances of Ecological Criteria
		PFOS	<LOR (multiple)	0	NA	0
		PFOS+PFHxS	<LOR (multiple) to 0.03 µg/L (MW126)	1	0	NA
Off-Site – North (MW121, MW124, MW187S)						
July 2022	3 Primary, 4 QC	PFOA	<LOR (multiple)	0	0	0
		PFOS	<LOR (multiple)	0	NA	0
		PFOS+PFHxS	<LOR (multiple) to 0.07 µg/L (MW124)	1	1	NA
Off-Site – North East (MW129, MW056, MW132)						
July 2022	1 Primary	PFOA	<LOR (MW132)	0	0	0
		PFOS	0.03 µg/L (MW132)	1	NA	1
		PFOS+PFHxS	0.06 µg/L (MW132)	1	0	NA

Notes:

[1] = Sample counts include intra-laboratory and inter-laboratory duplicates

multiple = the value applies to multiple locations

NA = Not applicable

Table 13 Summary of PFOA, PFOS and PFOS+PFHxS Concentrations in Groundwater: deep aquifer

Sampling Event	No. of Samples[1]	Compound	Concentration Range (µg/L) in Sampling Event	No. of Samples[1] with Concentration > LOR	No. of Samples[1] with Exceedances of Human Health Criteria	No. of Samples[1] with Exceedances of Ecological Criteria
On-Site - Former Cantonment Fire Station and FTP (MW008, MW011, MW012, MW167)						
July 2022	3 Primary	PFOA	<LOR (multiple)	0	0	0
		PFOS	<LOR (multiple) to 0.02 µg/L (MW011)	1	NA	1
		PFOS+PFHxS	<LOR (multiple) to 0.04 µg/L (MW011)	1	0	NA
On-Site – DNSDC (MW050)						
July 2022	1 Primary	PFOA	<LOR (MW050)	0	0	0
		PFOS	<LOR (MW050)	0	NA	0
		PFOS+PFHxS	<LOR (MW050)	0	0	NA
On-Site – Dochra Airfield (MW063, MW071)						
July 2022	2 Primary	PFOA	<LOR (multiple)	0	0	0
		PFOS	<LOR (MW071) to 0.05 µg/L (MW063)	1	NA	1
		PFOS+PFHxS	<LOR (MW071) to 0.05 µg/L (MW063)	1	0	NA
On-Site – Northern Boundary (MW102, MW109, MW114, MW188D)						
July 2022	3 Primary	PFOA	<LOR (multiple)	0	0	0
		PFOS	<LOR (multiple)	0	NA	0
		PFOS+PFHxS	<LOR (multiple)	0	0	NA
January 2023	2 Primary, 2 QC	PFOA	<LOR (multiple)	0	0	0
		PFOS	<LOR (multiple) to 0.06 µg/L (MW109)	1	NA	1
		PFOS+PFHxS	<LOR (multiple) to 0.12 µg/L (MW109)	1	1	NA
Off-Site – North (MW187D)						
July 2022	1 Primary	PFOA	<LOR (MW187D)	0	0	0

Sampling Event	No. of Samples[1]	Compound	Concentration Range (µg/L) in Sampling Event	No. of Samples[1] with Concentration > LOR	No. of Samples[1] with Exceedances of Human Health Criteria	No. of Samples[1] with Exceedances of Ecological Criteria
		PFOS	<LOR (MW187D)	0	NA	0
		PFOS+PFHxS	<LOR (MW187D)	0	0	NA

Notes:

[1] = Sample counts include intra-laboratory and inter-laboratory duplicates

multiple = the value applies to multiple locations

NA = Not applicable

During the monitoring period, the following first-time detections of PFOS, PFOS+PFHxS and/or PFOA were reported as presented in **Table 14**.

Table 14 Groundwater Results - First-time Detections of PFOS, PFOS+PFHxS and/or PFOA

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
July 2022	Off-Site - North (Shallow)	MW124	PFOS+PFHxS (0.07 µg/L)
	Off-Site – Northern Boundary (Deep)	MW188D	PFOS (0.02 µg/L)
		MW188D	PFOS+PFHxS (0.02 µg/L)
	Off-Site - Northern Boundary (Shallow)	MW126	PFOS+PFHxS (0.03 µg/L)

Notes: (Shallow) = Shallow groundwater and (Deep) = Deep groundwater

During the monitoring period, there were no new exceedances of drinking water guidelines; there was one new exceedance of ecological (freshwater 99%) guidelines, presented in **Table 15**.

Table 15 Groundwater Results – New Exceedances (Freshwater 99%) of PFOS and/or PFOA

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
July 2022	Off-Site – Northern Boundary (Deep)	MW188D	PFOS (0.02 µg/L)

Notes: (Deep) = Deep groundwater

The new maximum concentrations of PFOS, PFOS+PFHxS and/or PFOA reported during the monitoring period are presented in **Table 16**.

Table 16 Groundwater Results – New Maximum Concentrations of PFOS, PFOS+PFHxS and/or PFOA

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
July 2022	On-Site - DNSDC (Shallow)	MW048	PFOA (0.05 µg/L)*
		MW048	PFOA (0.06 µg/L)^
	Off-Site – North (Shallow)	MW124	PFOS+PFHxS (0.07 µg/L)
	Off-Site – Northeast (Shallow)	MW132	PFOS (0.03 µg/L)
		MW132	PFOS+PFHxS (0.06 µg/L)
	Off-Site – Northern Boundary (Shallow)	MW126	PFOS+PFHxS (0.03 µg/L)

Notes: (Shallow) = Shallow groundwater, *primary and duplicate samples, ^interlaboratory sample

The new minimum concentrations of PFOS, PFOS+PFHxS and/or PFOA reported during the monitoring period are presented in **Table 17**.

Table 17 Groundwater Results – New Minimum Concentrations of PFOS, PFOS+PFHxS and/or PFOA

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
July 2022	On-Site - DNSDC (Shallow)	MW048	PFOS+PFHxS (2.26 µg/L)
		MW052	PFOA (0.02 µg/L)
		MW052	PFOS (0.38 µg/L)
		MW052	PFOS+PFHxS (0.66 µg/L)
	On-Site - Former Cantonment Fire Station and FTP (Deep)	MW011	PFOS (0.02 µg/L)
		MW011	PFOS+PFHxS (0.04 µg/L)
	On-Site - Helicopter Landing Ground (Shallow)	MW059	PFOS+PFHxS (0.04 µg/L)

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
	Off-Site - North (Shallow)	MW187S	PFOA (<LOR)
		MW187S	PFOS (<LOR)
		MW187S	PFOS+PFHxS (<LOR)

Notes: (Shallow) = Shallow groundwater and (Deep) = Deep groundwater

7.2 Surface Water and Wastewater Results

7.2.1 Surface Water and Wastewater Field Observations

Surface water and wastewater field observations from the monitoring period are presented in **Table T3** in **Appendix B** and summarised below. Note that no notable estate works, or training activities were observed in the vicinity of the sampling locations during the four sampling events.

July 2022

- Surface water and wastewater was observed to range from pale yellow, yellow brown and grey, with low to medium turbidity.
- Organic odours were noted at OTH006, SW035, SW039, SW065 and SW554. No other odours were noted at the locations sampled.
- Possible biological sheen was observed at SW034.
- Water was observed to be flowing at some surface water locations including SW003, SW004, SW026, SW034, SW036, SW039, SW040, SW115 and SW554, as well as at wastewater sampling location OTH006. No water flow was observed at the remaining surface water sample locations visited.

January 2023

- Surface water and wastewater was observed to range from pale yellow, yellow brown and grey, with low to medium turbidity. High turbidity and black or black/grey colour was observed in SW002, SW035 and SW039.
- Organic odours were noted at SW034, SW035, SW036, SW039 and SW065. No other odours were observed at the locations sampled.
- Possible biological sheen was observed at SW028, SW034 and SW064
- An algal bloom was observed at SW002 and SW035.
- Water was observed to be flowing at wastewater sampling location OTH006. Water flow was observed to be absent at all surface water locations visited.

7.2.2 Surface Water Quality Parameters

Surface water quality parameters were measured during the collection of surface water samples. The surface water quality parameters from July 2022 and January 2023 events are presented in **Table T3** in **Appendix B** and summarised below in **Table 18** for locations within each sub-catchment.

Table 18 Summary of surface water quality parameters

Sampling Event	Dissolved Oxygen (mg/L)		Temperature (°C)		Electrical Conductivity (µS/cm)		pH (pH units)		Reduction-oxidation Potential, Corrected (mV)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
On-Site - Sub-catchment A (SW002, SW003, SW026, SW032, SW034, SW114)										
July 2022	4.39 (SW002)	9.84 (SW114)	12.0 (SW002)	16.1 (SW114)	98.1 (SW032)	330.4 (SW002)	6.41 (SW032)	7.43 (SW034)	-170.7 (SW032)	-113.4 (SW034)
January 2023	1.18 (SW002)	5.56 (SW034)	26.4 (SW026)	28.8 (SW034)	248.2 (SW032)	634.0 (SW003)	5.44 (SW026)	6.82 (SW032)	230.5 (SW002)	370.7 (SW032)
On-Site - Sub-catchment B (SW028 and SW555)										
July 2022	8.28 (SW555)	8.31 (SW028)	11.4 (SW028)	16.1 (SW555)	1,090.0 (SW028)	2,404.0 (SW555)	6.81 (SW555)	7.62 (SW028)	-124.6 (SW555)	-33.2 (SW028)
January 2023	0.85 (SW028)	0.85 (SW028)	24.9 (SW028)	24.9 (SW028)	732.0 (SW028)	732.0 (SW028)	4.85 (SW028)	4.85 (SW028)	318.3 (SW028)	318.3 (SW028)
On-Site - Sub-catchment C (SW040)										
July 2022	8.91 (SW040)	8.91 (SW040)	13.0 (SW040)	13.0 (SW040)	1,893.0 (SW040)	1,893.0 (SW040)	6.77 (SW040)	6.77 (SW040)	-131.8 (SW040)	-131.8 (SW040)
January 2023	5.21 (SW040)	5.21 (SW040)	28.3 (SW040)	28.3 (SW040)	29,252 (SW040)	29,252 (SW040)	7.09 (SW040)	7.09 (SW040)	300.7 (SW040)	300.7 (SW040)
On-Site – Boundary (SW115 and SW116)										
July 2022	8.25 (SW116)	8.53 (SW115)	16.1 (SW115)	16.4 (SW116)	190.3 (SW115)	438.9 (SW116)	6.1 (SW116)	6.97 (SW115)	-195.9 (SW116)	-140.4 (SW115)
January 2023	Locations dry.									
On-Site Dochra Airfield (SW004 and SW005)										
July 2022	3.93 (SW005)	7.10 (SW004)	13.9 (SW005)	14.4 (SW004)	149.7 (SW004)	491.1 (SW005)	5.93 (SW005)	6.47 (SW004)	-285.8 (SW005)	-147.8 (SW004)
January 2023	2.65 (SW004)	2.65 (SW004)	23.4 (SW004)	23.4 (SW004)	462.1 (SW004)	462.1 (SW004)	4.98 (SW004)	4.98 (SW004)	435.1 (SW004)	435.1 (SW004)

Sampling Event	Dissolved Oxygen (mg/L)		Temperature (°C)		Electrical Conductivity (µS/cm)		pH (pH units)		Reduction-oxidation Potential, Corrected (mV)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Off-Site North East (SW039 and SW064)										
July 2022	5.47 (SW039)	8.29 (SW064)	10.5 (SW039)	17.6 (SW064)	262.4 (SW039)	426.0 (SW064)	6.78 (SW039)	7.22 (SW064)	-96.3 (SW064)	-75.6 (SW039)
January 2023	0.06 (SW039)	3.86 (SW064)	23.4 (SW039)	24.0 (SW064)	10.2 (SW064)	1,638.0 (SW039)	7.07 (SW039)	7.86 (SW064)	242.7 (SW039)	296.1 (SW064)
Off-Site North West (SW035 and SW036)										
July 2022	6.53 (SW036)	6.70 (SW035)	12.4 (SW035)	13.7 (SW036)	130.0 (SW036)	563.0 (SW035)	6.75 (SW035)	6.81 (SW036)	-224.1 (SW035)	338.0 (SW036)
January 2023	2.92 (SW036)	4.95 (SW035)	28.1 (SW036)	29.7 (SW035)	444.9 (SW036)	1,154.0 (SW035)	6.60 (SW036)	7.25 (SW035)	214.5 (SW035)	295.0 (SW036)
Off-Site - Singleton STP (SW065, SW553, SW563, OTH006)										
July 2022	5.58 (SW065)	6.94 (SW554)	13.9 (SW065)	17.8 (SW553)	161.5 (SW553)	377.1 (SW065)	6.34 (SW554)	6.85 (SW065)	-90.5 (SW065)	-76.1 (SW553)
January 2023	2.22 (SW065)	4.72 (SW553)	27.7 (SW553)	28.2 (SW065)	432.1 (SW553)	675.0 (SW065)	5.92 (SW065)	7.13 (SW553)	305.8 (SW553)	319.9 (SW065)

The readings presented in **Table 18** indicate:

- Moderately to well oxygenated conditions during the July 2022 sampling event and poorly to moderately oxygenated conditions during the January 2023 sampling event
- Generally fresh to brackish water conditions with the exception of SW040 in January 2023 sampling event which was saline (compared to brackish in July 2022)
- Moderately acidic to slightly alkaline conditions during both sampling events
- Slightly to moderately reducing conditions with the exception of SW036 which was strongly oxidising during the July 2022 and January 2023 sampling events
- Temperature ranges are considered consistent with background conditions for the time of year of the sampling being conducted in each event.

The differences in water quality parameters between the two events may be attributed to the significant rainfall prior to the July 2022 event.

7.2.3 Surface Water Analytical Results

Surface water analytical results from the monitoring period as well as relevant historical surface water analytical results are presented in **Table T6** in **Appendix B**. Surface water results from July 2022 and January 2023 are presented spatially on **Figure F9** to **Figure F12** in **Appendix A**. The monitoring activities are summarised in the OMP Sampling Event Factual Reports provided in **Appendix E**. The interpretive assessment of the surface water analytical results is discussed in **Section 8.1.2.6** and **Section 8.2.2**.

Additionally, historical surface water concentrations of PFOS+PFHxS and PFOA have been displayed graphically on temporal trend graphs, by sub-catchment / area of interest set out in **Appendix C** for the locations in **Table 19**.

Table 19 Temporal trend graphs of surface water locations

Graph ID	Sub-catchment / Area of interest	Surface water locations
G33, G34	On-Site Sub-Catchment A	SW002, SW003, SW026, SW032, SW034, SW114
G35, G36	On-Site Boundary	SW115, SW116
G37, G38	On-Site Sub-Catchment B	SW028, SW555
G39, G40	On-Site Sub-Catchment C	SW040
G41, G42	On-Site Dochra Airfield	SW004, SW005
G43, G44	Off-Site North West	SW035, SW036
G45, G46	Off-Site North East	SW039, SW064
G47, G48	Off-Site Singleton STP	SW065, SW553 , SW554

A summary of surface water results from July 2022 and January 2023 events is provided in **Table 20** for locations by sub-catchment / area of interest.

Deviations from the historical dataset for surface water are summarised in **Table 21** to **Table 25**.

Table 20 Summary of PFOA, PFOS and PFOS+PFHxS concentrations in surface water

Sampling Event	No. of Samples[1]	Compound	Concentration Range (µg/L) in Sampling Event	No. of Samples[1] with Concentration > LOR	No. of Samples[1] with Exceedances of Human Health Criteria	No. of Samples[1] with Exceedances of Ecological Criteria
On-Site Sub-Catchment A (SW002, SW003, SW026, SW032, SW034, SW114)						
July 2022	6 Primary 2 QC	PFOA	<LOR (multiple) to 0.03 µg/L (SW032)	6	0	0
		PFOS	0.01 µg/L(multiple) to 0.86 µg/L (SW032)	8	NA	8
		PFOS+PFHxS	0.01 µg/L(SW114) to 1.57 µg/L (SW032)	8	6	NA
January 2023	5 Primary 2 QC	PFOA	<LOR (SW003) to 0.08 µg/L (SW032)	6	0	0
		PFOS	0.02 µg/L(SW003) to 2.13 µg/L (SW032)	7	NA	7
		PFOS+PFHxS	0.04 µg/L(SW003) to 3.82 µg/L (SW032)	7	1	NA
On-Site Boundary (SW115, SW116)						
July 2022	2 Primary	PFOA	<LOR (SW116) and 0.01 µg/L (SW115)	1	0	0
		PFOS	<LOR (SW116) and 0.49 µg/L (SW115)	1	NA	1
		PFOS+PFHxS	<LOR (SW116) and 0.82 µg/L (SW115)	1	0	NA
On-Site Sub-Catchment B (SW004, SW005)						
July 2022	2 Primary	PFOA	<LOR (multiple)	0	0	0
		PFOS	<LOR (multiple)	0	NA	0
		PFOS+PFHxS	<LOR (SW555) and 0.02 µg/L (SW028)	1	0	NA
January 2023	1 Primary 2 QC	PFOA	<LOR (multiple)	0	0	0
		PFOS	0.01 µg/L(multiple)	3	NA	3
		PFOS+PFHxS	0.01 µg/L(multiple)	3	0	NA

Sampling Event	No. of Samples[1]	Compound	Concentration Range (µg/L) in Sampling Event	No. of Samples[1] with Concentration > LOR	No. of Samples[1] with Exceedances of Human Health Criteria	No. of Samples[1] with Exceedances of Ecological Criteria
On-Site Sub-Catchment C (SW040)						
July 2022	1 Primary	PFOA	<LOR (SW040)	0	0	0
		PFOS	<LOR (SW040)	0	NA	0
		PFOS+PFHxS	<LOR (SW040)	0	0	NA
January 2023	1 Primary	PFOA	<LOR (SW040)	0	0	0
		PFOS	<LOR (SW040)	0	NA	0
		PFOS+PFHxS	<LOR (SW040)	0	0	NA
On-Site Dochra Airfield (SW004, SW005)						
July 2022	2 Primary	PFOA	<LOR (multiple)	0	0	0
		PFOS	<LOR (multiple)	0	NA	0
		PFOS+PFHxS	<LOR (multiple)	0	0	NA
January 2023	1 Primary	PFOA	<LOR (SW004)	0	0	0
		PFOS	<LOR (SW004)	0	NA	0
		PFOS+PFHxS	<LOR (SW004)	0	0	NA
Off-Site North East (SW039, SW064)						
July 2022	2 Primary	PFOA	<LOR (multiple)	0	0	0
		PFOS	0.01 µg/L (SW039) and 0.02 µg/L (SW064)	2	NA	2
		PFOS+PFHxS	0.02 µg/L (SW039) and 0.04 µg/L (SW064)	2	0	NA
January 2023	2 Primary	PFOA	<LOR (SW039) and 0.02 µg/L (SW064)	1	0	0
		PFOS	0.03 µg/L (SW039) and 0.06 µg/L (SW064)	2	NA	2
		PFOS+PFHxS	0.04 µg/L (SW039) and 0.08 µg/L (SW064)	2	0	NA

Sampling Event	No. of Samples[1]	Compound	Concentration Range (µg/L) in Sampling Event	No. of Samples[1] with Concentration > LOR	No. of Samples[1] with Exceedances of Human Health Criteria	No. of Samples[1] with Exceedances of Ecological Criteria
Off-Site North West (SW035, SW036)						
July 2022	2 Primary	PFOA	<LOR (multiple)	0	0	0
		PFOS	<LOR (SW035) and 0.23 µg/L (SW036)	1	NA	1
		PFOS+PFHxS	<LOR (SW035) and 0.38 µg/L (SW036)	1	0	NA
January 2023	2 Primary	PFOA	<LOR (SW035) and 0.03 µg/L (SW036)	1	0	0
		PFOS	0.01 µg/L (SW035) and 0.94 µg/L (SW036)	2	NA	2
		PFOS+PFHxS	0.01 µg/L (SW035) and 1.52 µg/L (SW036)	2	0	NA
Off-Site Singleton STP (SW065, SW553, SW563)						
July 2022	3 Primary 2 QC	PFOA	<LOR (multiple)	0	0	0
		PFOS	0.01 µg/L (SW065) to 0.08 µg/L (SW553)	5	NA	5
		PFOS+PFHxS	0.02 µg/L (SW065) to 0.15 µg/L (SW553)	5	0	NA
January 2023	2 Primary	PFOA	<LOR (SW065) and 0.01 µg/L (SW553)	1	0	0
		PFOS	0.03 µg/L (SW065) and 0.30 µg/L (SW553)	2	NA	2
		PFOS+PFHxS	0.03 µg/L (SW065) and 0.50 µg/L (SW553)	2	0	NA

Notes:

1 = Sample counts include intra-laboratory and inter-laboratory duplicates

multiple = the value applies to multiple locations

NA = Not applicable

During the monitoring period, the following first-time detections of PFOS, PFOS+PFHxS and/or PFOA were reported as presented in **Table 28**.

Table 21 Surface Water Results - First-time Detections of PFOS, PFOS+PFHxS and/or PFOA

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
July 2022	On-Site - Boundary	SW115	PFOA (0.01 µg/L)
		SW115	PFOS (0.49 µg/L)
		SW115	PFOS+PFHxS (0.82 µg/L)
	On-Site - Sub-catchment A	SW032	PFOA (0.03 µg/L)
		SW114	PFOS (0.01 µg/L)
		SW114	PFOS+PFHxS (0.01 µg/L)
	Off-Site - Singleton STP	OTH006	PFOA (0.01 µg/L)
		SW554	PFOS (0.05 µg/L)
		SW554	PFOS+PFHxS (0.09 µg/L)
January 2023	Off-Site - North West	SW035	PFOS (0.01 µg/L)
		SW035	PFOS+PFHxS (0.01 µg/L)
		SW036	PFOA (0.03 µg/L)

The new exceedances of human health recreational guidelines reported during the monitoring period are presented in **Table 22**.

Table 22 Surface Water Results - New Exceedances (Recreational) of PFOS+PFHxS and/or PFOA

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
January 2023	On-Site - Sub-catchment A	SW032	PFOS+PFHxS (3.82 µg/L)

The new exceedances of ecological (freshwater 99%) guidelines reported during the monitoring period are presented in **Table 23**.

Table 23 Surface Water Results – New Exceedances (Freshwater 99%) of PFOS and/or PFOA

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
July 2022	On-Site - Boundary	SW115	PFOS (0.49 µg/L)
	On-Site - Sub-catchment A	SW114	PFOS (0.01 µg/L)
	Off-Site - Singleton STP	SW554	PFOS (0.05 µg/L)
January 2023	Off-Site - North West	SW035	PFOS (0.01 µg/L)

The new maximum concentrations of PFOS, PFOS+PFHxS and/or PFOA reported during the monitoring period are presented in **Table 24**.

Table 24 Surface Water Results – New Maximum Concentrations of PFOS, PFOS+PFHxS and/or PFOA

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
July 2022	On-Site - Sub-catchment A	SW002	PFOS (0.42 µg/L)
		SW002	PFOS+PFHxS (0.66 µg/L)
		SW026	PFOA (0.02 µg/L)
		SW026	PFOS (0.76 µg/L)
		SW026	PFOS+PFHxS (1.2 µg/L)

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
		SW032	PFOS (0.86 µg/L)
		SW032	PFOS+PFHxS (1.57 µg/L)
July 2022	Off-Site - North East	SW064	PFOS+PFHxS (0.04 µg/L)
	Off-Site - North West	SW036	PFOS (0.23 µg/L)
		SW036	PFOS+PFHxS (0.38 µg/L)
	Off-Site - Singleton STP	SW065	PFOS+PFHxS (0.05 µg/L)
		OTH006	PFOS (0.12 µg/L)
		OTH006	PFOS+PFHxS (0.23 µg/L)
January 2023	On-Site - Sub-catchment A	SW002	PFOA (0.05 µg/L)
		SW002	PFOS (0.85 µg/L)
		SW002	PFOS+PFHxS (1.66 µg/L)
		SW032	PFOA (0.08 µg/L)
		SW032	PFOS (2.13 µg/L)
		SW032	PFOS+PFHxS (3.82 µg/L)
		SW034	PFOA (0.04 µg/L)
		SW034	PFOS (1.35 µg/L)
		SW034	PFOS+PFHxS (1.9 µg/L)
	Off-Site - North East	SW064	PFOS (0.06 µg/L)
		SW064	PFOS+PFHxS (0.08 µg/L)
		SW036	PFOS (0.94 µg/L)
		SW036	PFOS+PFHxS (1.52 µg/L)
	Off-Site - Singleton STP	SW553	PFOS (0.3 µg/L)
		OTH006	PFOS (0.16 µg/L)

The new minimum concentrations of PFOS, PFOS+PFHxS and/or PFOA reported during the monitoring period are presented in **Table 25**.

Table 25 Surface Water Results – New Minimum Concentrations of PFOS, PFOS+PFHxS and/or PFOA

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
July 2022	On-Site - Boundary	SW116	PFOA (<LOR)
		SW116	PFOS (<LOR)
		SW116	PFOS+PFHxS (<LOR)
	On-Site - Sub-catchment A	SW114	PFOA (<LOR)
	Off-Site - Singleton STP	SW553	PFOS (0.08 µg/L)
		SW553	PFOS+PFHxS (0.15 µg/L)

7.3 Sediment

7.3.1 Sediment Field Observations

The sediment observed during the monitoring period were comprised mainly clays and silts (silty clay and sandy silt), with sand (silty, gravelly and clayey sand) and gravels (clayey and sandy gravels) at some locations. The colours observed were mainly browns (light to dark) with some greys and minor orange/red.

Most sediment samples were described to contain some organic matter in the form of grass rootlets.

7.3.2 Sediment Analytical Results

Sediment analytical results from the monitoring period as well as all available historical sediment analytical results for OMP sampling locations (including data from other projects) are presented in **Table T7** in **Appendix B**.

The sediment results from July 2022 and January 2023 events are presented spatially on **Figure F13** to **Figure F16** in **Appendix A**. The monitoring activities are summarised in the OMP Sampling Event Factual Reports provided in **Appendix E**. The interpretive assessment of the sediment analytical results is discussed in **Section 8.3.1** and **Section 8.3.2**.

Additionally, OMP and other historical PFOS+PFHxS and PFOA concentrations for sediment are displayed graphically on temporal trend graphs, by catchment/area of interest, in **Appendix C** for the locations in **Table 26**.

Table 26 Temporal trend graphs of sediment concentrations by catchment or area of interest

Graph ID	Catchment /Area of interest	Sediment locations
G17, G18	On-Site Sub-Catchment A	SD002, SD003, SD032, SD053, SD065
G19, G20	On-Site Boundary	SD115, SD116
G21, G22	On-Site Sub-Catchment B	SD055, SD555
G23, G24	On-Site Sub-Catchment C	SD040
G25, G26	On-Site Dochra Airfield	SD004, SD005
G27, G28	Off-Site North East	SD039, SD046
G29, G30	Off-Site North West	SD052, SD080
G31, G32	Off-Site Singleton STP	SD047, SD539, SD540

A summary of sediment results from July 2022 and January 2023 events is provided in **Table 27** for catchment areas and on and off-Site areas of interest.

Deviations from the historical dataset for sediment are summarised in **Table 28** to **Table 30**.

Table 27 Summary of PFOA, PFOS and PFOS+PFHxS Concentrations in Sediment

Sampling Event	No. of Samples[1]	Compound	Concentration Range (mg/kg) in Sampling Event	No. of Samples[1] with Concentration > LOR
On-Site Sub-Catchment A (SD002, SD003, SD032, SD053, SD065, SD114)				
July 2022	6 Primary 2 QC	PFOA	<LOR (multiple) to 0.0002 (multiple)	2
		PFOS	0.0007 (SD065) to 0.0428 (SD002)	8
		PFOS+PFHxS	0.0007 (SD065) to 0.0446 (SD002)	8
January 2023	6 Primary 2 QC	PFOA	< LOR	0
		PFOS	0.0003 (SD003) to 0.0051 (SD053)	8
		PFOS+PFHxS	0.0003 (SD003) to 0.0078 (SD002)	8
On-Site Boundary (SD115, SD116)				
July 2022	2 Primary	PFOA	<LOR (SD116) and 0.0002 (SD115)	1
		PFOS	0.0007 (SD116) and 0.0457 (SD115)	2
		PFOS+PFHxS	0.0007 (SD116) and 0.048 (SD115)	2
January 2023	2 Primary	PFOA	<LOR (SD116) and 0.0003 (SD115)	1
		PFOS	0.0003 (SD116) and 0.0351 (SD115)	2
		PFOS+PFHxS	0.0003 (SD116) and 0.0374 (SD115)	2
On-Site Sub-Catchment B (SD055, SD555)				
July 2022	2 Primary	PFOA	<LOR (multiple)	0
		PFOS	0.0003 (SD555) and 0.0026 (SD055)	2
		PFOS+PFHxS	0.0003 (SD555) and 0.0029 (SD055)	2
January 2023	2 Primary 2 QC	PFOA	<LOR	0
		PFOS	0.0011 to 0.0034 (SD055)	4
		PFOS+PFHxS	0.002 to 0.0034 (SD055)	4
On-Site Sub-Catchment C (SD040)				
July 2022	1 Primary	PFOA	<LOR (SD040)	0
		PFOS	0.0004 (SD040)	1
		PFOS+PFHxS	0.0004 (SD040)	1
On-Site Dochra Airfield (SD004, SD005)				
July 2022	2 Primary	PFOA	<LOR	0
		PFOS	<LOR (SD004) and 0.0018 (SD005)	1
		PFOS+PFHxS	<LOR (SD004) and 0.0018 (SD005)	1

Sampling Event	No. of Samples[1]	Compound	Concentration Range (mg/kg) in Sampling Event	No. of Samples[1] with Concentration > LOR
Off-Site North East (SD039, SD046)				
July 2022	2 Primary	PFOA	<LOR	0
		PFOS	0.0034 (SD046) and 0.0038 (SD039)	2
		PFOS+PFHxS	0.0036 (SD046) and 0.0038 (SD039)	2
January 2023	2 Primary	PFOA	<LOR (multiple)	0
		PFOS	0.0016 (SD043) and 0.0029 (SD039)	2
		PFOS+PFHxS	0.0016 (SD043) and 0.0029 (SD039)	2
Off-Site North West (SD052, SD080)				
July 2022	2 Primary	PFOA	<LOR	0
		PFOS	0.0009 (SD052) and 0.001 (SD080)	2
		PFOS+PFHxS	0.0009 (SD052) and 0.001 (SD080)	2
January 2023	2 Primary	PFOA	<LOR	0
		PFOS	0.0007 (SD052) and 0.0189 (SD080)	2
		PFOS+PFHxS	0.0007 (SD052) and 0.021 (SD080)	2
Off-Site Singleton STP (SD047, SD539, SD563)				
July 2022	3 Primary 2 QC	PFOA	<LOR (multiple) to 0.0002 (multiple)	3
		PFOS	0.0016 (SD539) to 0.012 (SD540)	5
		PFOS+PFHxS	0.0016 (SD539) to 0.0123 (SD540)	5
January 2023	2 Primary	PFOA	<LOR	0
		PFOS	0.0048 (SD047) and 0.0112 (SD539)	2
		PFOS+PFHxS	0.0016 (SD047) and 0.012 (SD539)	2

Notes:

1 = Sample counts include intra-laboratory and inter-laboratory duplicates

multiple = the value applies to multiple locations

NA = Not applicable

During the monitoring period, the following first-time detections of PFOS, PFOS+PFHxS and/or PFOA were reported as presented in **Table 28**.

Table 28 Sediment Results - First-time Detections of PFOS, PFOS+PFHxS and/or PFOA

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
July 2022	On-Site - Boundary	SD115	PFOA (0.0002 mg/kg)
		SD115	PFOS (0.0457 mg/kg)
		SD115	PFOS+PFHxS (0.048 mg/kg)
		SD116	PFOS (0.0007 mg/kg)
		SD116	PFOS+PFHxS (0.0007 mg/kg)
	On-Site - Sub-catchment A	SD002	PFOA (0.0002 mg/kg)
		SD114	PFOS (0.0029 mg/kg)

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
		SD114	PFOS+PFHxS (0.0029 mg/kg)
	On-Site - Sub-catchment B	SD555	PFOS (0.0003 mg/kg)
	On-Site - Sub-catchment B	SD555	PFOS+PFHxS (0.0003 mg/kg)
	On-Site - Sub-catchment C	SD040	PFOS (0.0004 mg/kg)
		SD040	PFOS+PFHxS (0.0004 mg/kg)
	Off-Site - Singleton STP	SD047	PFOA (0.0002 mg/kg)
		SD540	PFOA (0.0002 mg/kg)

The new maximum concentrations of PFOS, PFOS+PFHxS and/or PFOA reported during the monitoring period are presented in **Table 29**.

Table 29 Sediment Water Results – New Maximum Concentrations of PFOS, PFOS+PFHxS and/or PFOA

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
July 2022	On-Site - Dochra Airfield	SD005	PFOS (0.0018 mg/kg)
		SD005	PFOS+PFHxS (0.0018 mg/kg)
	On-Site - Sub-catchment A	SD032	PFOS (0.0044 mg/kg)
		SD032	PFOS+PFHxS (0.0051 mg/kg)
	On-Site - Sub-catchment B	SD055	PFOS+PFHxS (0.0029 mg/kg)
	Off-Site - North East	SD046	PFOS+PFHxS (0.0036 mg/kg)
	Off-Site - Singleton STP	SD047	PFOS (0.0094 mg/kg)
		SD047	PFOS+PFHxS (0.0096 mg/kg)
January 2023	On-Site - Boundary	SD115	PFOA (0.0003 mg/kg)
	On-Site - Sub-catchment B	SD055	PFOS+PFHxS (0.0034 mg/kg)
		SD555	PFOS (0.0011 mg/kg)
		SD555	PFOS+PFHxS (0.0013 mg/kg)
	Off-Site - North West	SD080	PFOS (0.0189 mg/kg)
	Off-Site - North West	SD080	PFOS+PFHxS (0.021 mg/kg)
	Off-Site - Singleton STP	SD539	PFOS (0.0112 mg/kg)

The new minimum concentrations of PFOS, PFOS+PFHxS and/or PFOA reported during the monitoring period are presented in **Table 30**.

Table 30 Sediment Results – New Minimum Concentrations of PFOS, PFOS+PFHxS and/or PFOA

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
July 2022	On-Site - Boundary	SD116	PFOA (<LOR)
	On-Site - Sub-catchment A	SD065	PFOS (0.0007 mg/kg)
		SD065	PFOS+PFHxS (0.0007 mg/kg)
	On-Site - Sub-catchment A	SD114	PFOA (<LOR)
	On-Site - Sub-catchment B	SD555	PFOA (<LOR)
	Off-Site - North West	SD080	PFOS (0.001 mg/kg)
		SD080	PFOS+PFHxS (0.001 mg/kg)
		SD052	PFOS (0.0009 mg/kg)

Sampling Event	Area	Location	Analyte/s & Reported Concentrations
		SD052	PFOS+PFHxS (0.0009 mg/kg)
	Off-Site - Singleton STP	SD539	PFOS (0.0016 mg/kg)
July 2022	Off-Site - Singleton STP	SD539	PFOS+PFHxS (0.0016 mg/kg)
		SD540	PFOS (0.012 mg/kg)
		SD540	PFOS+PFHxS (0.0123 mg/kg)
January 2023	On-Site - Boundary	SD115	PFOS (0.0351 mg/kg)
		SD115	PFOS+PFHxS (0.0374 mg/kg)
		SD116	PFOS (0.0003 mg/kg)
		SD116	PFOS+PFHxS (0.0003 mg/kg)
	On-Site - Sub-catchment A	SD003	PFOS (0.0003 mg/kg)
		SD003	PFOS+PFHxS (0.0003 mg/kg)
		SD065	PFOS (0.0006 mg/kg)
		SD065	PFOS+PFHxS (0.0006 mg/kg)
		SD114	PFOS (0.0023 mg/kg)
		SD114	PFOS+PFHxS (0.0023 mg/kg)
	Off-Site - North West	SD052	PFOS (0.0007 mg/kg)
		SD052	PFOS+PFHxS (0.0007 mg/kg)

8.0 Discussion/Interpretive Analysis

8.1 Groundwater

8.1.1 Groundwater Results

The July 2022 and January 2023 groundwater results for PFOS+PFHxS and PFOA compared to assessment criteria are provided in **Figure F5** to **Figure F8** (in **Appendix A**) and presented in **Table T5** (in **Appendix B**).

A summary of groundwater concentrations changes by area of interest is provided below:

- **Former Cantonment Fire Station and FTP**: Concentrations of PFOA, PFOS and PFOS+PFHxS were less than the assessment criteria except for PFOS in MW011, which exceeded the ecological criteria. New minimum concentrations were reported for PFOS and PFOS+PFHxS in MW011.
- **DNSDC**: Concentrations of PFOS exceeded the ecological criteria and concentrations of PFOS+PFHxS exceeded the human health criteria in the locations sampled. New maximum concentrations of PFOS and PFOA were reported in MW048.
- **Helicopter Landing Ground**: The results were less than the assessment criteria. One detection of PFOS+PFHxS was reported above the laboratory LOR.
- **Dochra Airfield**: The results were less than the laboratory LOR in the samples from the shallow aquifer. PFOS and PFOS+PFHxS were detected in one monitoring well (MW071) targeting the deep aquifer, with PFOS concentrations exceeding the ecological assessment criteria.
- **Northern boundary**: The results were less than the laboratory LOR in the samples from the shallow aquifer. Concentrations of PFOS exceeded the ecological criteria and concentrations of PFOS+PFHxS exceeded the human health criteria in one (MW109) of the two monitoring wells targeting the deep aquifer.
- **Off-Site Northern boundary**: The results were less than the laboratory LOR in the samples from shallow aquifer except for a first time and maximum detection of PFHxS in MW126, but less than the assessment criteria. PFOS exceeded the ecological criteria assessment criteria in the deep aquifer in monitoring well (MW188D), which was also a first-time detection and exceedance.
- **Off-Site North**: The results were less than the laboratory LOR in the samples from the shallow and deep aquifer, except for a first-time detection and maximum concentration of PFHxS in MW124 targeting the shallow aquifer.
- **Off-Site North East**: Note that for this area, only one (MW132) of three wells targeting the shallow aquifer was able to be sampled. In MW132, PFOS exceeded the ecological assessment criteria and PFOS and PFOS+PFHxS were both new maximum concentrations.

The highest concentrations of PFAS on-Site during the monitoring period and historically have been detected at the Former Cantonment Fire Station and FTP, DNSDC, northern boundary and the Dochra Airfield. It is however noted that the location with the highest historical PFAS concentrations (MW012 with PFOS+PFHxS at 142 µg/L in May 2019) within the area of the former Cantonment Fire Station has not been sampled since 2019 as it may have been destroyed.

The highest off-Site concentrations of PFAS during the monitoring period have been detected in monitoring wells to the north east of the Site, which are located east and downstream of the Singleton STP. However, historically the highest concentrations of PFAS in off-Site groundwater was at MW139 (with PFOS+PFHxS at 0.1 µg/L in May 2020), within a residential property approximately 1.6 km to the north east of the Site. It is noted that this well could not be sampled during the monitoring period due to access constraints.

The DSI (AECOM, 2019) found that the PFAS groundwater plume in the off-Site area to the north east did not appear to be directly connected to the on-Site source areas and is likely from one or more of the off-Site sources identified in the DSI, which include the Singleton STP, a former council sullage tip and Whittingham Fire Station and Airstrip all within the local catchment area, as well as other up-gradient sources (local mine sites, Fire and Rescue NSW in Singleton and Hunter Valley Mines Rescue Facility).

The results of the locations accessed and sampled for the monitoring period are generally consistent with the findings of the DSI (AECOM, 2019) in terms of extent of PFAS impacts.

8.1.2 Groundwater Temporal Trend Analysis

Temporal trend graphs and Mann Kendall analysis are presented in **Appendix C** for PFOS+PFHxS and PFOA concentrations in selected groundwater sampling locations indicative of a source area or area of interest (as presented in **Table 11** in **Section 7.1.5**).

The Mann Kendall analysis was used to assess the trends in the concentrations in groundwater, and whether they have a monotonic upward or downward trend. 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'.

Mann Kendall analysis was only undertaken for locations which were sampled in the monitoring period and for locations which were consistently greater than the LOR, with a minimum of four sampling rounds. The data used in this analysis was sourced from OMP events both historically and during the monitoring period for each sample location. Where sample results were less than the LOR, half the LOR[1] was adopted for the Mann Kendall analysis.

More holistically, concentration trends were also reviewed as temporal trend graphs, against 30-day average rainfall. These graphs allow for discussion of concentration trends within areas which do not meet the minimum assessment requirements of Mann Kendall analysis.

8.1.2.1 On-Site - Former Cantonment Fire Station and FTP – Trend Graphs

The Former Cantonment Fire Station and FTP is located within the central area of the northern half of the Cantonment Area within Sub-Catchment A. The concentrations in PFOS+PFHxS and PFOA in groundwater in the vicinity of the Former Cantonment Fire Station and FTP show no potential trend.

The temporal trend graphs show that the groundwater concentrations in this area are lower than the previous monitoring period, and therefore within historical concentration ranges at each of the monitoring locations. It is noted that historically MW012 has had the highest concentration at the Site but was not able to be sampled during the monitoring period.

Additionally, there is no observed changes to PFAS concentration trends associated with the demolition of the Former Cantonment Fire Station and removal of PFAS impacted concrete slabs.

Refer to **Graph G1** and **Graph G2** and the relevant Mann Kendall analysis in **Appendix C**, and **Table** 31 below.

[1] where multiple LOR thresholds were present for a sample location, the average of half the LOR values was used.

Table 31 Summary of Trend Analysis: On-Site - Former Cantonment Fire Station and FTP

Location ID	Aquifer	Analyte	Historical Range	Current Monitoring Period (µg/L)	Mann Kendall Trend	
			Min – Max (µg/L)		Trend	Confidence Factor
MW008	Deep	PFOS+PFHxS	<LOR – 0.02	<LOR	Not assessed*	
		PFOA	<LOR	<LOR	Not assessed*	
MW011	Deep	PFOS+PFHxS	0.083-0.42	0.04	No trend	83.3%
		PFOA	*<LOR – 0.025*	*<LOR*	*No trend*	*50%*
MW012	Deep	PFOS+PFHxS	128.2-145	Not sampled	Not assessed*	
		PFOA	2.48-2.91	Not sampled	Not assessed*	
MW167	Deep	PFOS+PFHxS	0.012-0.23	<LOR	No trend	62.5%
		PFOA	*<LOR-0.025*	*<LOR*	*No trend*	*50%*

Note:
Only one result is reported in the Min-Max Range where the values are the same.
Italics: indicate low confidence in the Mann Kendall trend analysis given concentrations are within 1 to 2 orders of magnitude of the LOR.
* Insufficient sample numbers at this location to allow for statistical assessment.

8.1.2.2 On-Site - DNSDC – Trend Graphs

The DNSDC is located in the northern portion of the Cantonment Area and is partially within Sub-Catchment A. The concentrations in PFOS+PFHxS and PFOA at MW048 targeting the shallow aquifer in the vicinity of the DNSDC showed no potential trend. The trend in the other three wells was not assessed due to insufficient data, however the concentrations for the monitoring period were within the same order of magnitude as historical data.

Refer to **Graph G3** and **Graph G4** and the relevant Mann Kendall analysis (in **Appendix C**), and **Table 32** below.

Table 32 Summary of Trend Analysis: On-Site - DNSDC

Location ID	Aquifer	Analyte	Historical Range	Current Monitoring Period (µg/L)	Mann Kendall Trend	
			Min – Max (µg/L)		Trend	Confidence Factor
MW048	Shallow	PFOS+PFHxS	2.2-2.71	2.7	No trend	62.5%
		PFOA	0.03-0.04	0.06	No trend	72.9%
MW049	Deep	PFOS+PFHxS	2.38-10.4	Not sampled	Not assessed*	
		PFOA	0.06-0.17	Not sampled	Not assessed*	
MW050	Deep	PFOS+PFHxS	<LOR	<LOR	Not assessed*	
		PFOA	0.01	0.01	Not assessed*	
MW052	Shallow	PFOS+PFHxS	0.95	0.66	Not assessed*	
		PFOA	0.03	0.02	Not assessed*	

Note:
Only one result is reported in the Min-Max Range where the values are the same.
Italics: indicate low confidence in the Mann Kendall trend analysis given concentrations are within 1 to 2 orders of magnitude of the LOR.
* Insufficient sample numbers at this location to allow for statistical assessment.

8.1.2.3 On-Site - Helicopter Landing Ground– Trend Graphs

No Mann Kendall analysis was undertaken given that only two rounds of data have been collected.

The temporal graphs show that PFOA concentrations have remained below LOR, whereas PFOS+PFHxS concentrations have decreased when compared to historical results.

Refer to **Graph G5** and **Graph G6** for trend graphs (in **Appendix C**).

8.1.2.4 On-Site - Dochra Airfield– Trend Graphs

No Mann Kendall analysis was undertaken given that only two rounds of data have been collected.

The temporal trend graphs show that PFOA concentrations have remained below LOR. PFOS+PFHxS concentrations are within an order of magnitude of the LOR, and have fluctuated, however no apparent correlation with rainfall is observed.

Refer to **Graph G7** and **Graph G8** for trend graphs (in **Appendix C**).

8.1.2.5 On-Site - Northern Boundary – Trend Graphs

The on-Site groundwater monitoring wells located along the northern boundary showed a stable or no potential trend, where there was sufficient data to perform the Mann Kendall analysis.

The temporal trend graphs show that PFOA concentrations have generally remained below LOR. PFOS+PFHxS concentrations were within an order of magnitude of the LOR, with the exception of MW109, which has fluctuated between below LOR and highest concentration of 0.28 µg/L (in May 2019), with no apparent trend or correlation with rainfall observed.

Refer to **Graph G9** and **Graph G10** and the relevant Mann Kendall analysis (in **Appendix C)**, and **Table 33** below.

Table 33 Summary of Trend Analysis: On-Site - Northern Boundary

Location ID	Aquifer	Analyte	Historical Range	Current Monitoring Period (µg/L)	Mann-Kendall Trend	
			Min – Max (µg/L)		Trend	Confidence Factor
MW102	Deep	PFOS+PFHxS	<LOR-0.02	<LOR	*Stable*	*72.9%*
		PFOA	<LOR-0.01	<LOR	*Stable*	*72.9%*
MW109	Deep	PFOS+PFHxS	<LOR-0.28	<LOR-0.12	No trend	82.1%
		PFOA	*<LOR*	*<LOR*	*Stable*	*40.8%*
MW110	Shallow	PFOS+PFHxS	*<LOR*	*<LOR*	*Stable*	*37.5%*
		PFOA	*<LOR*	*<LOR*	*Stable*	*37.5%*
MW114	Deep	PFOS+PFHxS	<LOR	<LOR	Not assessed*	
		PFOA	<LOR	<LOR	Not assessed*	
MW115	Shallow	PFOS+PFHxS	<LOR	<LOR	Not assessed*	
		PFOA	<LOR	<LOR	Not assessed*	
MW118	Shallow	PFOS+PFHxS	<LOR	<LOR	Not assessed*	
		PFOA	<LOR	<LOR	Not assessed*	

Note:
Only one result is reported in the Min-Max Range where the values are the same.
Italics: indicate low confidence in the Mann Kendall trend analysis given concentrations are within 1 to 2 orders of magnitude of the LOR.
* Insufficient sample numbers at this location to allow for statistical assessment.

8.1.2.6 Off-Site - Northern Boundary– Trend Graphs

No Mann Kendall analysis was undertaken given that only three rounds of data have been collected.

The temporal trend graphs show that PFOA and PFOS+PFHxS concentrations remained at or within an order of magnitude of the LOR for this area, with no apparent trend or correlation with rainfall observed.

Refer to **Graph G11** and **Graph G12** for trend graphs (in **Appendix C**).

8.1.2.7 Off-Site - North– Trend Graphs

As per the findings of the on-Site northern boundary groundwater monitoring wells, the off-Site wells located to the north also showed a stable or no potential trend, where there was sufficient data to perform the Mann Kendall analysis.

The trend graphs show an increase in PFOS+PFHxS concentrations at MW124, this may potentially be attributable to the rainfall prior to the July 2022 sampling event, though further monitoring would be required to confirm this interaction. This location will continue to be monitored to assess whether there is an increasing trend.

Refer to **Graph G13** and **Graph G14** and the relevant Mann Kendall analysis (in **Appendix C)**, and **Table 34** below.

Table 34 Summary of Trend Analysis: On-Site – Northern Boundary

Location ID	Aquifer	Analyte	Historical Range	Current Monitoring Period (µg/L)	Mann-Kendall Trend	
			Min – Max (µg/L)		Trend	Confidence Factor
MW121	Shallow	*PFOS+PFHxS*	*<LOR-0.03*	*<LOR*	*No trend*	*50%*
		PFOA	*<LOR-0.02*	*<LOR*	*No trend*	*50%*
MW124	Shallow	PFOS+PFHxS	<LOR	0.07	No trend	72.9%
		PFOA	*<LOR*	*<LOR*	*No trend*	*37.5%*
MW187S	Shallow	PFOS+PFHxS	Not sampled	<LOR	Not assessed	
		PFOA		<LOR	Not assessed	
MW188D	Deep	PFOS+PFHxS	<LOR	0.02	Not assessed	
		PFOA	<LOR	0.02	Not assessed	
MW187D	Deep	PFOS+PFHxS	<LOR	<LOR	Not assessed	
		PFOA	<LOR	0.02	Not assessed	

8.1.2.8 Off-Site – North East – Trend Graphs

No Mann Kendall analysis was undertaken given that only three rounds of data have been collected.

The temporal trend graphs show an increase in PFOS+PFHxS concentrations at MW132 (shallow well), potentially attributable to the rainfall prior to the July 2022 sampling event, though further monitoring would be required to confirm this interaction. This location will continue to be monitored to assess whether there is an increasing trend.

Refer to **Graph G15** and **Graph G16** for trend graphs (in **Appendix C**).

8.2 Surface Water

8.2.1 Surface Water PFAS Results

The July 2022 and January 2023 surface water analytical results for PFOS+PFHxS and PFOA, compared to screening criteria are provided in **Figure F9** to **Figure F12** (in **Appendix A**).

A summary of surface water concentrations changes by sub-catchment and area of interest is provided below:

- **Sub-catchment A**: Concentrations of PFOS and PFOS+PFHxS in the surface water samples exceeded the ecological and human health-based assessment criteria in the July 2022 monitoring event. During the January 2023 event, PFOS concentrations exceeded the ecological criteria in the samples analysed and one sample exceeded the human health-based criteria for PFOS+PFHxS.

There were first-time detections of PFOA in SW032 and PFOS and PFOS+PFHxS in SW114. New exceedances of human health criteria for PFOS+PFHxS in SW032 and ecological criteria for PFOS in SW114. Note that SW114 was sampled for the first time during the monitoring period.

- **Sub-catchment B**: During the July 2022 event there was one detection of PFHxS, below the adopted criteria. PFOS exceeded the ecological criteria in the January 2023 event. There were no new minimum or maximum concentrations and no new first-time detections or exceedances during the monitoring period.
- **Sub-catchment C**: All results were less than the LOR during the monitoring period.
- **On-Site boundary**: The concentration of PFOS exceeded the ecological assessment criteria in SW115, which was also a first-time detection. There were also first-time detections for PFOA, and PFOS+PFHxS in SW115 and new minimum concentrations for SW116 (all below LOR).
- **Dochra Airfield**: The results were less than the LOR during the monitoring period.
- **Off-Site – North East**: The concentration of PFOS exceeded the ecological assessment criteria at both locations and in both sampling events. There were new maximum concentrations of PFOS and PFOS+PFHxS at both locations for during the monitoring period.
- **Off-Site - North West**: Concentrations of PFOS exceeded the ecological criteria in SW036 for both sampling events, and in the July 2022 sampling event at SW035. First time detections of PFOS and PFOS+PFHxS were reported in SW035 and PFOA in SW036 in January 2023 sampling event. New exceedances of PFOS were reported in SW035 and new maximum concentrations of PFOS and PFOS+PFHxS were reported in SW036.
- **Off-Site – Singleton STP**: Concentrations of PFOS exceeded the ecological criteria in the locations sampled for both sampling events. First time detections of PFOA and new maximum concentration of PFOS and PFOS+PFHxS were reported in the effluent sample (OTH006). First time detections of PFOS and PFOS+PFHxS and new exceedances for PFOS was reported in SW554.

The results were consistent with the DSI findings (AECOM, 2020) with the highest concentrations detected in Sub-Catchment A (close to source areas), down-gradient locations off-Site to the north west, within effluent in the Singleton STP and surface water locations near the STP.

It is noted that PFAS concentrations in surface water are dependent on the conditions at the time of sampling (such as flow rate).

8.2.2 Surface Water Temporal Trend Analysis

Surface water temporal trend graphs for PFOS+PFHxS and PFOA concentrations are provided on **Graph G33** to **Graph G48** (in **Appendix C**).

Locations with PFAS concentrations consistently below LOR were excluded from the temporal graphs. Additionally, the 30-day average daily rainfall total (in mm) has been included on the temporal trend graphs to allow for assessment of the potential for influence of rainfall on PFAS concentrations.

Note that Mann Kendall analysis was not used to assess the trends in PFAS concentrations in surface water, in accordance with the *PFAS OMP Annual Interpretive Report Guidance* (Defence, 2022).

Based on the data to date there is no discernible trend in surface water concentrations with most locations with three or more results showing a fluctuating pattern.

However, at Sub-Catchment A (on-Site), an increase in the concentrations of PFOS+PFHxS were reported in four of the locations (SW002, SW026, SW032 and SW034), refer to **Graph 33** (in **Appendix C**). Further monitoring of these locations is required to assess whether there is an increasing trend.

8.3 Sediment

8.3.1 Sediment PFAS Results

The July 2022 and January 2023 sediment analytical results for PFOS+PFHxS and PFOA, compared to screening criteria are provided in Figure F5 to Figure F8 (in **Appendix A**).

A summary of sediment concentrations changes by sub-catchment and area of interest is provided below:

- **Sub-catchment A**: PFOS and PFOS+PFHxS concentrations were detected in the sediment samples during both sampling events and PFOA was detected in two samples during the July 2022 sampling event. There were new maximum and minimum concentrations for PFOS and PFOS+PFHxS in July 2022 and first-time detections of PFOA, PFOS and PFOS+PFHxS in July 2022.
- **Sub-catchment B**: PFOS and PFOS+PFHxS concentrations were detected in the sediment samples during both sampling events and PFOA was detected in one sample during both events. There was one first-time detection of PFOS and PFOS+PFHxS, new maximum concentrations of PFOS and PFOS+PFHxS, and new minimum concentrations for PFOA.
- **Sub-catchment C**: PFOS and PFOS+PFHxS concentrations were detected in the sediment samples during both sampling events. PFOA was not detected during the monitoring period. There were first-time detections of PFOS and PFOS+PFHxS in one sample.
- **Dochra Airfield**: PFOS and PFOS+PFHxS concentrations were detected in one of the two sediment samples. There were new maximum concentrations of PFOS and PFOS+PFHxS in July 2022 at one location.
- **On-Site Boundary**: PFOS and PFOS+PFHxS concentrations were detected in the two sediment samples during both sampling events and PFOA was detected in one sample in both sampling events. There was a first-time detection of PFOA and new maximum for PFOA, and new minimum concentration of PFOS and PFOS+PFHxS.
- **Off-Site – Northeast**: PFOS and PFOS+PFHxS concentrations were detected in the two sediment samples during both sampling events. PFOA was not detected during the monitoring period. There were new maximum concentrations of PFOS+PFHxS in July 2022.
- **Off-Site - Northwest**: PFOS and PFOS+PFHxS concentrations were detected in the two samples during both sampling events. PFOA was not detected during the monitoring period. There were new maximum concentrations of PFOS+PFHxS in January 2023.
- **Off-Site – Singleton STP**: PFOS and PFOS+PFHxS were detected in all samples in both rounds and PFOA was detected in three of five samples in the July 2022 event and no samples in the January 2023 event. There were first time detections of PFOA in the July 2022 event and new maximum PFOS and PFOS+PFHxS in both events. There were also new minimum PFOS and PFOS+PFHxS.

8.3.2 Sediment Temporal Trend Analysis

Sediment temporal trend graphs for PFOS+PFHxS and PFOA concentrations are provided on **Graph G17** to **Graph G32** (in **Appendix C**).

Note that Mann Kendall analysis was not used to assess the trends in PFAS concentrations in surface water, in accordance with the PFAS OMP Annual Interpretive Report Guidance (Defence, 2022).

As per the surface water results, based on the data to date there is no discernible trend in sediment concentrations with most locations with three or more results showing a fluctuating pattern. New or maximum detections of PFAS in sediments were within an order of magnitude of previous results.

9.0 Conceptual Site Model

The CSM was developed during the investigation stages (AECOM, 2019) and summarised in the OMP (Defence, 2021a). The CSM summarises the linkages between PFAS sources, exposure pathways and receptors.

The OMP monitoring over the monitoring period has provided additional data to further understand the changing conditions of the PFAS concentrations in groundwater, surface water and sediment. PFAS concentrations were within historical ranges and Mann Kendall trend analysis indicated stable, or inconclusive trends. There were new maximums in groundwater, surface water and sediment concentrations. Although there were no increasing trends in PFAS concentrations based on the monitoring data to date, there were increases in PFOS+PFHxS concentrations in four surface water locations at the Site (with Sub-Catchment A). These locations will continue to be monitored to assess whether there is an increasing trend.

However, concentrations of PFAS within groundwater, surface water and sediment remain consistent with previous monitoring, with new maximum concentrations limited in magnitude compared with historic observations. Therefore, no change to the CSM.

A mass flux assessment is proposed for this site, and that will determine the requirement for remediation. Note that prior to this monitoring period, minor source removal works occurred during demolition of the Former Cantonment Fire Station which included removal of PFAS contaminated concrete slabs. Given that no soil remediation was completed as part of the demolition works, there is no change to the understanding of the CSM for this area.

Future OMP sampling events will be undertaken to monitor the nature and extent of PFAS at the Site and surrounds to identify any potential changes in the risk profile to on and off-site receptors.

Overall, data presented in this report does not change the understanding of the CSM. Future monitoring, changes to receptors such as new developments surrounding the Site will continue to contribute to an evaluation of any potential changes to the CSM.

10.0 Discussion

10.1 Risk Profile Review

The data collected during OMP monitoring during the monitoring period indicates that the risk profile for human health and ecological receptors at the Site and surrounding area remains generally unchanged since the publication of the Human Health and Ecological Risk Assessment (HHERA) (AECOM, 2021). This is based on the following assessment of the OMP data:

Groundwater

- There were some new maximums, and concentrations exceeding either human health or ecological guidelines, however the PFAS impacts in groundwater were generally similar to historical results. Given the exceedances of human health criteria were limited to on-Site locations and associated with known source areas, and the groundwater in these areas are not used for drinking water, the exceedance does not constitute a change to the risk profile or the CSM.

  It is however noted that the location with the highest historical PFAS concentrations (MW012 with PFOS+PFHxS at 142 µg/L in May 2019) within the on-Site area of the former Cantonment Fire Station has not been sampled since 2019 as it has not been located and is suspected to have been destroyed. Additionally, off-Site location with the historical highest concentrations of PFAS in groundwater (MW139, with PFOS+PFHxS at 0.1 µg/L in May 2020) has not been sampled since 2020 due to access constraints.

  AECOM does not consider the lack of sampling at MW012 to constitute a significant data gap as the existing monitoring well network (MW008, MW011 and MW167) provides sufficient coverage of this area. Although, the lack of sampling data at MW139 presents a potential data gap in monitoring the extent of PFAS in groundwater off-Site to the north east, this location was subsequently sampled in July 2023 (to be reported under a separate cover).

Surface Water and Sediment

- PFAS concentrations at surface water and sediment locations were generally similar to historical results with the new maximum concentrations limited in magnitude compared with historical observations.

  An increase in the concentrations of PFOS+PFHxS were reported in four surface water locations (SW002, SW026, SW032 and SW034) within Sub-Catchment A (on-Site). Further monitoring of these locations is required to assess whether there is an increasing trend.

10.2 Assessment of current OMP

Following a review of the data collected during the current monitoring period, there has been no significant changes to the understanding of risks associated with PFAS at the Site and surrounding areas, the spatial distribution of PFAS and the need for monitoring of additional media.

There has been no significant increasing or decreasing trends identified to date. It is noted that at some locations more results are required for trend analysis assessment, however in these instances the trend assessment relied on CSM and temporal trend graphs, which include short term rainfall data.

11.0 Conclusions

Groundwater, surface water and sediment sampling were completed in accordance with SAQP (AECOM, 2023a) and to meet the objectives of the OMP (Defence, 2021a) between July 2021 and June 2023.

Overall, the concentrations of PFAS in groundwater were generally similar to previous results, with stable or no potential trends shown over the existing dataset to date. Where new maximum concentrations were present, increases in PFAS concentrations had previously been observed, and new maximums remained within an order of magnitude of these historic maximum observations. Further rounds of data are required to enable trend analysis at many of the locations.

PFAS concentrations in surface water and sediment were generally similar to historical results. Increases and new maximum concentrations that were reported remained within an order of magnitude of historical observations for the respective locations.

The CSM was reviewed, and no changes were identified to PFAS source, pathway or receptors at the Site and surrounding areas. It is noted that the Former Cantonment Fire Station was demolished prior to the July 2022 event which included removal of PFAS impacted concrete. Given that no soil remediation was completed as part of the demolition works, there is no change to the understanding of the CSM for this area.

Based on the data, AECOM considers that the conclusions made in the HHERA (AECOM, 2021) still apply and that the CSM and interpretive analysis supports the known risk profile as presented in the PMAP (Defence, 2021b).

AECOM notes that the data collected during the monitoring period is considered to be representative of conditions at the time of sampling and suitable for meeting the objectives of the OMP.

12.0 References

AECOM (2019) *Detailed Site Investigation, Singleton Military Area – PFAS Investigation.* 28 November 2019.

AECOM (2021) *Human Health and Ecological Risk Assessment, Singleton Military Area.* 3 December 2021.

AECOM (2022) *Sampling Event Factual Report, July 2022. PFAS OMP – Singleton Lone Pine Barracks (Site ID 0356).* 6 December 2022.

AECOM (2023a). *Sampling and Analysis Quality Plan – Singleton Lone Pine Barracks* (Site ID 0356). Revision 3. 11 Jan 2023.

AECOM (2023b) *Sampling Event Factual Report, July 2022. PFAS OMP- Singleton Lone Pine Barracks (Site ID 0356).* 6 December 2023.

AECOM (2023c) *Sampling Event Factual Report, January 2023. PFAS OMP- Singleton Lone Pine Barracks (Site ID 0356). 19 April 2023.*

BOM, 2023. Climate Data Online. Rainfall data, weather station 061430 and 061430 http://www.bom.gov.au/climate/data/index.shtml [Accessed 3 November 2023].

Department of Defence (2021a). *PFAS Ongoing Monitoring Plan, Singleton Military Area.* December 2021.

Department of Defence (2021b). *PFAS Management Area Plan, Singleton Military Area*. December 2021.

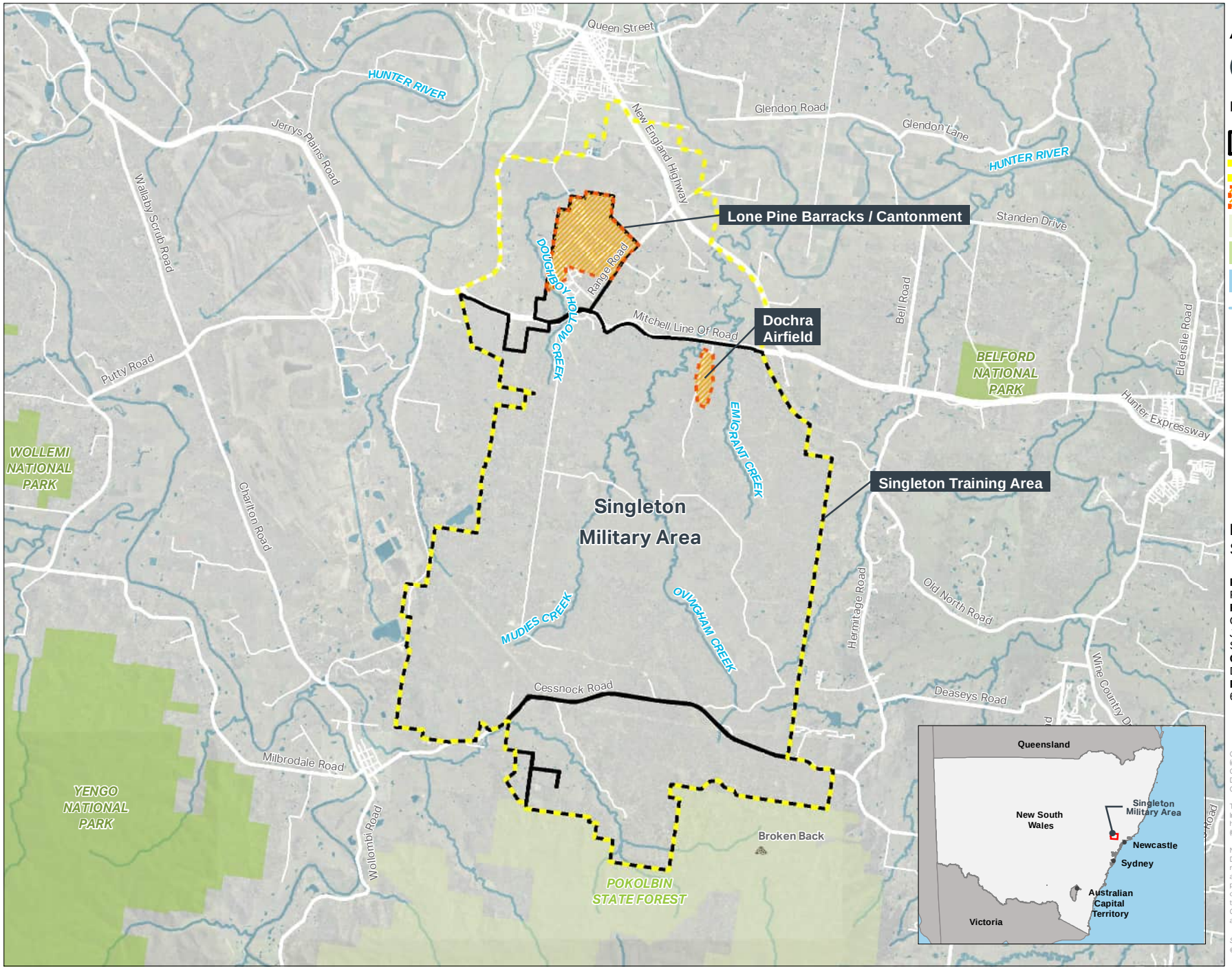
Department of Defence (2022). *PFAS OMP Annual Interpretive Report Guidance*. Version 0.4, October 2022.

EDP Consultants Pty Ltd (2022). *Data Gap Investigation, Fire Station and Associated Outbuildings Lone Pine Barracks, Singleton Military Area, Singleton NSW*. Draft. 11 March 2022.

Heads of EPAs Australia and New Zealand, 2020. *PFAS National Environmental Management Plan.* January 2020.

Appendix A

Figures



AECOM

N

0 1.5 3 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- State Forest
- NPWS Reserve
- Waterbody
- Watercourse

FIGURE F1:
SITE LOCATION

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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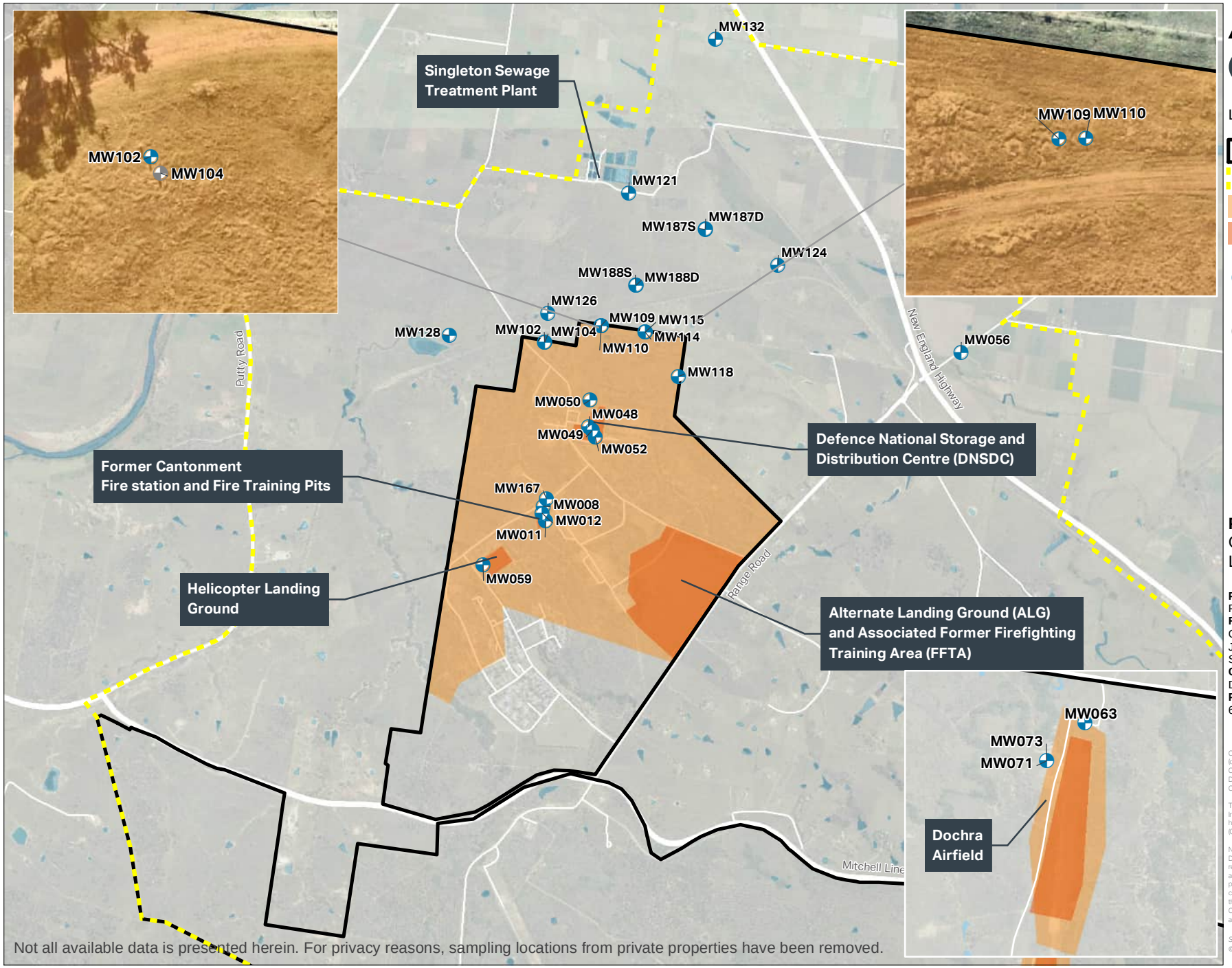

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Groundwater Location (sampled)
- Groundwater Location (not sampled)

FIGURE F2:
GROUNDWATER SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

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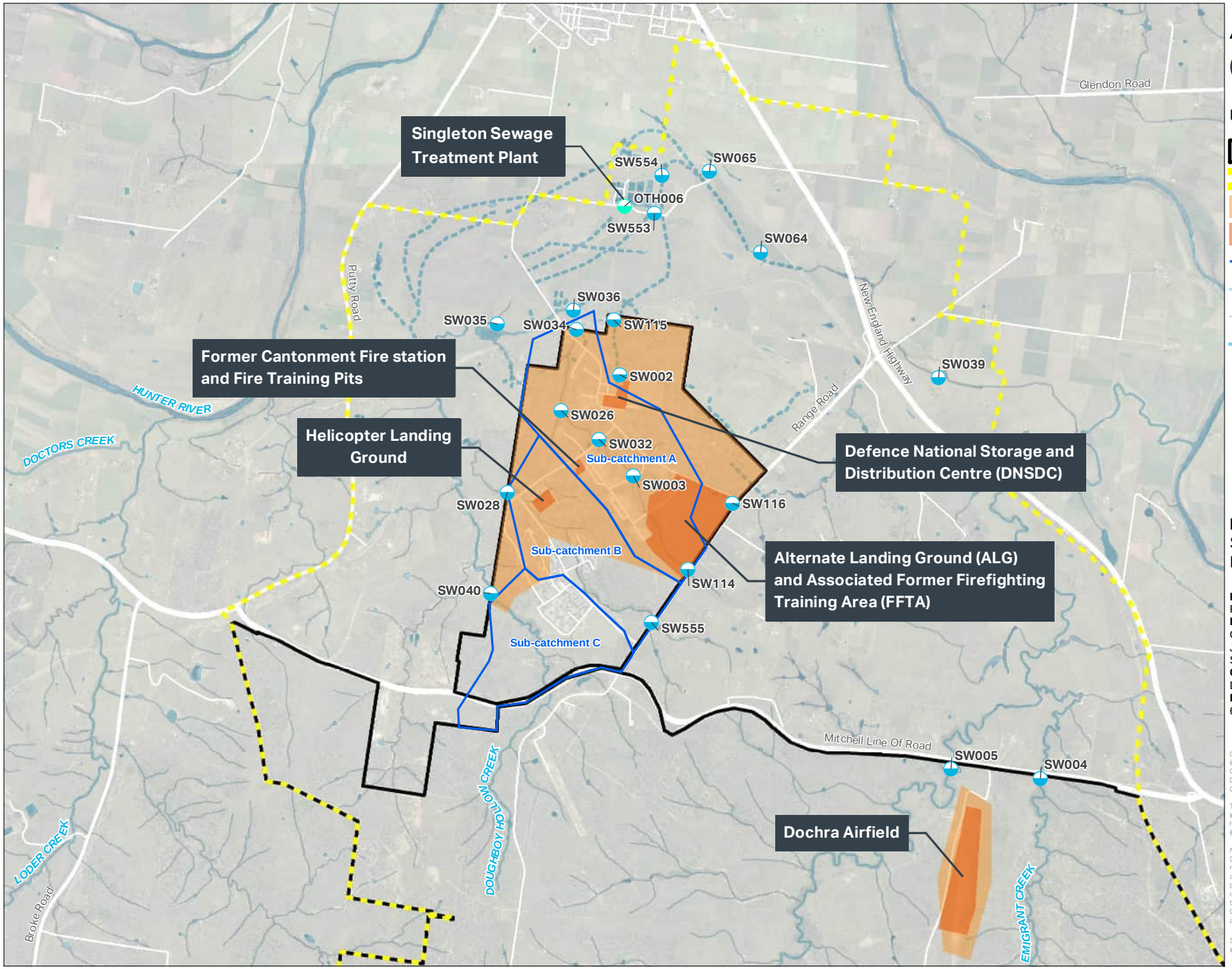

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Catchment Boundaries
- Watercourse
- Drainage Line
- Undefined Drainage Lines
- Surface Water Location
- Waste Water Location

FIGURE F3:
SURFACE WATER SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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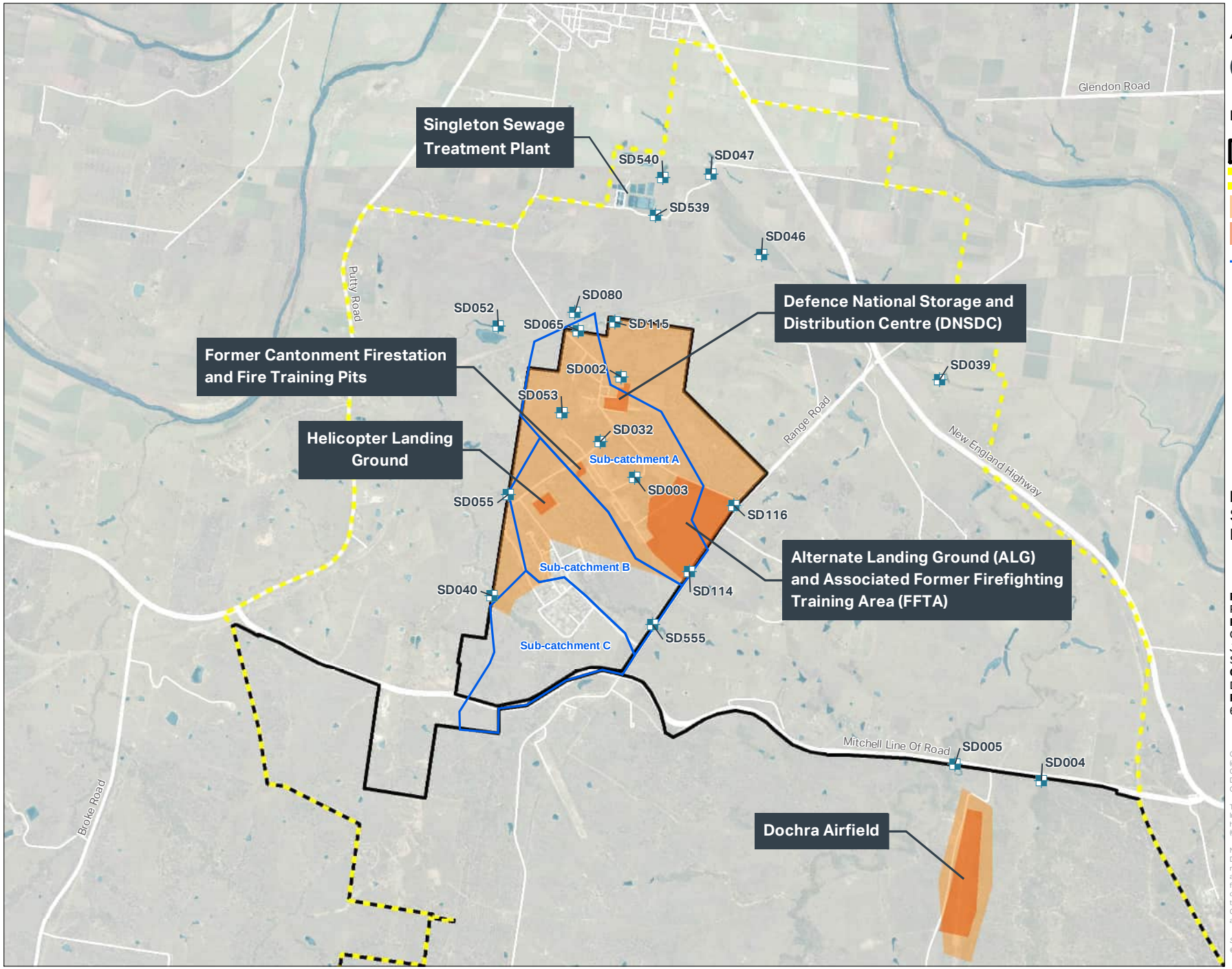

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Catchment Boundaries
- Sediment Location

FIGURE F4:
SEDIMENT SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

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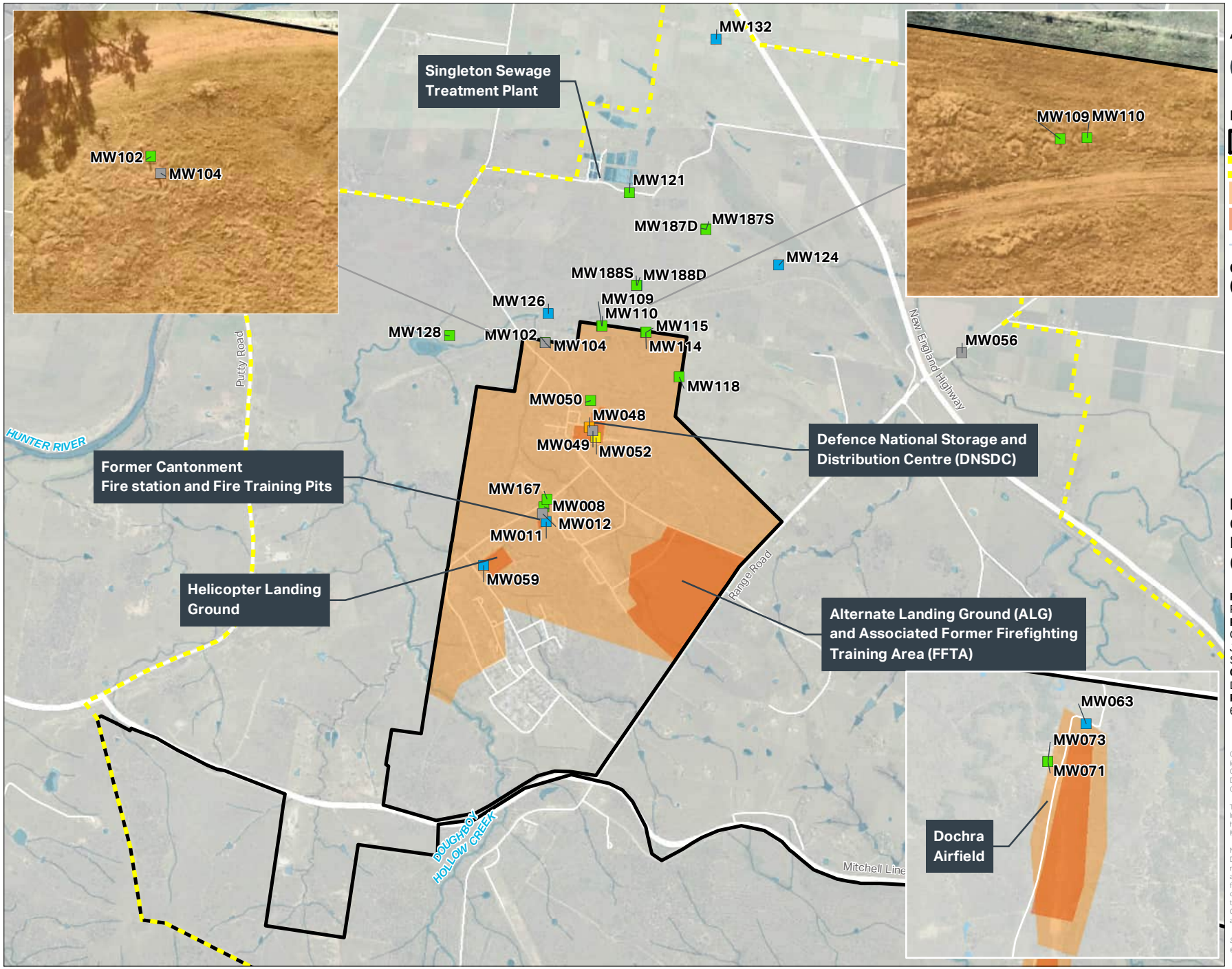

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Drainage Line

Groundwater - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 1 - 10
- > 0.07 - 1
- Limit of Reporting - 0.07
- < Limit of Reporting
- Not Sampled/Accessed or in Scope

FIGURE F5:
GROUNDWATER RESULTS - PFOS+PFHXS
(JULY 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

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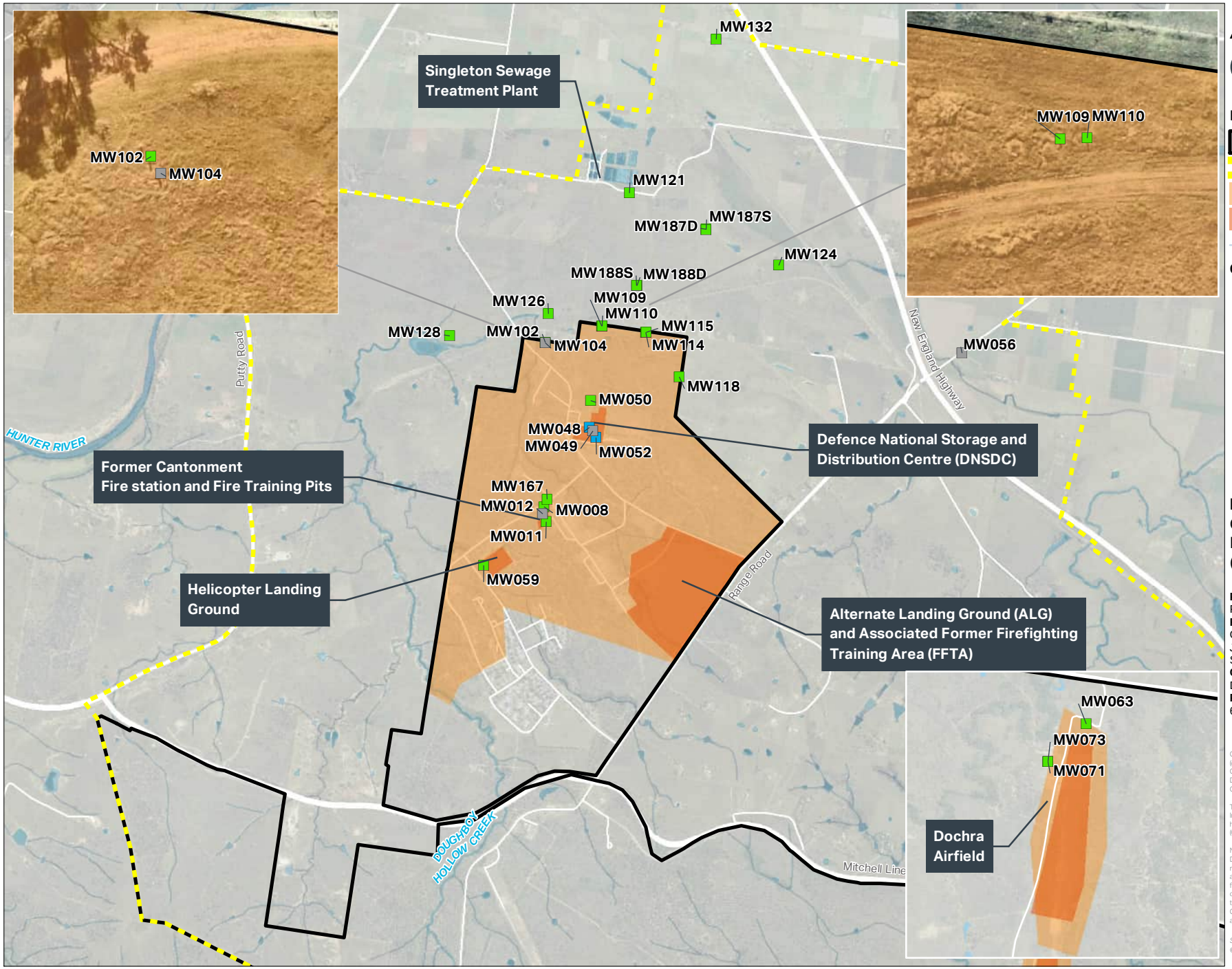

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Drainage Line

Groundwater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > 0.1 - 0.56
- Limit of Reporting - 0.1
- < Limit of Reporting
- Not Sampled/Accessed or in Scope

FIGURE F6:
GROUNDWATER RESULTS - PFOA
(JULY 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

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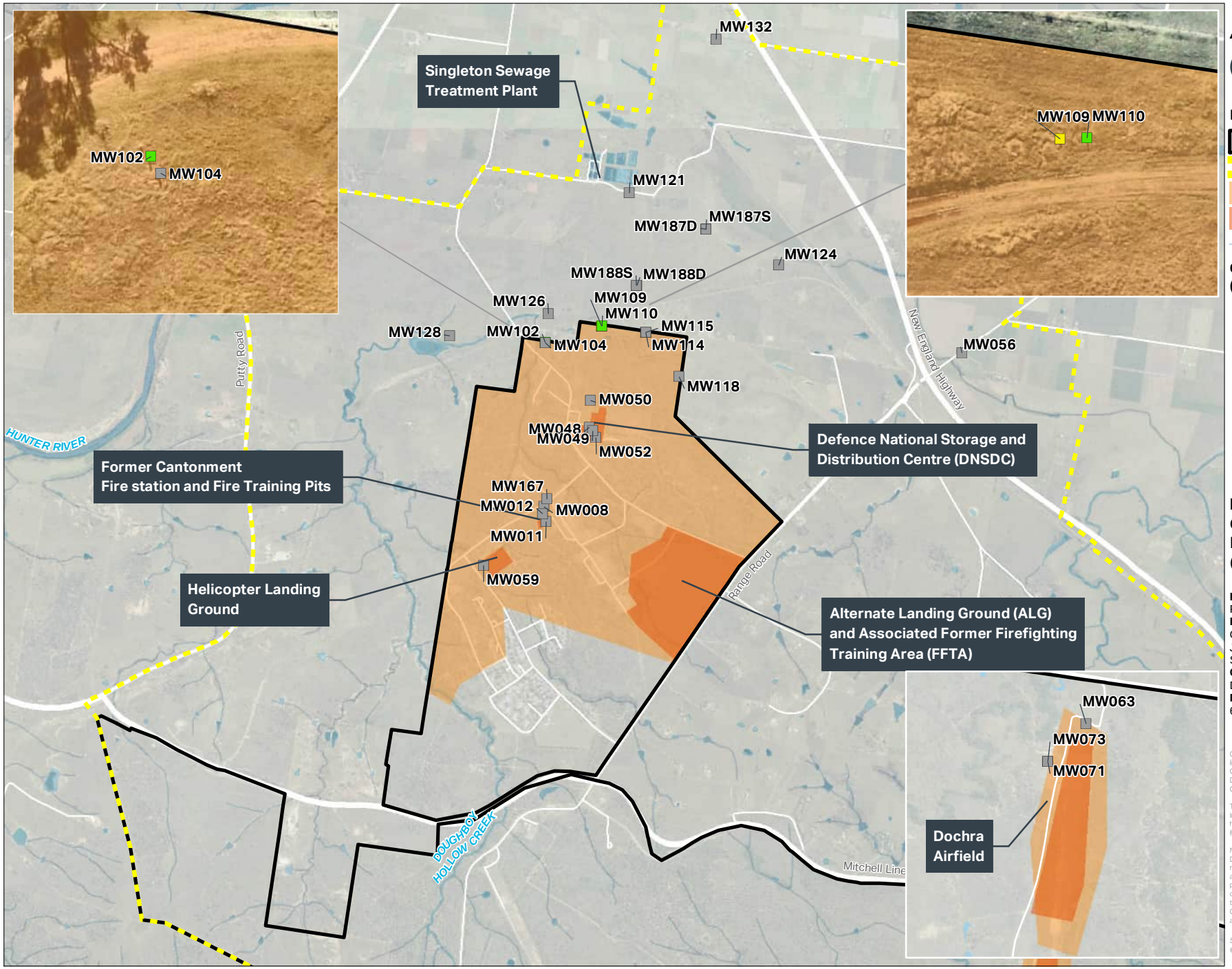

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Drainage Line

Groundwater - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 1 - 10
- > 0.07 - 1
- Limit of Reporting - 0.07
- < Limit of Reporting
- Not Sampled/Accessed or in Scope

FIGURE F7:
GROUNDWATER RESULTS - PFOS+PFHXS (JANUARY 2023)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

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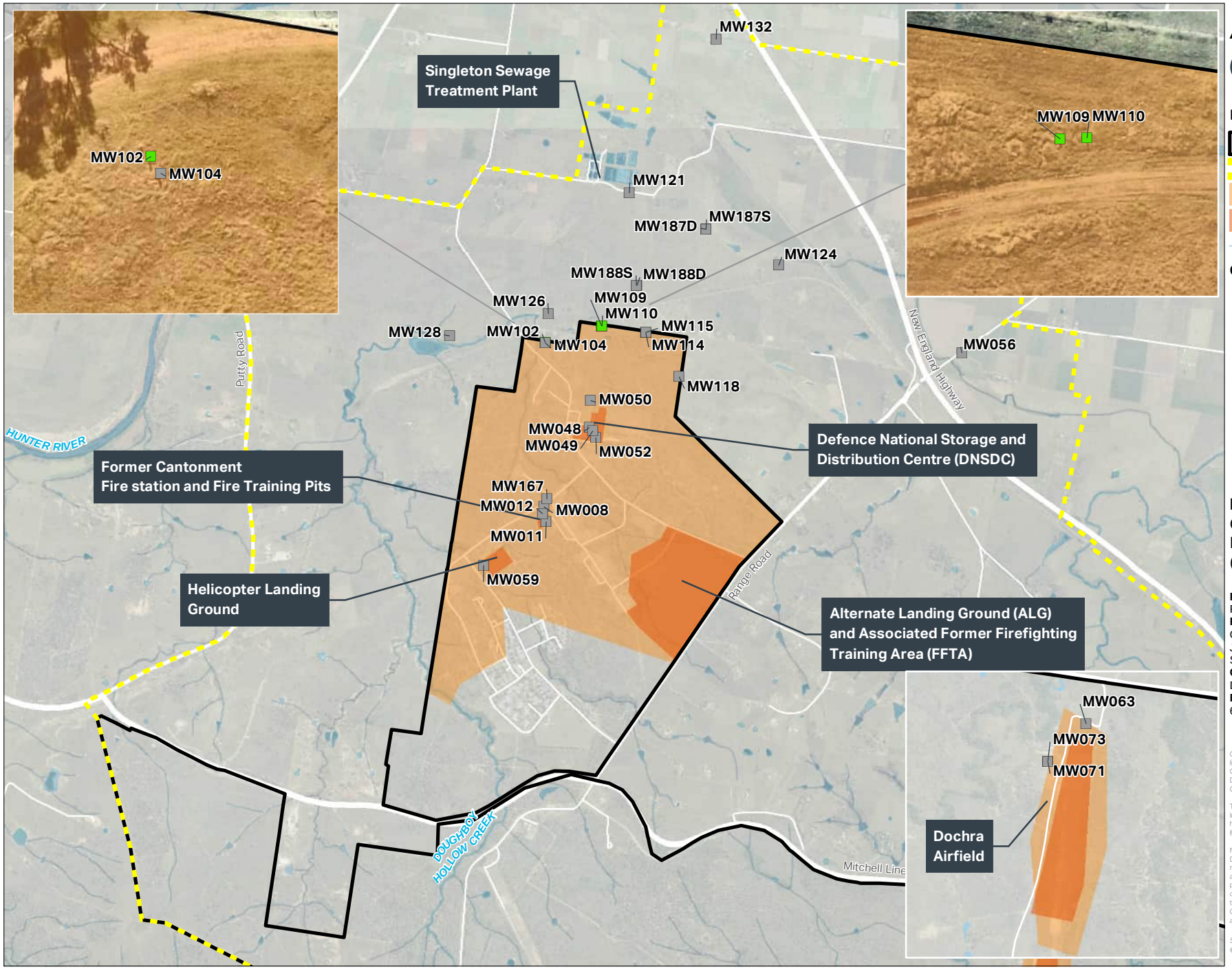

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Drainage Line

Groundwater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > 0.1 - 0.56
- Limit of Reporting - 0.1
- < Limit of Reporting
- Not Sampled/Accessed or in Scope

FIGURE F8:
GROUNDWATER RESULTS - PFOA
(JUNUARY 2023)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

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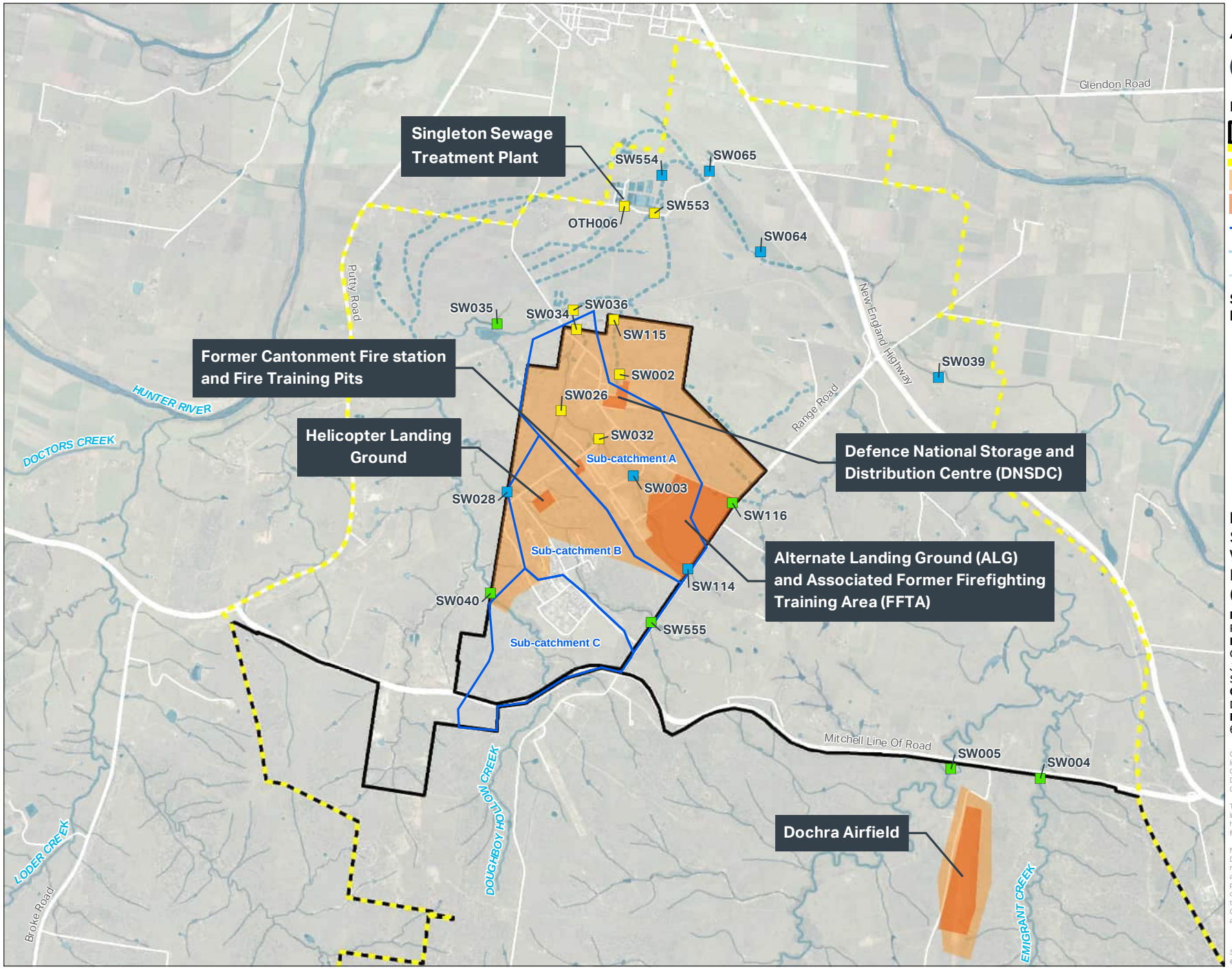

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Catchment Boundaries
- Watercourse
- Drainage Line

Surface Water and Wastewater - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > 0.1 - 2
- Limit of Reporting - 0.1
- < Limit of Reporting
- Not Sampled/Accessed or in Scope

FIGURE F9:
SURFACE WATER AND WASTEWATER RESULTS - PFOS+PFHXS
(JULY 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

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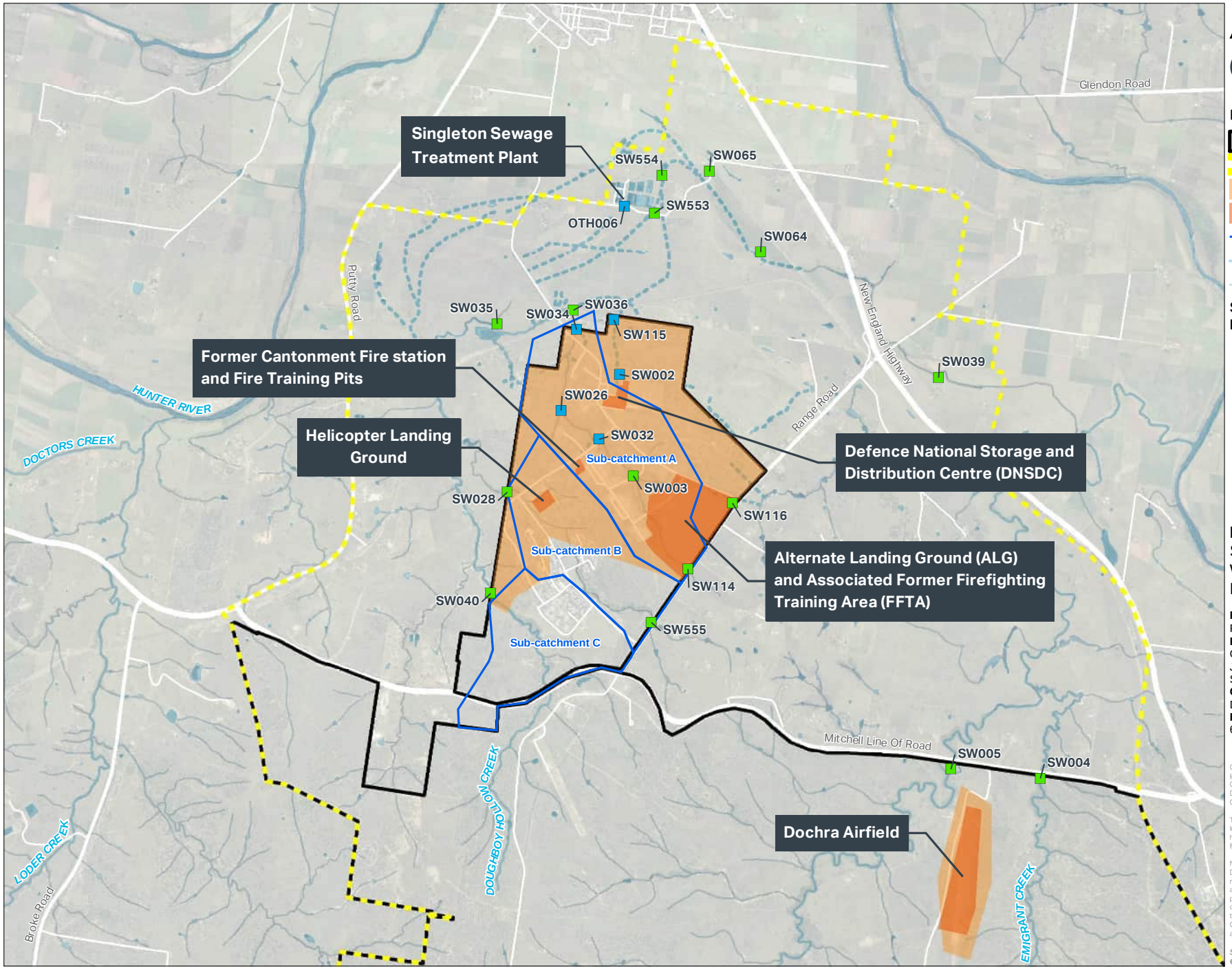

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Catchment Boundaries
- Watercourse
- Drainage Line

Surface Water and Wastewater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > 0.1 - 0.56
- Limit of Reporting - 0.1
- < Limit of Reporting
- Not Sampled/Accessed or in Scope

FIGURE F10:
SURFACE WATER AND WASTEWATER RESULTS - PFOA (JULY 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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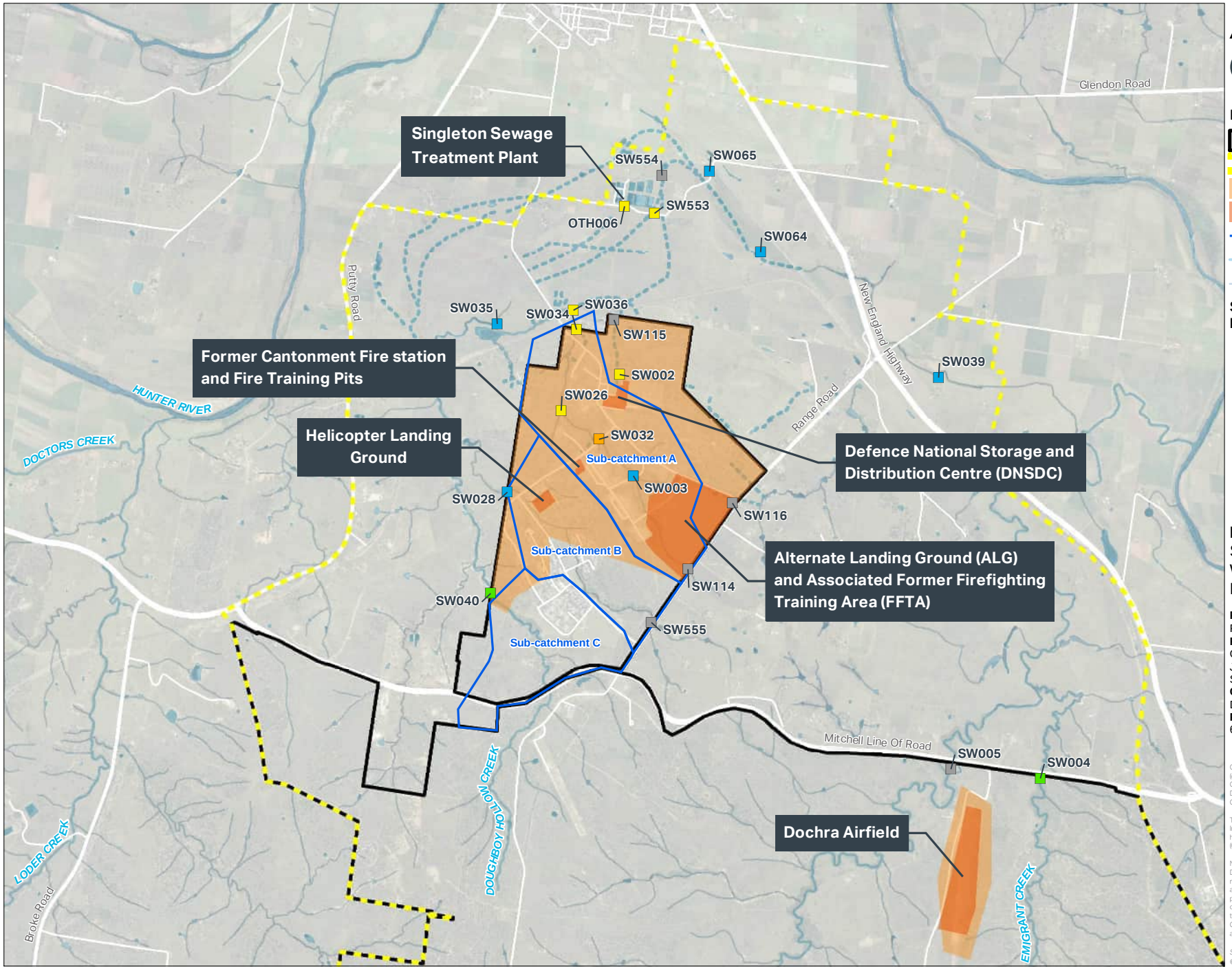

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Catchment Boundaries
- Watercourse
- Drainage Line

Surface Water and Wastewater - PFOS + PFHxS (µg/L)

- > 50
- > 10 - 50
- > 2 - 10
- > 0.1 - 2
- Limit of Reporting - 0.1
- < Limit of Reporting
- Not Sampled/Accessed or in Scope

FIGURE F11:
SURFACE WATER AND WASTEWATER RESULTS - PFOS+PFHXS (JANUARY 2023)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
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Source:
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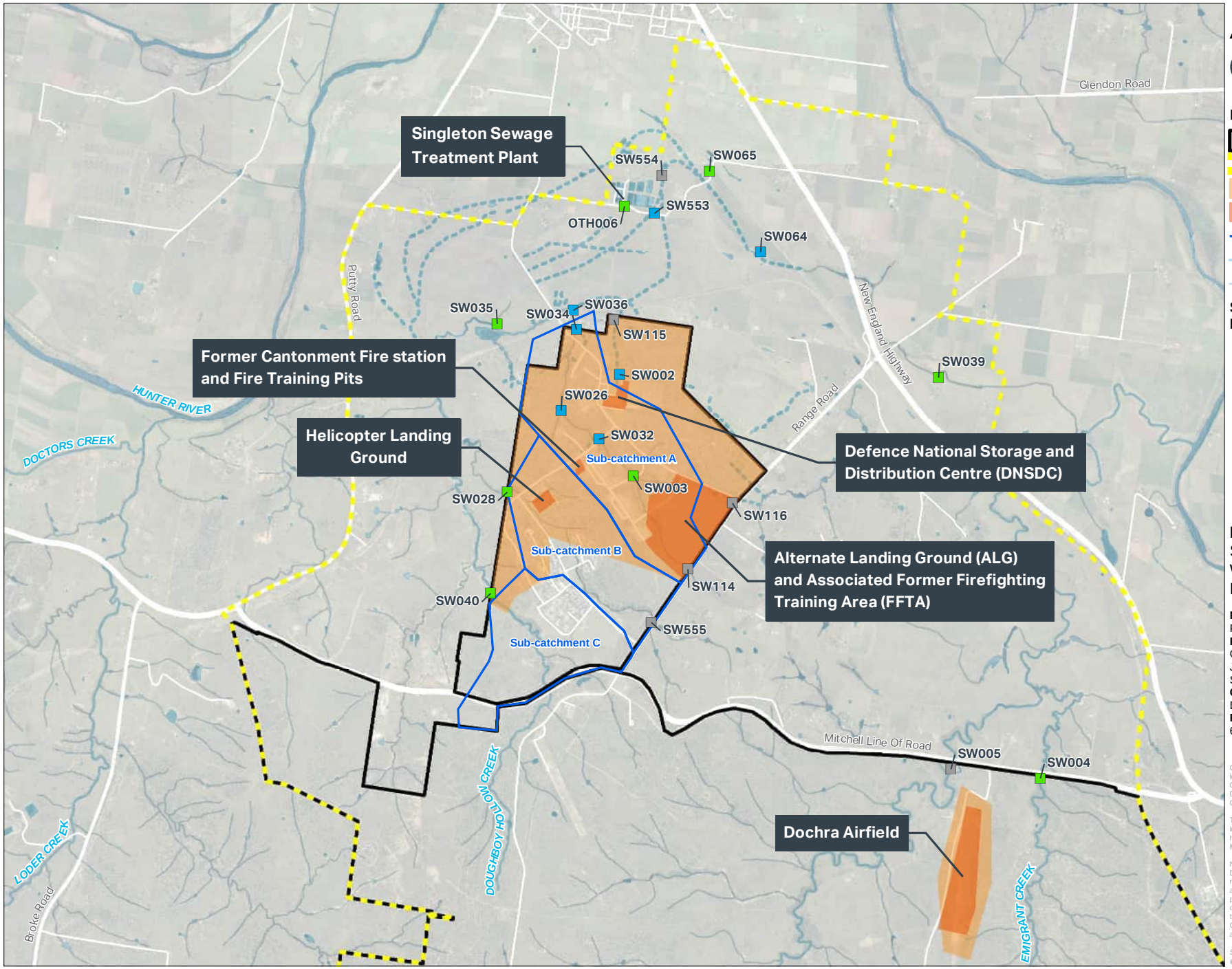


AECOM

N

0 0.5 1 km

Legend

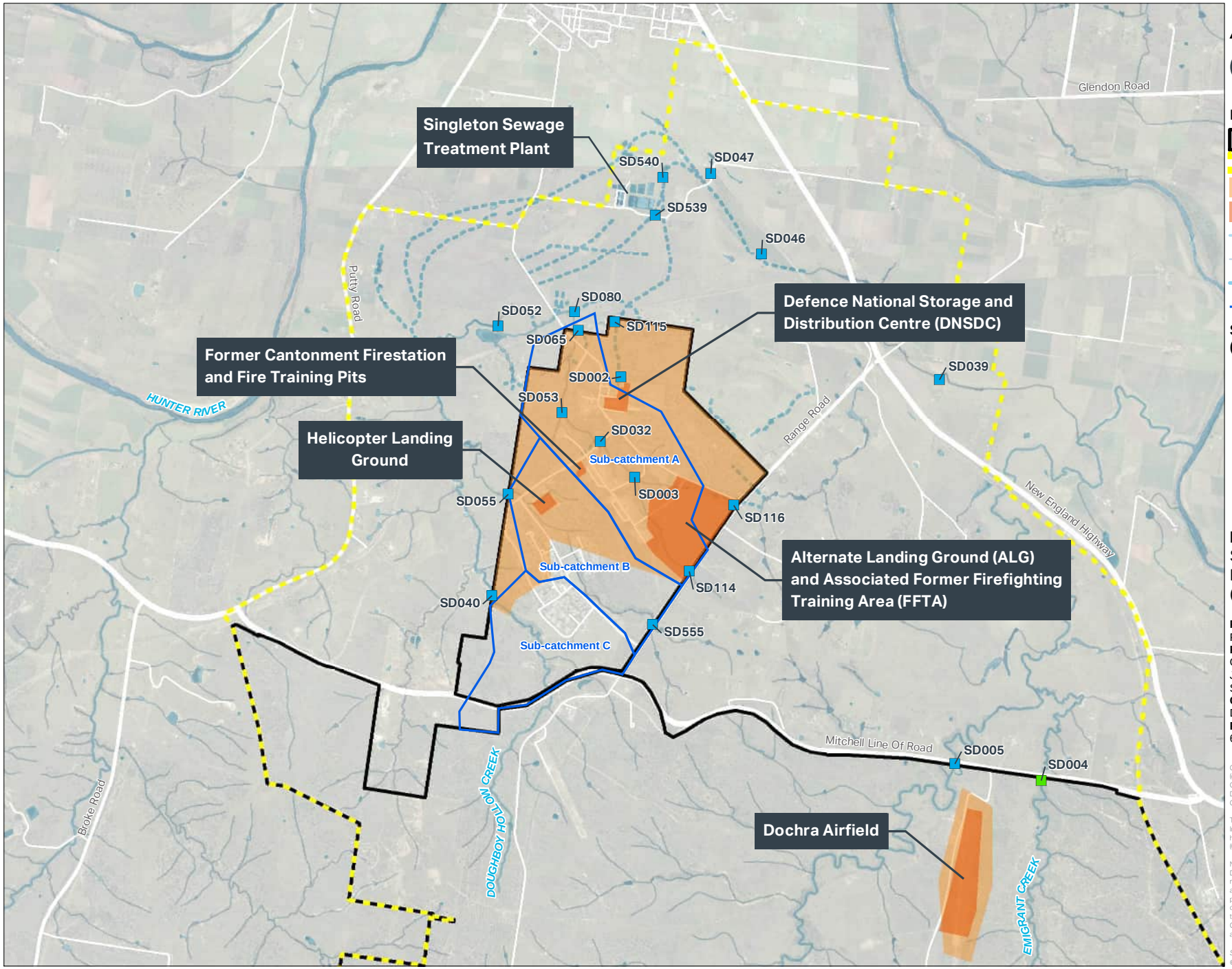
- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Catchment Boundaries
- Watercourse
- Drainage Line

Surface Water and Wastewater - PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > 0.1 - 0.56
- Limit of Reporting - 0.1
- < Limit of Reporting
- Not Sampled/Accessed or in Scope

FIGURE F12:
SURFACE WATER AND WASTEWATER RESULTS - PFOA (JANUARY 2023)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562



AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage Line
- Undefined Drainage Lines
- Catchment Boundaries

Sediment - PFOS + PFHxS (mg/kg)

- > 50
- > 10 - 50
- > 0.2 - 10
- > Limit of Reporting - 0.2
- < Limit of Reporting
- Not Sampled/Accessed or in Scope

FIGURE F13:
SEDIMENT RESULTS - PFOS+PFHXS (JULY 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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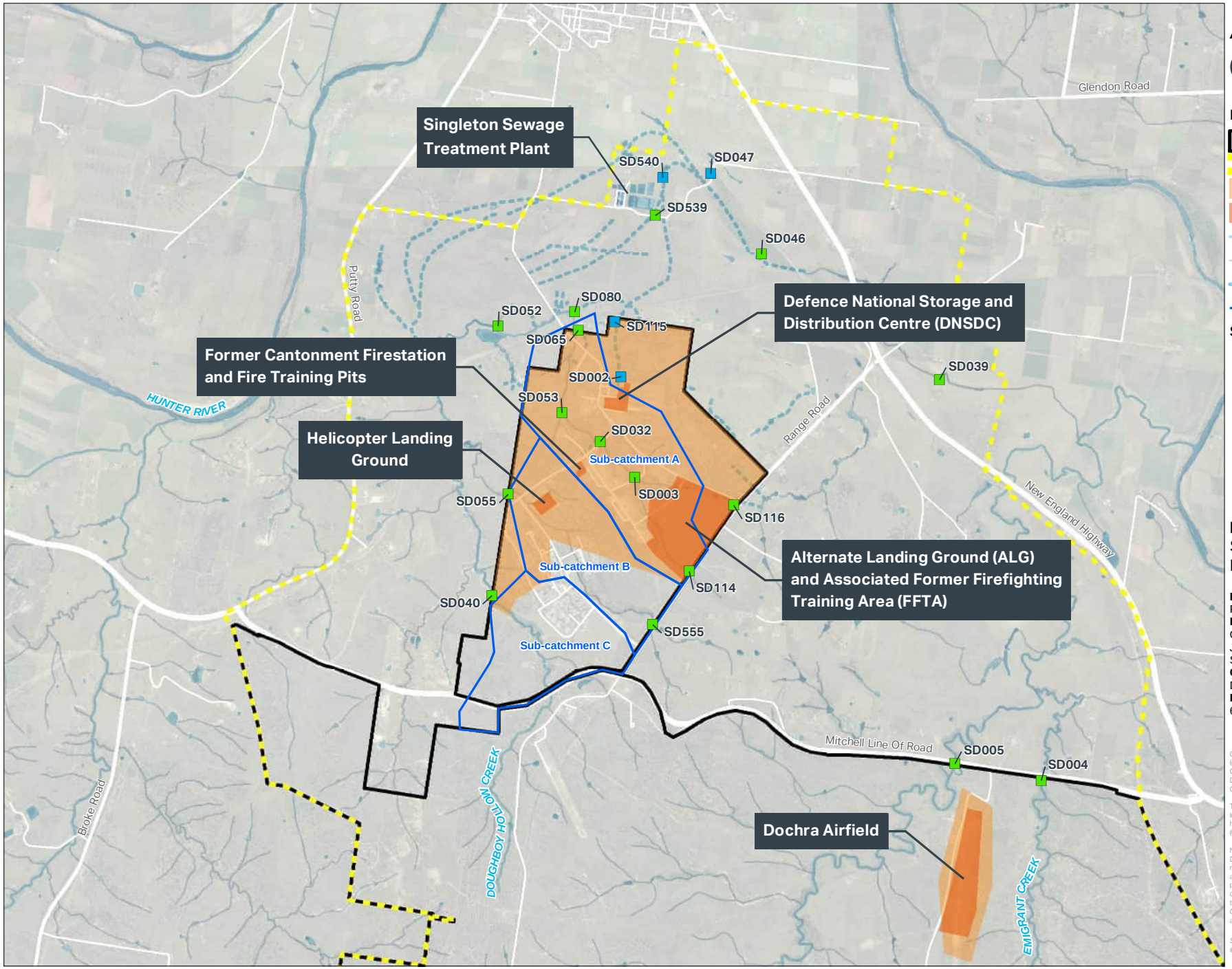

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage Line
- Undefined Drainage Lines
- Catchment Boundaries

Sediment - PFOA (mg/kg)

- > 50
- > 10 - 50
- > 0.2 - 10
- > Limit of Reporting - 0.2
- < Limit of Reporting
- Not Sampled/Accessed or in Scope

FIGURE F14:
SEDIMENT RESULTS - PFOA (JULY 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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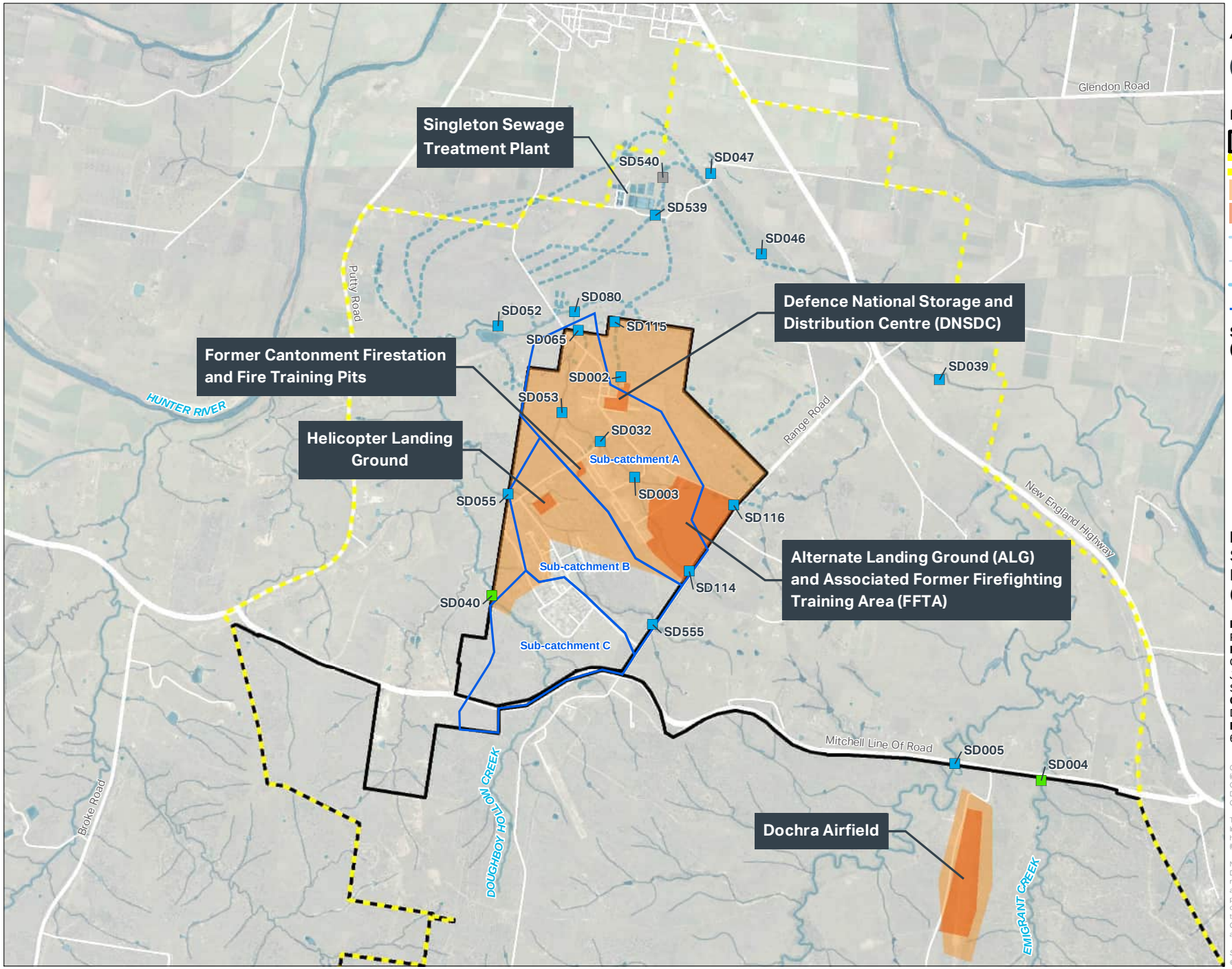

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage Line
- Undefined Drainage Lines
- Catchment Boundaries

Sediment - PFOS + PFHxS (mg/kg)

- > 50
- > 10 - 50
- > 0.2 - 10
- > Limit of Reporting - 0.2
- < Limit of Reporting
- Not Sampled/Accessed or in Scope

FIGURE F15:
SEDIMENT RESULTS - PFOS+PFHXS (JANUARY 2023)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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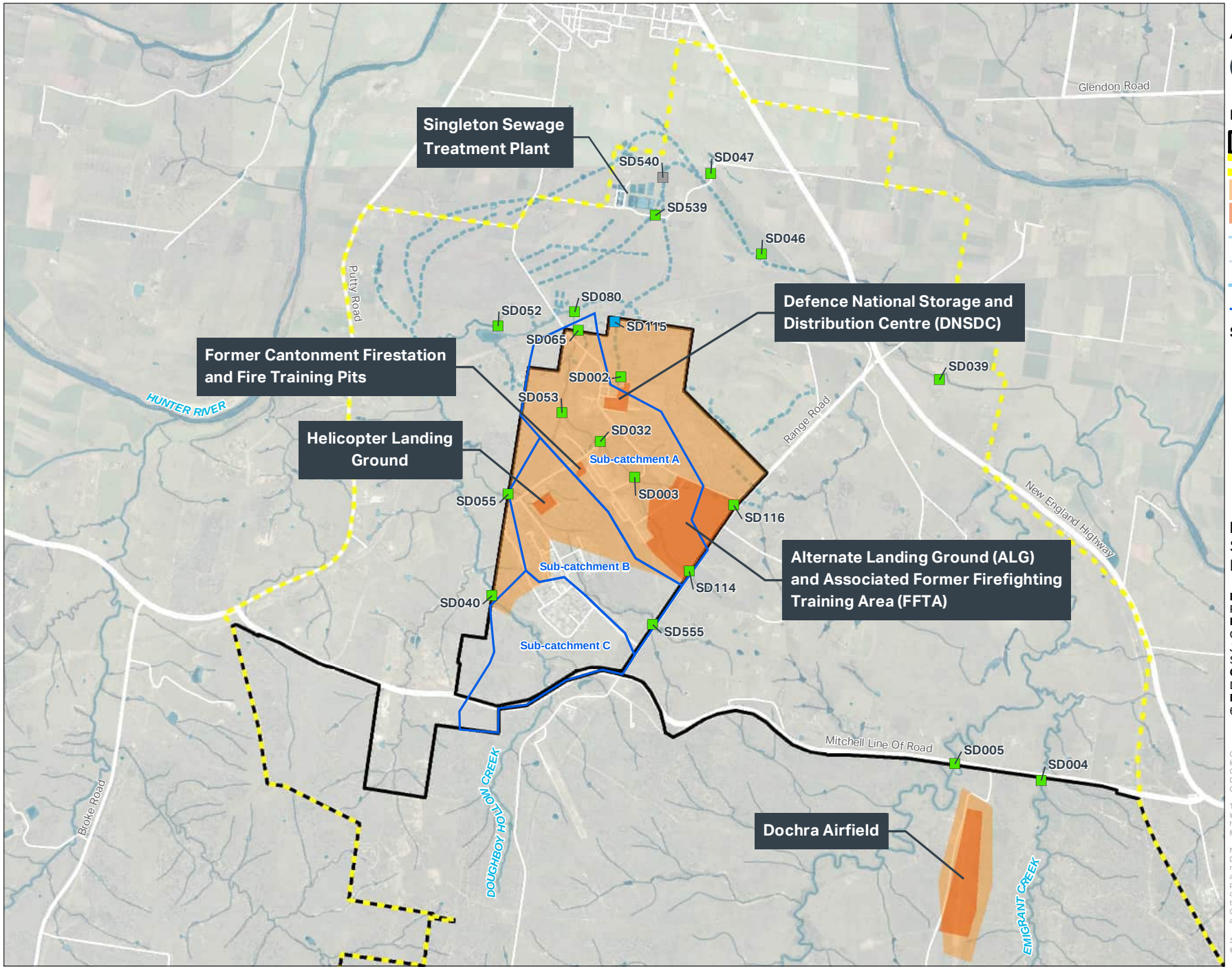

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage Line
- Undefined Drainage Lines
- Catchment Boundaries

Sediment - PFOA (mg/kg)

- > 50
- > 10 - 50
- > 0.2 - 10
- > Limit of Reporting - 0.2
- < Limit of Reporting
- Not Sampled/Accessed or in Scope

FIGURE F16:
SEDIMENT RESULTS - PFOA (JANUARY 2023)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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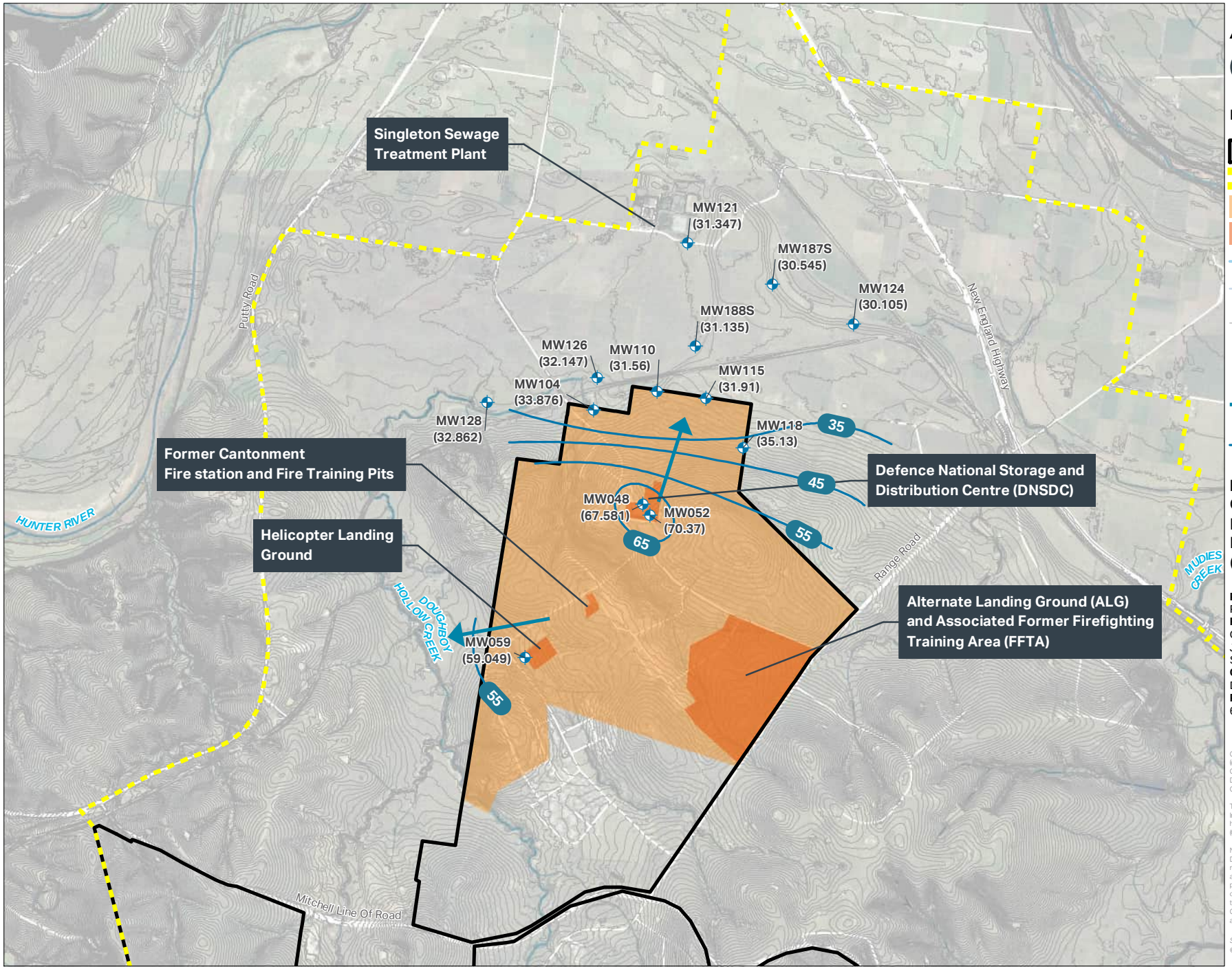

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage Line
- 1 mAHD Topographical Contour
- Groundwater Location (gauged)
- Inferred Groundwater Flow Direction
- Groundwater Contours (mAHD)

FIGURE F17:
GROUNDWATER ELEVATION PLAN - SHALLOW (JULY 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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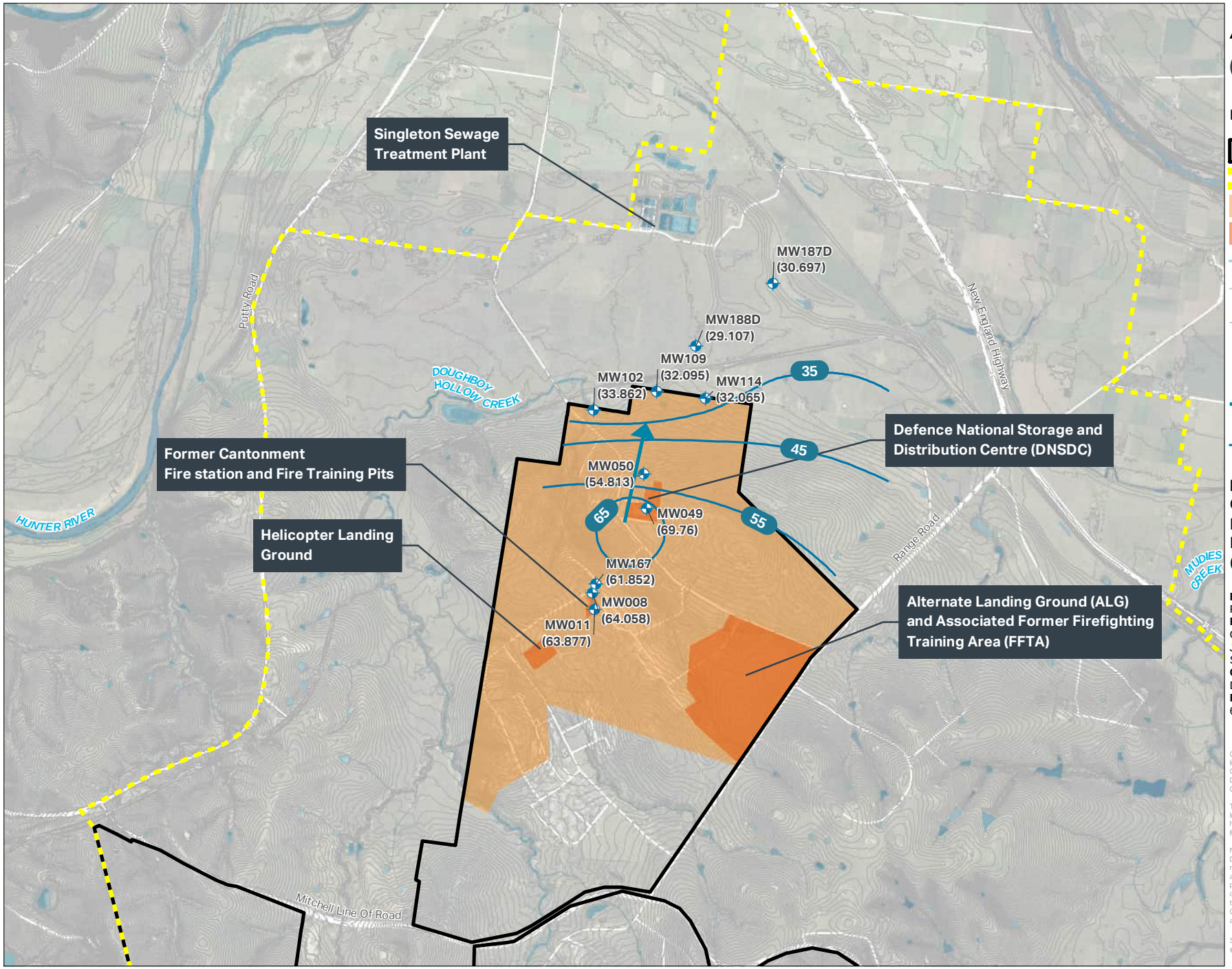

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage Line
- 1 mAHD Topographical Contour
- Groundwater Location (gauged)
- Inferred Groundwater Flow Direction
- Groundwater Contours (mAHD)

FIGURE F17:
GROUNDWATER ELEVATION PLAN - DEEP (JULY 2022)

PROJECT NAME:
PFAS OMP
REPORT NAME:
Ongoing Monitoring Report
July 2022 to June 2023
Singleton Military Area (0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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Appendix B

Tables

Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW008	CNN0018_GW08	74.1	11.9	14.9	n/a	19/07/2022 8:20	10.042	64.058	16.10	Good condition. Targeted gauging round for groundwater elevation plan.
MW008	CNN0018_GW08	74.1	11.9	14.9	13.0	21/07/2022 8:04	10.009	64.091	13.95	Good condition
MW011	CNN0018_GW02/CNN0018_GW002	74.13	9.7	12.7	n/a	19/07/2022 8:25	10.253	63.877	12.80	Good condition. Targeted gauging round for groundwater elevation plan. [Total depth was corrected from 13.80, after initial reporting]
MW011	CNN0018_GW02/CNN0018_GW002	74.13	9.7	12.7	10.7	21/07/2022 16:58	10.269	63.861	11.70	Good condition
MW012	CNN0018_GW03/CNN0018_GW003	73.25	5.8	12	n/a	21/07/2022 16:32	n/a	n/a	n/a	Location not found, likely destroyed.
MW048	CNN0039_GW01/CNN0039_GW001	69.11	4	7	n/a	19/07/2022 8:40	1.529	67.581	6.77	Good condition. Targeted gauging round for groundwater elevation plan.
MW048	CNN0039_GW01/CNN0039_GW001	69.11	4	7	5.8	21/07/2022 8:29	1.582	67.528	6.80	Good condition
MW049	CNN0039_GW02/CNN0039_GW002	69.76	2.7	8.7	n/a	19/07/2022 8:42	n/a	n/a	7.82	Good condition, water in gatic above top of casing removed prior to removal of plug. Well dry. Targeted gauging round for groundwater elevation plan.
MW050	CNN0039_GW03	64.4	13.4	16.9	n/a	19/07/2022 10:48	9.587	54.813	17.10	Good condition. Targeted gauging round for groundwater elevation plan.
MW050	CNN0039_GW03	64.4	13.4	16.9	15.0	21/07/2022 9:15	9.583	54.817	17.25	Good condition
MW052	CNN0039_GW05	72.05	0.8	3.8	n/a	19/07/2022 8:45	1.680	70.370	4.90	Good condition. Targeted gauging round for groundwater elevation plan.
MW052	CNN0039_GW05	72.05	0.8	3.8	2.8	21/07/2022 8:45	1.693	70.357	4.90	Good condition
MW056	GW12, MW12S	34.71	5.3	8.3	n/a	20/07/2022 9:57	n/a	n/a	n/a	Location unable to open, due to threaded bolt.
MW059	HLG_GW03	61.14	2.75	4.75	n/a	19/07/2022 8:15	2.091	59.049	4.78	Good condition. Targeted gauging round for groundwater elevation plan.
MW059	HLG_GW03	61.14	2.75	4.75	3.0	21/07/2022 7:29	2.090	59.050	4.75	Good condition
MW063	NSW1164_MW001D/NSW1164_MW01D	42.88	16.8	19.8	n/a	19/07/2022 12:35	6.043	36.837	20.14	Good condition. Targeted gauging round for groundwater elevation plan.
MW063	NSW1164_MW001D/NSW1164_MW01D	42.88	16.8	19.8	18.0	19/07/2022 12:46	5.664	37.216	20.14	Good condition. Targeted gauging round for groundwater elevation plan.
MW071	NSW1164_MW003D	47.87	24.4	30.4	28.5	19/07/2022 12:09	8.244	39.626	31.04	Good condition. Targeted gauging round for groundwater elevation plan.
MW073	NSW1164_MW03S	47.91	7	10	10.7	19/07/2022 12:22	10.757	37.153	11.54	Good condition. Targeted gauging round for groundwater elevation plan.
MW102	GW02D	46.82	13.5	16.5	n/a	19/07/2022 8:50	12.958	33.862	16.85	Good condition. Targeted gauging round for groundwater elevation plan.
MW102	GW02D	46.82	13.5	16.5	14.5	21/07/2022 22:15	12.195	34.625	16.85	Good condition
MW102	GW02D	46.82	13.5	16.5	14.5	18/01/2023 08:36	12.920	33.900	16.66	Good condition
MW104	GW02S	46.72	10	13	n/a	21/07/2022 9:52	12.844	33.876	12.97	Good condition, insufficient water for sampling
MW104	GW02S	46.72	10	13	n/a	18/01/2023 08:31	n/a	n/a	12.45	Good condition, well dry
MW109	GW03D	45.1	24.5	30	n/a	19/07/2022 10:10	13.005	32.095	30.34	Good condition. Targeted gauging round for groundwater elevation plan.
MW109	GW03D	45.1	24.5	30	29.0	21/07/2022 22:23	13.023	32.077	30.04	Good condition
MW109	GW03D	45.1	24.5	30	26.0	18/01/2023 14:12	12.942	32.158	30.00	Good condition
MW110	GW03S	45.4	12.4	14.9	n/a	19/07/2022 10:12	13.840	31.560	14.80	Good condition. Targeted gauging round for groundwater elevation plan.
MW110	GW03S	45.4	12.4	14.9	13.8	21/07/2022 16:59	13.895	31.505	14.80	Good condition
MW110	GW03S	45.4	12.4	14.9	13.7	18/01/2023 14:22	13.610	31.790	14.73	Good condition
MW114	GW04D	45.9	24.3	30.3	n/a	19/07/2022 9:15	13.835	32.065	30.34	Good condition. Targeted gauging round for groundwater elevation plan. [Total depth was corrected from 31.34, after initial reporting]
MW114	GW04D	45.9	24.3	30.3	28.5	21/07/2022 10:47	13.877	32.023	30.34	Good condition. [Total depth was corrected from 31.34, after initial reporting]
MW115	GW04S	45.86	11.8	14.8	n/a	19/07/2022 9:18	13.950	31.910	14.91	Good condition. Targeted gauging round for groundwater elevation plan.
MW115	GW04S	45.86	11.8	14.8	14.0	21/07/2022 10:52	13.995	31.865	15.09	Good condition
MW118	GW05S	52.72	Unknown	Unknown	n/a	19/07/2022 9:30	17.590	35.130	26.10	Good condition. Targeted gauging round for groundwater elevation plan.
MW118	GW05S	52.72	Unknown	Unknown	30.0	21/07/2022 10:42	17.604	35.116	31.04	Good condition
MW121	GW06/GW06S	39.82	9.5	12.5	n/a	22/07/2022 13:46	8.473	31.347	12.30	Good condition
MW124	GW07/GW07S	38.68	9.4	13.8	n/a	20/07/2022 14:50	8.575	30.105	13.85	Good condition, water in gatic above top of casing removed prior to removal of plug, sediment on probe
MW126	GW08S	42.78	10.5	13.5	n/a	22/07/2022 10:32	10.633	32.147	12.16	Good condition. {Unable to locate on first visit on 19/07/2022}
MW128	GW09S	44.08	9.2	12.2	n/a	22/07/2022 9:53	11.218	32.862	13.78	Good condition. {Unable to locate on first visit on 19/07/2022}
MW129	GW10S	37.95	9	12	n/a	21/07/2022 16:33	n/a	n/a	n/a	Residential appointment not confirmed.
MW132	RESI_GW011	Unknown	Unknown	Unknown	n/a	19/07/2022 14:13	n/a	n/a	n/a	Residential tap bore.
MW139	RESI_GW013/RESI_GW13	n/a	Unknown	Unknown	n/a	21/07/2022 16:34	n/a	n/a	n/a	Residential tap bore. Residential appointment not confirmed.
MW167	CNN0230_GW01	72.65	14.5	20.5	n/a	19/07/2022 8:30	10.798	61.852	20.50	Good condition. Targeted gauging round for groundwater elevation plan.
MW167	CNN0230_GW01	72.65	14.5	20.5	19.5	21/07/2022 8:15	10.819	61.831	20.50	Good condition
MW187D	MW09D	40.23	18.7	24.7	n/a	21/07/2022 13:23	9.533	30.697	25.94	Good condition
MW187S	MW09S	40.4	7	10	n/a	20/07/2022 13:02	9.855	30.545	10.90	Good condition
MW188D	MW10D	41.25	25	31	n/a	22/07/2022 12:40	12.143	29.107	31.00	Good condition
MW188S	MW10S	41.12	8.9	11.9	n/a	22/07/2022 12:28	9.985	31.135	12.04	Good condition

Notes

mbTOC	meters below Top of Casing
mAHD	meters Australian Height Datum
n/a	Not applicable
-	Not measured

Table T2 - Groundwater Quality Parameters and Observations

				Water Quality Parameters					
				Dissolved Oxygen	Temperature	Electrical Conductivity	pH	Redox Potential Er	Redox Potential Eh (Corrected)
				mg/L	°C	uS/cm	pH Units	mV	mV
Location Code	**Date**	**Monitoring Round**	**Sample Comments**						
MW008	21 Jul 2022	202207_AECOM_OMP	Light yellow, no turbidity, no odour, no sheen	0.64	17.1	23,974.0	7.04	-356.2	-150.4
MW011	21 Jul 2022	202207_AECOM_OMP	Light brown, low turbidity, no odour, no sheen	0.87	18.3	20,177.0	6.30	-325.7	-119.9
MW012	21 Jul 2022	202207_AECOM_OMP	Location not found, likely destroyed.	n/a	n/a	n/a	n/a	n/a	n/a
MW048	21 Jul 2022	202207_AECOM_OMP	Light yellow, low turbidity, organic odour, no sheen	1.48	17.8	1,355.0	5.83	-315.9	-110.1
MW049	21 Jul 2022	202207_AECOM_OMP	Location dry, no sample collected.	n/a	n/a	n/a	n/a	n/a	n/a
MW050	21 Jul 2022	202207_AECOM_OMP	Clear, no turbidity, rotten egg smell (sulphurous), no sheen	2.39	18.8	12,254.0	6.61	-372.0	-166.2
MW052	21 Jul 2022	202207_AECOM_OMP	Orange, medium turbidity, no odour, no sheen	3.85	15.7	205.1	6.59	-299.0	-93.2
MW056	20 Jul 2022	202207_AECOM_OMP	Location unable to open, due to threaded bolt.	n/a	n/a	n/a	n/a	n/a	n/a
MW059	21 Jul 2022	202207_AECOM_OMP	Light grey, low turbidity, organic odour, no sheen	4.34	14.6	16,977.0	6.98	-272.0	-66.2
MW063	19 Jul 2022	202207_AECOM_OMP	Clear, no turbidity, no odour, no sheen	2.13	19.4	15,656.0	8.03	-471.9	-266.1
MW071	19 Jul 2022	202207_AECOM_OMP	Black / grey, medium turbidity, organic odour, no sheen	2.10	19.0	13,755.0	7.43	-558.4	-352.6
MW073	19 Jul 2022	202207_AECOM_OMP	Yellow / brown, medium turbidity, no odour, no sheen	2.50	19.7	21,450.0	6.74	-496.8	-291.0
MW102	21 Jul 2022	202207_AECOM_OMP	Clear, no turbidity, no odour, no sheen	1.16	19.7	18,542.0	6.60	-401.1	-195.3
MW102	18 Jan 2023	202301_AECOM_OMP	Light grey, medium turbidity, no odour or sheen. Grey sediment at base of HydraSleeve.	0.00	22.6	21,250.0	6.73	-37.1	168.7
MW104	19 Jul 2022	202207_AECOM_OMP	Clear, no turbidity, no odour, no sheen. Insufficient water to collect sample.	n/a	n/a	n/a	n/a	n/a	n/a
MW104	18 Jan 2023	202301_AECOM_OMP	Location dry, no sample collected.	n/a	n/a	n/a	n/a	n/a	n/a
MW109	21 Jul 2022	202207_AECOM_OMP	Black / grey, turbid, distinct rotten egg smell (sulphurous), no sheen	0.94	20.8	16,310.0	6.88	-410.2	-204.4
MW109	18 Jan 2023	202301_AECOM_OMP	Light grey colour, low turbidity, no odour or sheen.	0.23	26.2	15,851.0	6.53	35.0	240.8
MW110	21 Jul 2022	202207_AECOM_OMP	Light brown, low turbidity, no odour, no sheen	1.66	20.0	17,804.0	6.90	-376.1	-170.3
MW110	18 Jan 2023	202301_AECOM_OMP	Light grey, low turbidity, no odour or sheen. Insufficient water in HydraSleeve, field parameters not collected.	n/a	n/a	n/a	n/a	n/a	n/a
MW114	21 Jul 2022	202207_AECOM_OMP	Light brown, low turbidity, no odour, no sheen	*	20.6	5,476.0	7.16	-335.2	-129.4
MW115	21 Jul 2022	202207_AECOM_OMP	Yellow / brown, low turbidity, no odour, no sheen	1.96	20.3	6,390.0	6.77	-297.6	-91.8
MW118	21 Jul 2022	202207_AECOM_OMP	Light grey, low turbidity, rotten egg smell (sulphurous), no sheen	6.46	21.9	15,052.0	6.94	-245.5	-39.7
MW121	22 Jul 2022	202207_AECOM_OMP	Yellow / brown, no turbidity, no odour, sheen	1.08	18.7	255.4	7.11	-404.4	-198.6
MW124	20 Jul 2022	202207_AECOM_OMP	Clear, no turbidity, no odour, no sheen	2.53	19.9	5,696.0	7.03	-339.9	-134.1
MW126	22 Jul 2022	202207_AECOM_OMP	Light yellow, low turbidity, no odour, no sheen	6.90	19.9	6,756.0	6.02	-210.0	-4.2
MW128	22 Jul 2022	202207_AECOM_OMP	Light brown, turbid, no odour, no sheen	7.20	19.0	4,813.0	7.22	-243.8	-38.0
MW129	19 Jul 2022	202207_AECOM_OMP	Residential appointment not confirmed.	n/a	n/a	n/a	n/a	n/a	n/a
MW132	19 Jul 2022	202207_AECOM_OMP	Clear, low turbidity, no odour, no sheen	5.50	13.1	3,537.0	6.55	-396.2	-190.4
MW139	19 Jul 2022	202207_AECOM_OMP	Residential appointment not confirmed.	n/a	n/a	n/a	n/a	n/a	n/a
MW167	21 Jul 2022	202207_AECOM_OMP	Light yellow / brown, low turbidity, organic odour, no sheen	0.71	19.2	24,385.0	6.71	-318.1	-112.3
MW187D	20 Jul 2022	202207_AECOM_OMP	Clear, no turbidity, no odour, no sheen	0.25	19.0	11,568.0	6.70	-443.2	-237.4
MW187S	20 Jul 2022	202207_AECOM_OMP	Clear, no turbidity, no odour, no sheen	3.28	19.9	15,940.0	6.58	-326.5	-120.7
MW188D	22 Jul 2022	202207_AECOM_OMP	Grey, medium turbidity, no odour, no sheen. Grab sample collected as insufficient head of water present in well to purge using low flow sampler.	5.89	19.6	7,623.0	11.21	-252.5	-46.7
MW188S	22 Jul 2022	202207_AECOM_OMP	Grey, low turbidity, no odour, no sheen	3.44	19.5	14,234.0	*	-259.7	-53.9

Notes

mg/L	milligrams per Litre
°C	degrees Celsius
µS/cm	microSiemens per centimetre
mV	milliVolts

Corrected field Redox measurement Eh = Er + 205.8
* - Parameter not recorded due to equipment malfunction

Table T3 - Surface Water Quality Parameters and Observations

						Water Quality Parameters					
						Dissolved Oxygen	Temperature	Electrical Conductivity	pH	Redox Potential Er	Redox Potential Eh (Corrected)
						mg/L	°C	uS/cm	pH Units	mV	mV
Location Code	**Date**	**Monitoring Round**	**Location Comments**	**Depth**	**Sample Comments**						
OTH006	20 Jul 2022	202207_AECOM_OMP	Effluent wastewater pit. Water flow observed.	0.0 - 0.1	Grey, no turbidity, organic odour, no sheen. Geochemical parameters not required.	n/a	n/a	n/a	n/a	n/a	n/a
OTH006	18 Jan 2023	202301_AECOM_OMP	Effluent wastewater pit. Waterbody approx. 1m wide, 2m deep. Water flow observed.	-	Dark yellow, medium turbidity, organic odour, no sheen. Geochemical parameters not required.	n/a	n/a	n/a	n/a	n/a	n/a
SW002	21 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.3 m. No water flow observed.	0.0 - 0.2	Brown, low turbidity, no odour, no sheen	4.39	12.0	330.4	7.37	-326.6	-120.8
SW002	17 Jan 2023	202301_AECOM_OMP	Agricultural dam. Waterbody approx.10m wide, 10cm deep. Algal bloom. No water flow observed.	0.1 - 0.2	Black, high turbidity, no odour, no sheen.	1.18	26.8	251.6	6.15	24.7	230.5
SW003	21 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 1.0 m. Waterbody depth (approx.): 0.3 m. Water flow observed.	0.0 - 0.1	Pale yellow, medium turbidity, no odour, no sheen	6.71	13.7	150.3	6.46	-348.7	-142.9
SW003	17 Jan 2023	202301_AECOM_OMP	Creek with culvert. Waterbody approx. 3m wide, 10cm deep. No water flow observed.	0.1 - 0.2	Yellow, low turbidity, no odour, no sheen.	3,14	27	634	6.04	138.2	344.0
SW004	19 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 10.0 m. Waterbody depth (approx.): 0.2 m. Water flow observed.	0.0 - 0.1	Brown, low turbidity, no odour, no sheen	7.10	14.4	149.7	6.47	-353.6	-147.8
SW004	19 Jan 2023	202301_AECOM_OMP	Emigrant Creek. Waterbody approx. 10m wide, 10cm deep. No water flow observed.	0.1 - 0.2	Light yellow, low turbidity, no odour, no sheen.	2.65	23.4	462.1	4.98	229.3	435.1
SW005	19 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 10.0 m. Waterbody depth (approx.): 0.5 m. No water flow observed.	0.0 - 0.1	Pale yellow, low turbidity, no odour, no sheen	3.93	13.9	491.1	5.93	-491.6	-285.8
SW005	19 Jan 2023	202301_AECOM_OMP	Mudies Creek. Location dry, not sampled.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SW026	21 Jul 2022	202207_AECOM_OMP	Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.3 m. Water flow observed.	0.0 - 0.2	Pale yellow, low turbidity, no odour, no sheen	8.84	13.7	119.6	6.54	-371.9	-166.1
SW026	17 Jan 2023	202301_AECOM_OMP	Creek. Waterbody approx. 3m wide, 0.5m deep. No water flow observed.	0.1 - 0.2	Light brown, medium turbidity, no odour, no sheen.	3.64	26.4	577	5.44	130.1	335.9
SW028	21 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 0.5 m. Waterbody depth (approx.): 0.1 m. No water flow observed.	0.0 - 0.1	Brown, low turbidity, no odour, no sheen	8.31	11.4	1,090.0	7.62	-239.0	-33.2
SW028	17 Jan 2023	202301_AECOM_OMP	Creek. Waterbody approx. 2m wide, 0.5-1m deep. Biosheen on water's surface. No water flow observed.	0.1 - 0.2	Light yellow, low turbidity, no odour, biosheen.	0.85	24.9	732	4.85	112.5	318.3
SW032	21 Jul 2022	202207_AECOM_OMP	Creek near culvert. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.4 m.	0.0 - 0.1	Brown, medium turbidity, no odour	8.67	13.4	98.1	6.41	-376.5	-170.7
SW032	17 Jan 2023	202301_AECOM_OMP	Creek with culvert. Waterbody approx. 3m wide, 0.5m deep. No water flow observed.	0.1 - 0.2	Yellow, low turbidity, no odour, no sheen.	3.61	26.8	248.2	6.82	164.9	370.7
SW034	21 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.3 m. Water flow observed.	0.0 - 0.1	Pale yellow, low turbidity, no odour, no sheen	6.85	14.4	227.9	7.43	-319.2	-113.4
SW034	17 Jan 2023	202301_AECOM_OMP	Creek with culvert. Waterbody approx. 1.5m wide, 0.3m deep. Biosheen on water's surface. No water flow observed.	0.1 - 0.2	Yellow, low turbidity, organic odour, biosheen.	5.56	28.8	324.8	6.15	136.7	342.5
SW035	19 Jul 2022	202207_AECOM_OMP	Pond. Waterbody width (approx.): 20.0-40.0 m. Waterbody depth (approx.): 0.5 m. No water flow observed.	0.0 - 0.1	Yellow, low turbidity, organic odour, biosheen appearance	6.70	12.4	563.0	6.75	-429.9	-224.1
SW035	18 Jan 2023	202301_AECOM_OMP	Agricultural dam. Waterbody approx. 40m wide, unknown depth. Algal bloom. No water flow observed.	0.1 - 0.2	Black/grey, high turbidity, organic odour, no sheen.	4.95	29.7	1154	7.25	8.7	214.5
SW036	19 Jul 2022	202207_AECOM_OMP	Pond. Waterbody width (approx.): 10.0-20.0 m. Waterbody depth (approx.): 0.5 m. Water flow observed.	0.0 - 0.1	Brown, low turbidity, no odour, no sheen	6.53	13.7	130.0	6.81	132.2	338.0
SW036	18 Jan 2023	202301_AECOM_OMP	Agricultural dam. Waterbody approx. 30m wide, unknown depth. Highly vegetated on banks. No water flow observed.	0.1 - 0.2	Black/grey, high turbidity, organic odour, no sheen.	2.92	28.1	444.9	6.6	89.2	295.0
SW039	20 Jul 2022	202207_AECOM_OMP	Dam. Waterbody width (approx.): >10.0 m. Waterbody depth (approx.): 1.0 m. Water flow observed.	0.0 - 0.2	Brown, low turbidity, slight organic odour, no sheen	5.47	10.5	262.4	6.78	-281.4	-75.6
SW039	18 Jan 2023	202301_AECOM_OMP	Agricultrual dam. Waterbody approx. 30m wide, unknown depth. No water flow observed.	0.1 - 0.2	Black/grey, high turbidity, organic odour, no sheen.	0.06	23.4	1638	7.07	36.9	242.7
SW040	21 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 0.5 m. Waterbody depth (approx.): 0.2 m. Water flow observed.	0.0 - 0.2	Yellow, low turbidity, no odour, no sheen	8.91	13.0	1,893.0	6.77	-337.6	-131.8
SW040	17 Jan 2023	202301_AECOM_OMP	Creek. Waterbody approx. 1m wide, 0.5m deep. No water flow observed.	0.1 - 0.2	Yellow, low turbidity, no odour, no sheen.	5.21	28.3	29252	7.09	94.9	300.7
SW064	20 Jul 2022	202207_AECOM_OMP	Dam. Waterbody width (approx.): 20.0 m. Waterbody depth (approx.): >0.5 m. No water flow observed.	0.0 - 0.1	Yellow, medium turbidity, no odour, no sheen	8.29	17.6	426.0	7.22	-302.1	-96.3
SW064	18 Jan 2023	202301_AECOM_OMP	Creek with culvert. Waterbody approx. 3m wide, unknown depth. Biosheen on water's surface. No water flow observed.	0.1 - 0.2	Dark brown, high turbidity, no odour, no sheen.	3.86	24	10.2	7.86	90.3	296.1
SW065	20 Jul 2022	202207_AECOM_OMP	Culvert. Waterbody width (approx.): 20.0 m. Waterbody depth (approx.): 0.5 m.	0.0 - 0.1	Pale yellow, No turbidity, organic odour	5.58	13.9	377.1	6.85	-296.3	-90.5
SW065	18 Jan 2023	202301_AECOM_OMP	Agricultural dam. Waterbody approx.15m wide, unknown depth. No water flow observed.	0.1 - 0.2	Light green, medium turbidity, organic odour, no sheen.	2.22	28.2	675	5.92	114.1	319.9
SW114	21 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 0.5 m. Waterbody depth (approx.): 0.1 m. No water flow observed.	0.0 - 0.1	Pale yellow, low turbidity, no odour, no sheen	9.84	16.1	115.0	6.60	-353.5	-147.7
SW114	17 Jan 2023	202301_AECOM_OMP	Creek from culvert. Location dry, not sampled.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SW115	21 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.1 m. Water flow observed.	0.0 - 0.1	dark reddish brown, turbid turbidity, no odour	8.53	16.1	190.3	6.97	-346.2	-140.4
SW115	17 Jan 2023	202301_AECOM_OMP	Waterway. Location dry, not sampled.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SW116	21 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 1.5 m. Waterbody depth (approx.): 0.1 m. No water flow observed.	0.0 - 0.2	Pale yellow, medium turbidity, no odour, no sheen	8.25	16.4	438.9	6.10	-401.7	-195.9
SW116	17 Jan 2023	202301_AECOM_OMP	Creek from culvert. Location dry, not sampled.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SW553	20 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 5.0 m. Waterbody depth (approx.): 0.5 m. No water flow observed.	0.0 - 0.1	Yellow, low turbidity, no odour, no sheen	5.87	17.8	161.5	6.44	-281.9	-76.1
SW553	18 Jan 2023	202301_AECOM_OMP	Creek with culvert. Waterbody approx. 3m wide, unknown depth. No water flow observed.	0.1 - 0.2	Dark green, medium turbidity, no odour, no sheen.	4.72	27.7	432.1	7.13	100	305.8
SW554	20 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 10.0 m. Waterbody depth (approx.): 0.8 m. Water flow observed.	0.0 - 0.1	Pale yellow, low turbidity, weak organic odour	6.94	15.5	216.7	6.34	-292.8	-87.0
SW554	18 Jan 2023	202301_AECOM_OMP	Dam. Location unable to be accessed (to confirm private stakeholder). Not visited/sampled.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SW555	21 Jul 2022	202207_AECOM_OMP	Creek. Waterbody width (approx.): 0.8 m. Waterbody depth (approx.): 0.2 m. No water flow observed.	0.0 - 0.1	Yellow, low turbidity, no odour, no sheen	8.28	16.1	2,404.0	6.81	-330.4	-124.6
SW555	17 Jan 2023	202301_AECOM_OMP	Creek from culvert. Location dry, not sampled.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Notes

mg/L	milligrams per Litre
°C	degrees Celsius
µS/cm	microSiemens per centimetre
mV	milliVolts
Corrected field Redox measurement Eh = Er + 205.8	
n/a	not applicable
-	not measured

Table T4 - Sediment Observations

Location Code	Date	Monitoring Round	Sample Depth From (m)	Sample Depth To (m)	Sample Comment
SD002	21 Jul 2022	202207_AECOM_OMP	0.0	0.1	Sandy SILT: Dark brown, sandy silt, fine grained, rootlets present, earthy odour
SD002	17 Jan 2023	202301_AECOM_OMP	0.1	0.3	SAND: brown/black, fine grained, with organic material. No odour or staining.
SD003	21 Jul 2022	202207_AECOM_OMP	0.0	0.1	Gravelly SAND: Brown, coarse to fine grain, roots
SD003	17 Jan 2023	202301_AECOM_OMP	0.1	0.3	Clayey GRAVEL: red-orange-brown <5mm sub-angular gravel, dark grey clay. No odour or staining.
SD004	19 Jul 2022	202207_AECOM_OMP	0.0	0.1	Gravelly SAND: gravelly sand, fine to course grained
SD004	19 Jan 2023	202301_AECOM_OMP	0.1	0.3	Silty CLAY: brown, high plasticity, with rootlets, saturated. No odour or staining.
SD005	19 Jul 2022	202207_AECOM_OMP	0.0	0.1	Silty CLAY: brown, high plasticity, rootlets
SD005	19 Jan 2023	202301_AECOM_OMP	0.1	0.3	Silty CLAY: brown with orange and white mottling, low plasticity, with rootlets, dry. No odour or staining.
SD032	21 Jul 2022	202207_AECOM_OMP	0.0	0.1	Sandy SILT: dark brown, moderate plasticity, rootlets present, fine to coarse grain
SD032	17 Jan 2023	202301_AECOM_OMP	0.1	0.3	Sandy GRAVEL: brown, medium to coarse sub-rounded to sub-angular gravels. No odour or staining.
SD039	20 Jul 2022	202207_AECOM_OMP	0.0	0.1	SILT: with sand, dark brown, rootlets, fine grain, organic odour
SD039	18 Jan 2023	202301_AECOM_OMP	0.1	0.3	Silty CLAY: brown, with rootlets, saturated. No odour or staining.
SD040	21 Jul 2022	202207_AECOM_OMP	0.0	0.1	Sandy SILT: brown, high plasticity, trace rootlets, fine grain
SD040	17 Jan 2023	202301_AECOM_OMP	0.1	0.3	CLAY: brown/grey, high plasticity, with rootlets, saturated. No odour or staining.
SD046	20 Jul 2022	202207_AECOM_OMP	0.0	0.1	Gravelly CLAY: brown, moderate plasticity, organic matter, roots
SD046	18 Jan 2023	202301_AECOM_OMP	0.1	0.3	Sandy CLAY: grey-brown, medium plasticity, fine to coarse sand, saturated. No odour or staining.
SD047	20 Jul 2022	202207_AECOM_OMP	0.0	0.1	Sandy SILT: brown, fine grained gravels and organic matter
SD047	18 Jan 2023	202301_AECOM_OMP	0.1	0.3	Gravelly CLAY: brown, low plasticity, red-orange-brown gravels <5mm sub-angular to sub-rounded. No odour or staining.
SD052	19 Jul 2022	202207_AECOM_OMP	0.0	0.1	Silty CLAY: brown, organic matter, organic odour.
SD052	18 Jan 2023	202301_AECOM_OMP	0.1	0.3	CLAY: brown/black, low plasticity, saturated. Organic odour, no staining.
SD053	21 Jul 2022	202207_AECOM_OMP	0.0	0.1	Sandy SILT: dark brown, moderate plasticity, rootlets, fine to coarse grain
SD053	17 Jan 2023	202301_AECOM_OMP	0.1	0.3	Silty SAND: brown/grey, fine-medium sand, with rootlets. No odour or staining.
SD055	21 Jul 2022	202207_AECOM_OMP	0.0	0.1	Silty CLAY: dark brown, high plasticity, fine grain, rootlets, organic matter present
SD055	17 Jan 2023	202301_AECOM_OMP	0.1	0.3	Silty CLAY: brown, high plasticity, with rootlets, saturated. No odour or staining.
SD065	21 Jul 2022	202207_AECOM_OMP	0.0	0.1	Various brown colours, with yellows and reds, sand, rootlets present, no odour
SD065	17 Jan 2023	202301_AECOM_OMP	0.1	0.3	Sandy GRAVELS: brown-red, fine to coarse, angular to sub-angular gravel, brown sand. No odour or staining.
SD080	19 Jul 2022	202207_AECOM_OMP	0.0	0.1	Silty SAND: brown, fine grained with gravel, rootlets organic odour
SD080	18 Jan 2023	202301_AECOM_OMP	0.1	0.3	Silty CLAY: brown, with rootlets, saturated. Slight organic odour, no staining.
SD114	21 Jul 2022	202207_AECOM_OMP	0.0	0.1	Silty CLAY: dark brown, high plasticity, fine grain, moist, rootlets
SD114	17 Jan 2023	202301_AECOM_OMP	0.1	0.3	CLAY: brown, low plasticity, with rootlets, dry. No odour or staining.
SD115	21 Jul 2022	202207_AECOM_OMP	0.0	0.1	Sandy SILT: brown, fine grained, organic matter, grass
SD115	17 Jan 2023	202301_AECOM_OMP	0.1	0.3	Sandy CLAY: brown, low plasticity, dry. No odour or staining.
SD116	21 Jul 2022	202207_AECOM_OMP	0.0	0.1	Sandy SILT: brown, high plasticity, rootlets present, moist, fine grain
SD116	17 Jan 2023	202301_AECOM_OMP	0.1	0.3	CLAY: brown, low plasticity, with rootlets, dry. No odour or staining.
SD539	20 Jul 2022	202207_AECOM_OMP	0.0	0.1	Silty SAND: Light brown, with gravels, grass
SD539	18 Jan 2023	202301_AECOM_OMP	0.1	0.3	Silty CLAY: grey, low plasticity, with rootlets, saturated. No odour or staining.
SD540	20 Jul 2022	202207_AECOM_OMP	0.0	0.1	Clayey SAND: brown, fine to coarse grained, with gravels, grass
SD540	18 Jan 2023	202301_AECOM_OMP	n/a	n/a	Location unable to be accessed (to confirm private stakeholder). Not visited/sampled.
SD555	21 Jul 2022	202207_AECOM_OMP	0.0	0.1	Sandy SILT: dark brown, moderate plasticity, fine to coarse grained, rootlets
SD555	17 Jan 2023	202301_AECOM_OMP	0.1	0.3	Silty CLAY: dark brown with orange and black mottling, high plasticity, with rootlets. No odour or staining.

Notes
n/a Not applicable

Table T5 - Historical Groundwater Analytical Results

					PFAS					**PFAS - Perfluoroalkyl Sulfonic Acids**				**PFAS - Perfluoroalkyl Carboxylic Acids**										**PFAS - (n:2) Fluorotelomer Sulfonic Acids**				**PFAS - Perfluoroalkyl Sulfonamides**						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.002	0.005
PFAS NEMP 2020 Drinking Water					**0.56**			**0.07**																										
PFAS NEMP 2020 Freshwater 99%					*19*	*0.00023*																												
Location Code	**Date**	**Field ID**	**Sample Type**	**Project ID**																														
MW008	15 May 2019	0356_CNN0018_GW08_190515	Normal	NSW_0356_PFAS	<0.01	*0.02*	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW008	21 Jul 2022	0356_MW008_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW011	05 Oct 2018	CNN0018_GW02_181005	Normal	NSW_0356_PFAS	<0.05	*0.12*	0.3	0.42	-	<0.05	0.08	<0.05	<0.05	<0.2	<0.05	0.48	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW011	28 Feb 2019	0356_CNN0018_GW02_190228	Normal	NSW_0356_PFAS	0.004	*0.029*	0.054	**0.083**	0.176	0.019	0.008	0.002	<0.002	<0.01	0.008	0.035	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.014	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.002	<0.005	<0.002	<0.005
MW011	15 May 2019	0356_CNN0018_GW02_190515	Normal	NSW_0356_PFAS	<0.01	*0.03*	0.06	**0.09**	0.12	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW011	15 May 2019	0356_QC145_GW_190515	Field_D	NSW_0356_PFAS	<0.01	*0.03*	0.06	**0.09**	0.12	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW011	15 May 2019	0356_QC245_GW_190515	Field_D	NSW_0356_PFAS	<0.01	*0.03*	0.06	**0.09**	0.12	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW011	21 Jul 2022	0356_MW011_220721	Normal	NSW_0356_PFASOMP_22	<0.01	*0.02*	0.02	0.04	0.07	<0.02	<0.02	<0.02	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW012	04 Oct 2018	GW_QC103_181004	Field_D	NSW_0356_PFAS	**2.91**	*89.4*	38.8	128.2	-	3.83	3.59	2.36	<0.02	<0.1	1.77	9.43	1.29	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.1	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW012	05 Oct 2018	CNN0018_GW03_181005	Normal	NSW_0356_PFAS	0.49	*14.1*	4.77	18.87	-	0.47	0.55	0.49	<0.02	<0.1	0.17	1.24	0.19	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW012	05 Oct 2018	0356_GW_QC203_181005	Interlab_D	NSW_0356_PFAS	**2.4**	*77*	36	**110**	140	3.9	4.1	2.6	<0.02	1.1	1.7	9.1	1.2	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	0.08	<0.01	<0.01	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
MW012	28 Feb 2019	0356_CNN0018_GW03_190228	Normal	NSW_0356_PFAS	**2.48**	*114*	31.1	**145**	167	2.45	3.59	4.21	0.034	0.74	1.14	6.05	0.939	<0.002	0.012	<0.002	<0.002	<0.002	<0.005	<0.005	0.116	0.054	<0.005	0.019	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
MW012	15 May 2019	0356_CNN0018_GW03_190515	Normal	NSW_0356_PFAS	**2.71**	*105*	37.2	**142**	168	3.01	5.68	2.48	<0.02	0.8	1.42	8.02	1.09	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.1	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW048	03 Oct 2018	0356_CNN0039_GW01_181003	Normal	NSW_0356_PFAS	0.03	*0.03*	2.17	2.2	-	0.17	0.24	<0.02	<0.02	<0.1	0.04	0.21	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW048	27 Feb 2019	0356_CNN0039_GW01_190227	Normal	NSW_0356_PFAS	0.042	*0.03*	2.68	**2.71**	3.96	0.293	0.461	0.017	<0.002	<0.01	0.067	0.299	0.051	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.016	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
MW048	10 May 2019	0356_CNN0039_GW01_190510	Normal	NSW_0356_PFAS	0.03	*0.02*	2.26	**2.28**	2.88	0.16	0.24	<0.02	<0.02	<0.1	<0.02	0.15	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW048	21 Jul 2022	0356_MW048_220721	Normal	NSW_0356_PFASOMP_22	0.05	*0.02*	2.26	**2.28**	3.14	0.15	0.31	<0.02	<0.02	<0.1	0.04	0.27	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW048	21 Jul 2022	0356_QC103_220721	Field_D	NSW_0356_PFASOMP_22	0.05	*0.02*	2.24	**2.26**	3.15	0.19	0.31	<0.02	<0.02	<0.1	0.06	0.24	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW048	21 Jul 2022	0356_QC203_220721	Interlab_D	NSW_0356_PFASOMP_22	0.06	*0.02*	2.6	**2.7**	3.6	0.21	0.31	0.02	<0.02	0.04	0.05	0.23	0.05	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
MW049	03 Oct 2018	0356_CNN0039_GW02_181003	Normal	NSW_0356_PFAS	0.06	*1.12*	1.26	2.38	-	0.07	0.09	0.1	<0.02	<0.1	0.03	0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW049	27 Feb 2019	0356_CNN0039_GW02_190227	Normal	NSW_0356_PFAS	0.169	*6.45*	3.97	**10.4**	11.9	0.204	0.316	0.339	<0.002	<0.01	0.057	0.36	0.048	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.03	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
MW049	10 May 2019	0356_CNN0039_GW02_190510	Normal	NSW_0356_PFAS	0.09	*2.13*	3.16	**5.29**	6.21	0.15	0.26	0.14	<0.02	<0.1	<0.02	0.25	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW050	07 May 2019	0356_CNN0039_GW03_190507	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW050	21 Jul 2022	0356_MW050_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW052	10 May 2019	0356_CNN0039_GW05_190510	Normal	NSW_0356_PFAS	0.03	*0.42*	0.53	**0.95**	1.09	0.03	0.03	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW052	21 Jul 2022	0356_MW052_220721	Normal	NSW_0356_PFASOMP_22	0.02	*0.38*	0.28	**0.66**	0.79	<0.02	0.02	<0.02	<0.02	<0.1	0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW056	08 May 2019	0356_GW12_190508	Normal	NSW_0356_PFAS	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW056	30 May 2019	0356_GW12_190530	Normal	NSW_0356_PFAS	<0.01	*0.02*	0.02	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW059	08 May 2019	0356_HLG_GW03_190508	Normal	NSW_0356_PFAS	<0.01	*0.04*	0.04	**0.08**	0.08	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW059	21 Jul 2022	0356_MW059_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	0.04	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW063	07 Feb 2019	0356_NSW1164_MW01D_190207	Normal	NSW_0356_PFAS	<0.05	*0.07*	<0.05	0.07	0.35	0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	0.23	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW063	09 May 2019	0356_NSW1164_MW01D_190509	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW063	19 Jul 2022	0356_MW063_220719	Normal	NSW_0356_PFASOMP_22	<0.01	*0.05*	<0.01	0.05	0.34	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.24	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW071	06 Feb 2019	0356_NSW1164_MW03D_190206	Normal	NSW_0356_PFAS	<0.05	*0.08*	<0.05	**0.08**	0.15	0.07	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW071	09 May 2019	0356_NSW1164_MW03D_190509	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW071	19 Jul 2022	0356_MW071_220719	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW073	06 Feb 2019	0356_NSW1164_MW03S_190206	Normal	NSW_0356_PFAS	<0.01	*0.01*	<0.02	0.01	1.52	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	1.48	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW073	09 May 2019	0356_NSW1164_MW03S_190509	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW073	19 Jul 2022	0356_MW073_220719	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW102	06 May 2019	0356_GW02D_190506	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	0.11	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.11	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW102	08 May 2019	0356_GW02D_190508	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	0.1	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.1	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW102	20 Oct 2020	0356-GW-02D-201020	Normal	NSW_0356_PFAS	<0.01	*0.02*	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW102	21 Jul 2022	0356_MW102_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW102	18 Jan 2023	0356_MW102_230118	Normal	NSW_0356_PFASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW102	18 Jan 2023	0356_QC104_230118	Field_D	NSW_0356_PFASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW102	18 Jan 2023	0356_QC204_230118	Interlab_D	NSW_0356_PFASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
MW109	10 May 2019	0356_GW03D_190510	Normal	NSW_0356_PFAS	<0.01	*0.28*	<0.02	**0.28**	1.76	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	1.48	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW109	28 May 2019	0356_GW03D_190528	Normal	NSW_0356_PFAS	<0.01	*0.16*	<0.02	**0.16**	0.23	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW109	19 Oct 2020	0356_QC254_201020	Interlab_D	NSW_0356_PFAS	<0.01	<0.02	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05
MW109	20 Oct 2020	0356-GW03D-201020	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW109	20 Oct 2020	0356-QC154-201020	Field_D	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW109	21 Jul 2022	0356_MW109_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW109	18 Jan 2023	0356_MW109_230118	Normal	NSW_0356_PFASOMP_23	<0.01	*0.06*	0.06	**0.12**	0.16	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW110	07 May 2019	0356_GW03S_190507	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	0.3	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.3	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW110	20 Oct 2020	0356-GW03S-201020	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW110	21 Jul 2022	0356_MW110_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW110	18 Jan 2023	0356_MW110_230118	Normal	NSW_0356_PFASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW114	06 May 2019	0356_GW04D_190506	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW114	20 Oct 2020	0356-GW04D-201020	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05

Table T5 - Historical Groundwater Analytical Results

					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.002	0.005
PFAS NEMP 2020 Drinking Water					**0.56**			**0.07**																									
PFAS NEMP 2020 Freshwater 99%					*19*	*0.00023*																											
Location Code	**Date**	**Field ID**	**Sample Type**	**Project ID**																													
MW114	21 Jul 2022	0356_MW114_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW115	06 May 2019	0356_GW04S_190506	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW115	20 Oct 2020	0356-GW04S-201020	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW115	21 Jul 2022	0356_MW115_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118	06 May 2019	0356_GW05S_190506	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	0.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.09	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118	21 Jul 2022	0356_MW118_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW121	02 May 2019	0356_GW06_190502	Normal	NSW_0356_PFAS	0.01	<0.01	<0.02	<0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW121	31 May 2019	0356_GW06_190531	Normal	NSW_0356_PFAS	0.01	<0.01	<0.02	<0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW121	19 Oct 2020	0356_GW06_201019	Normal	NSW_0356_PFAS	0.02	*0.03*	<0.02	0.03	0.05	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW121	22 Jul 2022	0356_MW121_220722	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW121	22 Jul 2022	0356_QC106_220722	Field_D	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW121	22 Jul 2022	0356_QC206_220722	Interlab_D	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
MW124	02 May 2019	0356_GW07_190502	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW124	31 May 2019	0356_GW07_190531	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW124	19 Oct 2020	0356_GW07_201019	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW124	20 Jul 2022	0356_MW124_220720	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	0.07	0.07	0.07	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW126	03 May 2019	0356_GW08S_190503	Normal	NSW_0356_PFAS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW126	22 Jul 2022	0356_MW126_220722	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	0.03	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW128	03 May 2019	0356_GW09S_190503	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW128	30 May 2019	0356_GW09S_190530	Normal	NSW_0356_PFAS	<0.01	*0.02*	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW128	22 Jul 2022	0356_MW128_220722	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW129	03 May 2019	0356_GW10S_190503	Normal	NSW_0356_PFAS	<0.01	<0.01	0.04	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW129	30 May 2019	0356_GW10S_190530	Normal	NSW_0356_PFAS	<0.01	*0.02*	0.02	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW132	06 Nov 2018	0356_RESI_GW011_181106	Normal	NSW_0356_PFAS	<0.01	*0.02*	0.03	0.05	-	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW132	07 May 2019	0356_RESI_GW011_190507	Normal	NSW_0356_PFAS	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW132	19 Jul 2022	0356_MW132_220719	Normal	NSW_0356_PFASOMP_22	<0.01	*0.03*	0.03	0.06	0.06	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW139	18 Dec 2018	0356_RESI_GW013_181218	Normal	NSW_0356_PFAS	0.02	*0.03*	0.08	0.11	-	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW139	08 May 2019	0356_RESI_GW013_190508	Normal	NSW_0356_PFAS	<0.01	*0.03*	0.08	**0.11**	0.11	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW139	28 May 2020	0356_RESI_GW013_200528	Normal	NSW_0356_PFAS	0.02	*0.04*	0.06	**0.1**	0.12	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW167	02 Oct 2018	0356_CNN0230_GW01_181002	Normal	NSW_0356_PFAS	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW167	01 Mar 2019	0356_CNN0230_GW01_190301	Normal	NSW_0356_PFAS	<0.002	*0.012*	<0.002	0.012	0.36	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.348	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
MW167	15 May 2019	0356_CNN0230_GW01_190515	Normal	NSW_0356_PFAS	<0.01	*0.21*	0.02	**0.23**	0.74	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.51	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW167	21 Jul 2022	0356_MW167_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW187D	03 Sep 2020	0356_MW09D_200903	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW187D	20 Jul 2022	0356_MW187D_220720	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW187S	20 Jul 2022	0356_MW187S_220720	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW187S	20 Jul 2022	0356_QC102_220720	Field_D	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW187S	20 Jul 2022	0356_QC202_220720	Interlab_D	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
MW188D	03 Aug 2020	0356_QC251_200903	Interlab_D	NSW_0356_PFAS	<0.01	<0.02	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.2	<0.01	<0.05	<0.2	<0.01	<0.05
MW188D	03 Aug 2020	QC251_200903	Interlab_D	NSW_0356_PFAS	<0.01	<0.02	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.2	<0.01	<0.05	<0.2	<0.01	<0.05
MW188D	03 Sep 2020	0356_MW10D_200903	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW188D	22 Jul 2022	0356_MW188D_220722	Normal	NSW_0356_PFASOMP_22	<0.01	*0.02*	<0.01	0.02	0.34	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.32	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW188S	03 Sep 2020	0356_MW10S_200903	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW188S	03 Sep 2020	0356_QC151_200903	Field_D	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW188S	22 Jul 2022	0356_MW188S_220722	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05

Notes:

LOR	Limit of Reporting
Normal	Primary sample
Field_D	Intra-laboratory duplicate sample
Interlab_D	Inter-laboratory duplicate sample

Table T6 - Historical Surface Water and Wastewater Analytical Results

						PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.002	0.005
PFAS NEMP 2020 Recreational Water						**10**			**2**																									
PFAS NEMP 2020 Freshwater 99%						*19*	*0.00023*																											
Location Code	**Date**	**Field ID**	**Sample Type**	**Project ID**																															
OTH006	03 Apr 2019	0356_OTH006_190403	Normal	NSW_0356_PFAS		<0.01	*0.02*	0.02	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH006	19 Oct 2020	0356_OTH006_201019	Normal	NSW_0356_PFAS		<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH006	19 Oct 2020	0356_QC152_201019	Field_D	NSW_0356_PFAS		<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH006	19 Oct 2020	0356_QC252_201019	Interlab_D	NSW_0356_PFAS		<0.01	<0.02	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05
OTH006	20 Jul 2022	0356_OTH006_220720	Normal	NSW_0356_PFASOMP_22		0.01	*0.12*	0.11	0.23	0.27	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH006	18 Jan 2023	0356_OTH006_230118	Normal	NSW_0356_PFASOMP_23		<0.01	*0.16*	0.04	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW002	08 Oct 2018	0356_SW002_SW_181008	Normal	NSW_0356_PFAS		0.01	*0.33*	0.34	0.67	-	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW002	28 Feb 2019	0356_SW002_190228	Normal	NSW_0356_PFAS		0.007	*0.18*	0.21	0.39	0.465	0.013	0.011	0.005	<0.002	<0.01	0.009	0.026	0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
SW002	24 Apr 2019	0356_SW002_190424	Normal	NSW_0356_PFAS		0.02	*0.31*	0.2	0.51	0.56	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW002	16 Apr 2020	0356_SW002_200416	Normal	NSW_0356_PFAS		<0.01	*0.26*	0.24	0.5	0.54	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW002	21 Jul 2022	0356_SW002_220721	Normal	NSW_0356_PFASOMP_22		0.01	*0.33*	0.24	0.57	0.65	0.03	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW002	21 Jul 2022	0356_QC104_220721	Field_D	NSW_0356_PFASOMP_22		0.01	*0.34*	0.21	0.55	0.6	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW002	21 Jul 2022	0356_QC204_220721	Interlab_D	NSW_0356_PFASOMP_22		0.01	*0.42*	0.24	0.66	0.76	0.02	0.02	0.01	<0.02	<0.02	<0.02	0.04	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
SW002	17 Jan 2023	0356_SW002_230117	Normal	NSW_0356_PFASOMP_23		0.05	*0.85*	0.81	1.66	2.13	0.05	0.07	0.04	<0.02	<0.1	0.04	0.2	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW003	30 Nov 2018	0356_SW003_181130	Normal	NSW_0356_PFAS		<0.01	*0.01*	<0.02	0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW003	17 Apr 2019	0356_SW003_190417	Normal	NSW_0356_PFAS		0.02	*0.24*	0.23	0.47	0.61	0.06	<0.02	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW003	21 Jul 2022	0356_SW003_220721	Normal	NSW_0356_PFASOMP_22		<0.01	*0.01*	0.02	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW003	17 Jan 2023	0356_SW003_230117	Normal	NSW_0356_PFASOMP_23		<0.01	*0.02*	0.02	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW004	30 Nov 2018	0356_SW004_181130	Normal	NSW_0356_PFAS		<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW004	18 Apr 2019	0356_SW004_190418	Normal	NSW_0356_PFAS		<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW004	18 Apr 2020	0356_SW004_200418	Normal	NSW_0356_PFAS		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
SW004	19 Jul 2022	0356_SW004_220719	Normal	NSW_0356_PFASOMP_22		<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW004	19 Jan 2023	0356_SW004_230119	Normal	NSW_0356_PFASOMP_23		<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW005	30 Nov 2018	0356_SW005_181130	Normal	NSW_0356_PFAS		<0.01	*0.02*	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW005	18 Apr 2019	0356_SW005_190418	Normal	NSW_0356_PFAS		<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW005	18 Apr 2019	0356_QC241_SW_190418	Interlab_D	NSW_0356_PFAS		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.01	<0.01	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
SW005	18 Apr 2020	0356_SW005_200418	Normal	NSW_0356_PFAS		<0.002	*0.009*	0.004	0.013	0.013	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
SW005	19 Jul 2022	0356_SW005_220719	Normal	NSW_0356_PFASOMP_22		<0.01	<0.01	<0.01	<0.01	0.03	0.03	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW026	08 Oct 2018	0356_SMA13_SW_181008	Normal	NSW_0356_PFAS		<0.01	*0.23*	0.12	0.35	-	0.03	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW026	24 Apr 2019	0356_SMA13_SW_190424	Normal	NSW_0356_PFAS		0.01	*0.24*	0.13	0.37	0.38	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW026	16 Apr 2020	0356_SMA13_200416	Normal	NSW_0356_PFAS		<0.01	*0.24*	0.11	0.35	0.35	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW026	16 Apr 2020	0356_QC101_200416	Field_D	NSW_0356_PFAS		<0.01	*0.27*	0.12	0.39	0.39	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW026	21 Jul 2022	0356_SW026_220721	Normal	NSW_0356_PFASOMP_22		0.02	*0.76*	0.44	1.2	1.38	0.06	0.03	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW026	17 Jan 2023	0356_SW026_230117	Normal	NSW_0356_PFASOMP_23		0.02	*0.63*	0.28	0.91	1.08	0.04	0.03	<0.02	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW028	25 Oct 2018	0356_SWA7_SW_181025	Normal	NSW_0356_PFAS		<0.01	<0.01	<0.02	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW028	25 Oct 2018	0356_QC134_SW_181025	Field_D	NSW_0356_PFAS		<0.01	<0.01	<0.02	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW028	25 Oct 2018	0356_QC234_SW_181025	Interlab_D	NSW_0356_PFAS		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.01	<0.01	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
SW028	17 Apr 2019	0356_SMA7_SW_190417	Normal	NSW_0356_PFAS		<0.01	*0.03*	<0.02	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW028	21 Jul 2022	0356_SW028_220721	Normal	NSW_0356_PFASOMP_22		<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW028	17 Jan 2023	0356_SW028_230117	Normal	NSW_0356_PFASOMP_23		<0.01	*0.01*	<0.01	0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW028	17 Jan 2023	0356_QC101_230117	Field_D	NSW_0356_PFASOMP_23		<0.01	*0.01*	<0.01	0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW028	17 Jan 2023	0356_QC201_230117	Interlab_D	NSW_0356_PFASOMP_23		<0.01	*0.01*	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
SW032	22 Mar 2019	0356_SW032_190322	Normal	NSW_0356_PFAS		<0.01	*0.07*	0.02	0.09	0.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW032	21 Jul 2022	0356_SW032_220721	Normal	NSW_0356_PFASOMP_22		0.03	*0.86*	0.71	1.57	1.81	0.04	0.06	<0.02	<0.02	<0.1	<0.02	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW032	17 Jan 2023	0356_SW032_230117	Normal	NSW_0356_PFASOMP_23		0.08	*2.13*	1.69	**3.82**	4.85	0.17	0.21	0.07	<0.02	<0.1	0.06	0.4	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW034	30 Nov 2018	0356_SMA8_SW_181130	Normal	NSW_0356_PFAS		<0.01	*0.16*	0.09	0.25	0.32	0.03	<0.02	<0.02	<0.02	<0.1	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW034	08 Feb 2019	0356_SMA8_SW_190208	Normal	NSW_0356_PFAS		<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW034	24 Apr 2019	0356_SMA8_SW_190424	Normal	NSW_0356_PFAS		<0.01	*0.21*	0.1	0.31	0.31	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW034	24 Apr 2020	0356_SMA8_200424	Normal	NSW_0356_PFAS		0.01	*0.43*	0.44	0.87	0.96	0.03	<0.02	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW034	19 Oct 2020	0356_SMA8_201019	Normal	NSW_0356_PFAS		<0.01	*0.35*	0.36	0.71	0.81	0.03	0.02	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW034	21 Jul 2022	0356_SW034_220721	Normal	NSW_0356_PFASOMP_22		0.01	*0.35*	0.24	0.59	0.64	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW034	17 Jan 2023	0356_SW034_230117	Normal	NSW_0356_PFASOMP_23		0.04	*1.35*	0.55	1.9	2.29	0.05	0.05	0.03	<0.02	<0.1	0.04	0.18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW034	17 Jan 2023	0356_QC103_230117	Field_D	NSW_0356_PFASOMP_23		0.04	*1.33*	0.52	1.85	2.21	0.04	0.05	0.03	<0.02	<0.1	0.03	0.17	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW034	17 Jan 2023	0356_QC203_230117	Interlab_D	NSW_0356_PFASOMP_23		0.03	*1.1*	0.73	1.8	2.2	0.07	0.05	0.03	<0.02	<0.02	0.04	0.12	0.02	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
SW035	11 Apr 2019	0356_RESI_SW035_190411	Normal	NSW_0356_PFAS		<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW035	11 Apr 2019	0356_QC140_190411	Field_D	NSW_0356_PFAS		<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW035	19 Jul 2022	0356_SW035_220719	Normal	NSW_0356_PFASOMP_22		<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW035	18 Jan 2023	0356_SW035_230118	Normal	NSW_0356_PFASOMP_23		<0.01	*0.01*	<0.01	0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW036	11 Apr 2019	0356_RESI_SW036_190411	Normal	NSW_0356_PFAS		<0.01	*0.2*	0.09	0.29	0.29	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW036	19 Jul 2022	0356_SW036_220719	Normal	NSW_0356_PFASOMP_22		<0.01	*0.23*	0.15	0.38	0.41	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05

Table T6 - Historical Surface Water and Wastewater Analytical Results

				PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids									PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
				Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.002	0.005
PFAS NEMP 2020 Recreational Water				**10**			**2**																										
PFAS NEMP 2020 Freshwater 99%				*19*	*0.00023*																												
Location Code	**Date**	**Field ID**	**Sample Type**	**Project ID**																													
SW036	18 Jan 2023	0356_SW036_230118	Normal	NSW_0356_PFASOMP_23	0.03	*0.94*	0.58	1.52	1.75	0.02	0.04	<0.02	<0.02	<0.1	0.03	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW039	12 Apr 2019	0356_RESI_SW039_190412	Normal	NSW_0356_PFAS	0.02	*0.08*	<0.02	0.08	0.15	<0.02	<0.02	<0.02	<0.02	<0.1	0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW039	12 Apr 2019	0356_QC240_190412	Interlab_D	NSW_0356_PFAS	0.02	*0.07*	<0.01	0.07	0.12	<0.01	<0.01	<0.01	<0.02	<0.02	0.02	0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.01	<0.01	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
SW039	20 Apr 2020	0356-RESI-SW039-200420	Normal	NSW_0356_PFAS	<0.01	*0.01*	<0.02	0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW039	20 Jul 2022	0356_SW039_220720	Normal	NSW_0356_PFASOMP_22	<0.01	*0.01*	0.01	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW039	18 Jan 2023	0356_SW039_230118	Normal	NSW_0356_PFASOMP_23	<0.01	*0.03*	0.01	0.04	0.1	<0.02	<0.02	<0.02	<0.02	<0.1	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW040	07 May 2019	0356_SW040_190507	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW040	21 Jul 2022	0356_SW040_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW040	17 Jan 2023	0356_SW040_230117	Normal	NSW_0356_PFASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW064	17 Apr 2019	0356_RESI_SW041_190417	Normal	NSW_0356_PFAS	0.02	*0.02*	<0.02	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW064	17 Apr 2019	0356_QC141_190417	Field_D	NSW_0356_PFAS	0.01	*0.02*	<0.02	0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW064	22 Apr 2020	0356_RESI_SW041_200422	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW064	22 Apr 2020	0356_QC204_200422	Interlab_D	NSW_0356_PFAS	<0.01	<0.01	<0.01	<0.01	0.05	<0.01	<0.01	<0.01	<0.02	<0.02	0.03	0.02	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.01	<0.01	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
SW064	20 Jul 2022	0356_SW064_220720	Normal	NSW_0356_PFASOMP_22	<0.01	*0.02*	0.02	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW064	18 Jan 2023	0356_SW064_230118	Normal	NSW_0356_PFASOMP_23	0.02	*0.06*	0.02	0.08	0.33	0.09	<0.02	<0.02	<0.02	<0.1	0.05	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW065	17 Apr 2019	0356_RESI_SW042_190417	Normal	NSW_0356_PFAS	0.02	*0.03*	<0.02	0.03	0.05	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW065	20 Jul 2022	0356_SW065_220720	Normal	NSW_0356_PFASOMP_22	<0.01	*0.01*	0.01	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW065	20 Jul 2022	0356_QC101_220720	Field_D	NSW_0356_PFASOMP_22	<0.01	*0.02*	0.01	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW065	20 Jul 2022	0356_QC201_220720	Interlab_D	NSW_0356_PFASOMP_22	<0.01	*0.02*	0.02	0.05	0.05	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
SW065	18 Jan 2023	0356_SW065_230118	Normal	NSW_0356_PFASOMP_23	<0.01	*0.03*	<0.01	0.03	0.11	0.05	<0.02	<0.02	<0.02	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW114	21 Jul 2022	0356_SW114_220721	Normal	NSW_0356_PFASOMP_22	<0.01	*0.01*	<0.01	0.01	0.03	<0.02	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW115	21 Jul 2022	0356_SW115_220721	Normal	NSW_0356_PFASOMP_22	0.01	*0.49*	0.33	0.82	0.86	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW116	21 Jul 2022	0356_SW116_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW553	19 Oct 2020	0356_SW553_201019	Normal	NSW_0356_PFAS	0.01	*0.25*	0.28	0.53	0.65	0.03	0.03	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW553	20 Jul 2022	0356_SW553_220720	Normal	NSW_0356_PFASOMP_22	<0.01	*0.08*	0.07	0.15	0.15	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW553	18 Jan 2023	0356_SW553_230118	Normal	NSW_0356_PFASOMP_23	0.01	*0.3*	0.2	0.5	0.73	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.18	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW554	19 Oct 2020	0356_SW554_201019	Normal	NSW_0356_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW554	20 Jul 2022	0356_SW554_220720	Normal	NSW_0356_PFASOMP_22	<0.01	*0.05*	0.04	0.09	0.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW555	21 Jul 2022	0356_SW555_220721	Normal	NSW_0356_PFASOMP_22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05

Notes:

LOR	Limit of Reporting
Normal	Primary sample
Field_D	Intra-laboratory duplicate sample
Interlab_D	Inter-laboratory duplicate sample

Table T7 - Historical Sediment Analytical Results

						PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids									PFAS - (n:2) Fluorotelomer Sulfonic Acids			
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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						0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0005	0.0001	0.0001	0.0001	0.0001
Location Code	**Date**	**Field ID**	**Sample Type**	**Project ID**																								
SD002	08 Oct 2018	0356_SD002_181008	Normal	NSW_0356_PFAS		<0.0002	0.0024	0.0004	0.0028	-	<0.0002	<0.0002	<0.0002	0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD002	28 Feb 2019	0356_SD002_190228	Normal	NSW_0356_PFAS		<0.0002	0.001	<0.0002	0.001	0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD002	24 Apr 2019	0356_SD002_190424	Normal	NSW_0356_PFAS		<0.0002	0.0029	<0.0002	0.0029	0.0029	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD002	16 Apr 2020	0356_SD002_200416	Normal	NSW_0356_PFAS		<0.0002	0.001	<0.0002	0.001	0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD002	21 Jul 2022	0356_SD002_220721	Normal	NSW_0356_PFASOMP_22		0.0002	0.0428	0.0018	0.0446	0.0448	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD002	21 Jul 2022	0356_QC105_220721	Field_D	NSW_0356_PFASOMP_22		0.0002	0.0345	0.0017	0.0362	0.0372	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD002	21 Jul 2022	0356_QC205_220721	Interlab_D	NSW_0356_PFASOMP_22		<0.0001	0.037	0.0017	0.039	0.04	<0.0001	<0.0001	0.0002	0.0003	0.0002	0.0002	0.0002	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0001	<0.0001	<0.0002	<0.0002
SD002	17 Jan 2023	0356_SD002_230117	Normal	NSW_0356_PFASOMP_23		<0.0002	0.006	0.0018	0.0078	0.0088	<0.0002	<0.0002	<0.0002	0.0007	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD003	05 Oct 2018	0356_SD003_181005	Normal	NSW_0356_PFAS		<0.0002	0.0009	<0.0002	0.0009	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD003	28 Feb 2019	0356_SD003_190228	Normal	NSW_0356_PFAS		<0.0002	0.0013	<0.0002	0.0013	0.0013	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD003	17 Apr 2019	0356_SD003_190417	Normal	NSW_0356_PFAS		<0.0002	0.0334	0.0035	0.0369	0.0386	0.0002	<0.0002	<0.0002	0.0004	<0.001	0.0003	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD003	21 Jul 2022	0356_SD003_220721	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0026	<0.0002	0.0026	0.0026	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD003	17 Jan 2023	0356_SD003_230117	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0003	<0.0002	0.0003	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD004	12 Oct 2018	0356_SD004_181012	Normal	NSW_0356_PFAS		<0.0002	0.0002	<0.0002	0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD004	17 Jan 2019	0356_NSW1164_SD004_190117	Normal	NSW_0356_PFAS		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD004	05 Mar 2019	0356_SD004_190305	Normal	NSW_0356_PFAS		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD004	18 Apr 2019	0356_SD004_190418	Normal	NSW_0356_PFAS		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD004	18 Apr 2020	0356_SD004_200418	Normal	NSW_0356_PFAS		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD004	19 Jul 2022	0356_SD004_220719	Normal	NSW_0356_PFASOMP_22		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD004	19 Jan 2023	0356_SD004_230119	Normal	NSW_0356_PFASOMP_23		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD005	12 Oct 2018	0356_SD005_181012	Normal	NSW_0356_PFAS		<0.0002	0.0004	<0.0002	0.0004	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD005	18 Jan 2019	0356_NSW1164_SD005_190118	Normal	NSW_0356_PFAS		<0.0002	0.0002	<0.0002	0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD005	18 Jan 2019	0356_SD_QC100_190118	Field_D	NSW_0356_PFAS		<0.0002	0.0004	<0.0002	0.0004	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD005	18 Jan 2019	0356_SD_QC200_190118	Interlab_D	NSW_0356_PFAS		<0.0001	0.0004	<0.0001	0.0004	0.0004	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0001	<0.0001	<0.0001	<0.0001
SD005	05 Mar 2019	0356_SD005_190305	Normal	NSW_0356_PFAS		<0.0002	0.0002	<0.0002	0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD005	18 Apr 2019	0356_SD005_190418	Normal	NSW_0356_PFAS		<0.0002	0.0004	<0.0002	0.0004	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD005	18 Apr 2019	0356_QC241_SD_190418	Interlab_D	NSW_0356_PFAS		<0.0001	0.0004	<0.0001	0.0004	0.0004	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0001	<0.0001	<0.0001	<0.0001
SD005	18 Apr 2020	0356_SD005_200418	Normal	NSW_0356_PFAS		<0.0002	0.0002	<0.0002	0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD005	19 Jul 2022	0356_SD005_220719	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0018	<0.0002	0.0018	0.0018	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD005	19 Jan 2023	0356_SD005_230119	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0008	<0.0002	0.0008	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD032	22 Mar 2019	0356_SD032_190322	Normal	NSW_0356_PFAS		<0.0002	0.0006	<0.0002	0.0006	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD032	21 Jul 2022	0356_SD032_220721	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0044	0.0007	0.0051	0.0051	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD032	17 Jan 2023	0356_SD032_230117	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0009	<0.0002	0.0009	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD039	12 Apr 2019	0356_RESI_SD039_190412	Normal	NSW_0356_PFAS		<0.0002	0.0003	<0.0002	0.0003	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD039	12 Apr 2019	0356_QC240_190412	Interlab_D	NSW_0356_PFAS		0.0002	0.0019	<0.0001	0.0019	0.002	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0001	<0.0001	<0.0001	<0.0001
SD039	20 Apr 2020	0356_RESI_SD039_200420	Normal	NSW_0356_PFAS		0.0003	0.0036	<0.0002	0.0036	0.0039	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD039	20 Jul 2022	0356_SD039_220720	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0038	<0.0002	0.0038	0.0038	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD039	18 Jan 2023	0356_SD039_230118	Normal	NSW_0356_PFASOMP_23		<0.0010	0.0029	<0.0010	0.0029	0.0029	<0.0010	<0.0010	<0.0010	<0.0010	<0.005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0025	<0.0010	<0.0010	<0.0010	<0.0010
SD040	07 May 2019	0356_SD040_190507	Normal	NSW_0356_PFAS		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD040	21 Jul 2022	0356_SD040_220721	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0004	<0.0002	0.0004	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD040	17 Jan 2023	0356_SD040_230117	Normal	NSW_0356_PFASOMP_23		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD046	17 Apr 2019	0356_RESI_SD041_190417	Normal	NSW_0356_PFAS		<0.0002	0.0034	<0.0002	0.0034	0.0034	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD046	17 Apr 2019	0356_QC141_190417	Field_D	NSW_0356_PFAS		<0.0002	0.0028	<0.0002	0.0028	0.0028	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD046	22 Apr 2020	0356_RESI_SD041_200422	Normal	NSW_0356_PFAS		<0.0002	0.0004	<0.0002	0.0004	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD046	22 Apr 2020	0356_QC203_200422	Interlab_D	NSW_0356_PFAS		<0.0002	0.0007	<0.0002	0.0007	0.0007	<0.0002	<0.0002	<0.0002	<0.0004	<0.0004	<0.0004	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.01	<0.0002	<0.0002	<0.0002	<0.0002
SD046	20 Jul 2022	0356_SD046_220720	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0034	0.0002	0.0036	0.0036	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD046	18 Jan 2023	0356_SD046_230118	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0016	<0.0002	0.0016	0.0016	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD047	17 Apr 2019	0356_RESI_SD042_190417	Normal	NSW_0356_PFAS		<0.0002	0.0047	<0.0002	0.0047	0.0049	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD047	20 Jul 2022	0356_SD047_220720	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0075	<0.0002	0.0075	0.0075	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD047	20 Jul 2022	0356_QC100_220720	Field_D	NSW_0356_PFASOMP_22		0.0002	0.0081	0.0002	0.0083	0.0085	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD047	20 Jul 2022	0356_QC200_220720	Interlab_D	NSW_0356_PFASOMP_22		0.0002	0.0094	0.0002	0.0096	0.0099	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0001	<0.0001	<0.0002	<0.0002
SD047	18 Jan 2023	0356_SD047_230118	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0048	0.0003	0.0051	0.0051	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD052	11 Apr 2019	0356_RESI_SD035_190411	Normal	NSW_0356_PFAS		<0.0002	0.0012	0.0003	0.0015	0.0015	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD052	11 Apr 2019	0356_QC140_190411	Field_D	NSW_0356_PFAS		<0.0002	0.0017	0.0003	0.002	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD052	19 Jul 2022	0356_SD052_220719	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0009	<0.0002	0.0009	0.0019	<0.0002	<0.0002	<0.0002	<0.0002	0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Table T7 - Historical Sediment Analytical Results

					PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR					0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005
Location Code	**Date**	**Field ID**	**Sample Type**	**Project ID**							
SD002	08 Oct 2018	0356_SD002_181008	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD002	28 Feb 2019	0356_SD002_190228	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD002	24 Apr 2019	0356_SD002_190424	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD002	16 Apr 2020	0356_SD002_200416	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD002	21 Jul 2022	0356_SD002_220721	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD002	21 Jul 2022	0356_QC105_220721	Field_D	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD002	21 Jul 2022	0356_QC205_220721	Interlab_D	NSW_0356_PFASOMP_22	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005
SD002	17 Jan 2023	0356_SD002_230117	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD003	05 Oct 2018	0356_SD003_181005	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD003	28 Feb 2019	0356_SD003_190228	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD003	17 Apr 2019	0356_SD003_190417	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD003	21 Jul 2022	0356_SD003_220721	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD003	17 Jan 2023	0356_SD003_230117	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD004	12 Oct 2018	0356_SD004_181012	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD004	17 Jan 2019	0356_NSW1164_SD004_190117	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD004	05 Mar 2019	0356_SD004_190305	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD004	18 Apr 2019	0356_SD004_190418	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD004	18 Apr 2020	0356_SD004_200418	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD004	19 Jul 2022	0356_SD004_220719	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD004	19 Jan 2023	0356_SD004_230119	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD005	12 Oct 2018	0356_SD005_181012	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD005	18 Jan 2019	0356_NSW1164_SD005_190118	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD005	18 Jan 2019	0356_SD_QC100_190118	Field_D	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD005	18 Jan 2019	0356_SD_QC200_190118	Interlab_D	NSW_0356_PFAS	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005
SD005	05 Mar 2019	0356_SD005_190305	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD005	18 Apr 2019	0356_SD005_190418	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD005	18 Apr 2019	0356_QC241_SD_190418	Interlab_D	NSW_0356_PFAS	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005
SD005	18 Apr 2020	0356_SD005_200418	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD005	19 Jul 2022	0356_SD005_220719	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD005	19 Jan 2023	0356_SD005_230119	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD032	22 Mar 2019	0356_SD032_190322	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD032	21 Jul 2022	0356_SD032_220721	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD032	17 Jan 2023	0356_SD032_230117	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD039	12 Apr 2019	0356_RESI_SD039_190412	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD039	12 Apr 2019	0356_QC240_190412	Interlab_D	NSW_0356_PFAS	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005
SD039	20 Apr 2020	0356_RESI_SD039_200420	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD039	20 Jul 2022	0356_SD039_220720	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD039	18 Jan 2023	0356_SD039_230118	Normal	NSW_0356_PFASOMP_23	<0.0010	<0.0025	<0.0010	<0.0025	<0.0025	<0.0010	<0.0025
SD040	07 May 2019	0356_SD040_190507	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD040	21 Jul 2022	0356_SD040_220721	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD040	17 Jan 2023	0356_SD040_230117	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD046	17 Apr 2019	0356_RESI_SD041_190417	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD046	17 Apr 2019	0356_QC141_190417	Field_D	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD046	22 Apr 2020	0356_RESI_SD041_200422	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD046	22 Apr 2020	0356_QC203_200422	Interlab_D	NSW_0356_PFAS	<0.002	<0.002	<0.0004	<0.002	<0.002	<0.0004	<0.01
SD046	20 Jul 2022	0356_SD046_220720	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD046	18 Jan 2023	0356_SD046_230118	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD047	17 Apr 2019	0356_RESI_SD042_190417	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD047	20 Jul 2022	0356_SD047_220720	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD047	20 Jul 2022	0356_QC100_220720	Field_D	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD047	20 Jul 2022	0356_QC200_220720	Interlab_D	NSW_0356_PFASOMP_22	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005
SD047	18 Jan 2023	0356_SD047_230118	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD052	11 Apr 2019	0356_RESI_SD035_190411	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD052	11 Apr 2019	0356_QC140_190411	Field_D	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD052	19 Jul 2022	0356_SD052_220719	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005

Table T7 - Historical Sediment Analytical Results

						PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids			
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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						0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0005	0.0001	0.0001	0.0001	0.0001
Location Code	**Date**	**Field ID**	**Sample Type**	**Project ID**																								
SD052	18 Jan 2023	0356_SD052_230118	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0007	<0.0002	0.0007	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD053	08 Oct 2018	0356_SMA13_SD_181008	Normal	NSW_0356_PFAS		<0.0002	0.002	<0.0002	0.002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD053	28 Feb 2019	0356_SMA13__SD_190228	Normal	NSW_0356_PFAS		<0.0002	0.0226	0.0011	0.0237	0.0237	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD053	24 Apr 2019	0356_SMA13_SD_190424	Normal	NSW_0356_PFAS		<0.0002	0.0016	<0.0002	0.0016	0.0016	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD053	16 Apr 2020	0356_SMA13_SD_200416	Normal	NSW_0356_PFAS		<0.0002	0.0118	<0.0002	0.0118	0.0118	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD053	16 Apr 2020	0356_QC102_200416	Field_D	NSW_0356_PFAS		<0.0002	0.0613	0.0004	0.0617	0.0617	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD053	21 Jul 2022	0356_SD053_220721	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0043	0.0002	0.0045	0.0045	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD053	17 Jan 2023	0356_SD053_230117	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0051	0.0004	0.0055	0.0055	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD055	25 Oct 2018	0356_SMA7_SD_181025	Normal	NSW_0356_PFAS		<0.0002	0.0048	0.0006	0.0054	-	<0.0002	<0.0002	<0.0002	0.0017	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD055	25 Oct 2018	0356_QC134_SD_181025	Field_D	NSW_0356_PFAS		<0.0002	0.0053	0.0004	0.0057	-	<0.0002	<0.0002	<0.0002	0.0018	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD055	25 Oct 2018	0356_QC134_SD_181025	Field_D	NSW_0356_PFAS		<0.0002	0.0012	<0.0002	0.0012	-	<0.0002	<0.0002	<0.0002	0.0004	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD055	25 Oct 2018	0356_QC234_SD_181025	Interlab_D	NSW_0356_PFAS		<0.0002	0.0027	<0.0002	0.0027	0.0057	<0.0002	<0.0002	<0.0002	0.003	<0.0004	<0.0004	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.01	<0.0002	<0.0002	<0.0002	<0.0002
SD055	28 Feb 2019	0356_SMA7__SD_190228	Normal	NSW_0356_PFAS		<0.0002	0.001	<0.0002	0.001	0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD055	17 Apr 2019	0356_SMA7_SD_190417	Normal	NSW_0356_PFAS		<0.0002	0.001	<0.0002	0.001	0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD055	21 Jul 2022	0356_SD055_220721	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0026	0.0003	0.0029	0.0029	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD055	17 Jan 2023	0356_SD055_230117	Normal	NSW_0356_PFASOMP_23		<0.0002	0.002	<0.0002	0.002	0.0038	<0.0002	<0.0002	<0.0002	0.0018	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD055	17 Jan 2023	0356_QC100_230117	Field_D	NSW_0356_PFASOMP_23		<0.0002	0.0034	<0.0002	0.0034	0.0064	<0.0002	<0.0002	<0.0002	0.0028	<0.001	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD055	17 Jan 2023	0356_QC200_230117	Interlab_D	NSW_0356_PFASOMP_23		<0.0001	0.002	<0.0001	0.002	0.003	<0.0001	<0.0001	<0.0001	0.001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0001	<0.0001	<0.0002	<0.0002
SD065	08 Oct 2018	0356_SMA8_SD_181008	Normal	NSW_0356_PFAS		<0.0002	0.0024	<0.0002	0.0024	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD065	28 Feb 2019	0356_SMA8_SD_190228	Normal	NSW_0356_PFAS		<0.0002	0.0066	0.0005	0.0071	0.0071	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD065	24 Apr 2019	0356_SMA8_SD_190424	Normal	NSW_0356_PFAS		<0.0002	0.0048	0.0004	0.0052	0.0052	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD065	21 Jul 2022	0356_SD065_220721	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0007	<0.0002	0.0007	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD065	17 Jan 2023	0356_SD065_230117	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0006	<0.0002	0.0006	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD065	17 Jan 2023	0356_QC102_230117	Field_D	NSW_0356_PFASOMP_23		<0.0002	0.0007	<0.0002	0.0007	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD065	17 Jan 2023	0356_QC202_230117	Interlab_D	NSW_0356_PFASOMP_23		<0.0001	0.0006	0.0001	0.0007	0.0007	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0001	<0.0001	<0.0002	<0.0002
SD080	16 Nov 2018	0356_RESI_SD013_181116	Normal	NSW_0356_PFAS		<0.0002	0.0135	0.0024	0.0159	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD080	20 Apr 2020	0356_RESI_SD013_200420	Normal	NSW_0356_PFAS		<0.0002	0.0111	0.0013	0.0124	0.0124	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD080	20 Apr 2020	0356_QC103_200420	Field_D	NSW_0356_PFAS		<0.0002	0.0118	0.0014	0.0132	0.0132	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD080	19 Jul 2022	0356_SD080_220719	Normal	NSW_0356_PFASOMP_22		<0.0002	0.001	<0.0002	0.001	0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD080	18 Jan 2023	0356_SD080_230118	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0189	0.0021	0.021	0.0213	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD114	21 Jul 2022	0356_SD114_220721	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0029	<0.0002	0.0029	0.0029	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD114	17 Jan 2023	0356_SD114_230117	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0023	<0.0002	0.0023	0.0023	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD115	21 Jul 2022	0356_SD115_220721	Normal	NSW_0356_PFASOMP_22		0.0002	0.0457	0.0023	0.048	0.0496	<0.0002	<0.0002	<0.0002	0.001	<0.001	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD115	17 Jan 2023	0356_SD115_230117	Normal	NSW_0356_PFASOMP_23		0.0003	0.0351	0.0023	0.0374	0.0391	<0.0002	<0.0002	<0.0002	0.0007	<0.001	0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD116	21 Jul 2022	0356_SD116_220721	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0007	<0.0002	0.0007	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD116	17 Jan 2023	0356_SD116_230117	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0003	<0.0002	0.0003	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD539	19 Oct 2020	0356_SD539_201019	Normal	NSW_0356_PFAS		<0.0002	0.0088	0.0008	0.0096	0.0096	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD539	20 Jul 2022	0356_SD539_220720	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0016	<0.0002	0.0016	0.0016	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD539	18 Jan 2023	0356_SD539_230118	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0112	0.0004	0.0116	0.0116	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD540	19 Oct 2020	0356_SD540_201019	Normal	NSW_0356_PFAS		<0.0002	0.0128	<0.0002	0.0128	0.0133	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0003	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD540	20 Jul 2022	0356_SD540_220720	Normal	NSW_0356_PFASOMP_22		0.0002	0.012	0.0003	0.0123	0.0125	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD555	21 Jul 2022	0356_SD555_220721	Normal	NSW_0356_PFASOMP_22		<0.0002	0.0003	<0.0002	0.0003	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
SD555	17 Jan 2023	0356_SD555_230117	Normal	NSW_0356_PFASOMP_23		<0.0002	0.0011	0.0002	0.0013	0.0013	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Notes:

LOR	Limit of Reporting
Normal	Primary sample
Field_D	Intra-laboratory duplicate sample
Interlab_D	Inter-laboratory duplicate sample

Table T7 - Historical Sediment Analytical Results

					PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR					0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005
Location Code	**Date**	**Field ID**	**Sample Type**	**Project ID**							
SD052	18 Jan 2023	0356_SD052_230118	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD053	08 Oct 2018	0356_SMA13_SD_181008	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD053	28 Feb 2019	0356_SMA13__SD_190228	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD053	24 Apr 2019	0356_SMA13_SD_190424	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD053	16 Apr 2020	0356_SMA13_SD_200416	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD053	16 Apr 2020	0356_QC102_200416	Field_D	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD053	21 Jul 2022	0356_SD053_220721	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD053	17 Jan 2023	0356_SD053_230117	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD055	25 Oct 2018	0356_SMA7_SD_181025	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD055	25 Oct 2018	0356_QC134_SD_181025	Field_D	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD055	25 Oct 2018	0356_QC134_SD_181025	Field_D	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD055	25 Oct 2018	0356_QC234_SD_181025	Interlab_D	NSW_0356_PFAS	<0.002	<0.002	<0.0004	<0.002	<0.002	<0.0004	<0.01
SD055	28 Feb 2019	0356_SMA7__SD_190228	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD055	17 Apr 2019	0356_SMA7_SD_190417	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD055	21 Jul 2022	0356_SD055_220721	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD055	17 Jan 2023	0356_SD055_230117	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD055	17 Jan 2023	0356_QC100_230117	Field_D	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD055	17 Jan 2023	0356_QC200_230117	Interlab_D	NSW_0356_PFASOMP_23	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005
SD065	08 Oct 2018	0356_SMA8_SD_181008	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD065	28 Feb 2019	0356_SMA8_SD_190228	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD065	24 Apr 2019	0356_SMA8_SD_190424	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD065	21 Jul 2022	0356_SD065_220721	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD065	17 Jan 2023	0356_SD065_230117	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD065	17 Jan 2023	0356_QC102_230117	Field_D	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD065	17 Jan 2023	0356_QC202_230117	Interlab_D	NSW_0356_PFASOMP_23	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005
SD080	16 Nov 2018	0356_RESI_SD013_181116	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD080	20 Apr 2020	0356_RESI_SD013_200420	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD080	20 Apr 2020	0356_QC103_200420	Field_D	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD080	19 Jul 2022	0356_SD080_220719	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD080	18 Jan 2023	0356_SD080_230118	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD114	21 Jul 2022	0356_SD114_220721	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD114	17 Jan 2023	0356_SD114_230117	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD115	21 Jul 2022	0356_SD115_220721	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD115	17 Jan 2023	0356_SD115_230117	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD116	21 Jul 2022	0356_SD116_220721	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD116	17 Jan 2023	0356_SD116_230117	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD539	19 Oct 2020	0356_SD539_201019	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD539	20 Jul 2022	0356_SD539_220720	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD539	18 Jan 2023	0356_SD539_230118	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD540	19 Oct 2020	0356_SD540_201019	Normal	NSW_0356_PFAS	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD540	20 Jul 2022	0356_SD540_220720	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD555	21 Jul 2022	0356_SD555_220721	Normal	NSW_0356_PFASOMP_22	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD555	17 Jan 2023	0356_SD555_230117	Normal	NSW_0356_PFASOMP_23	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005

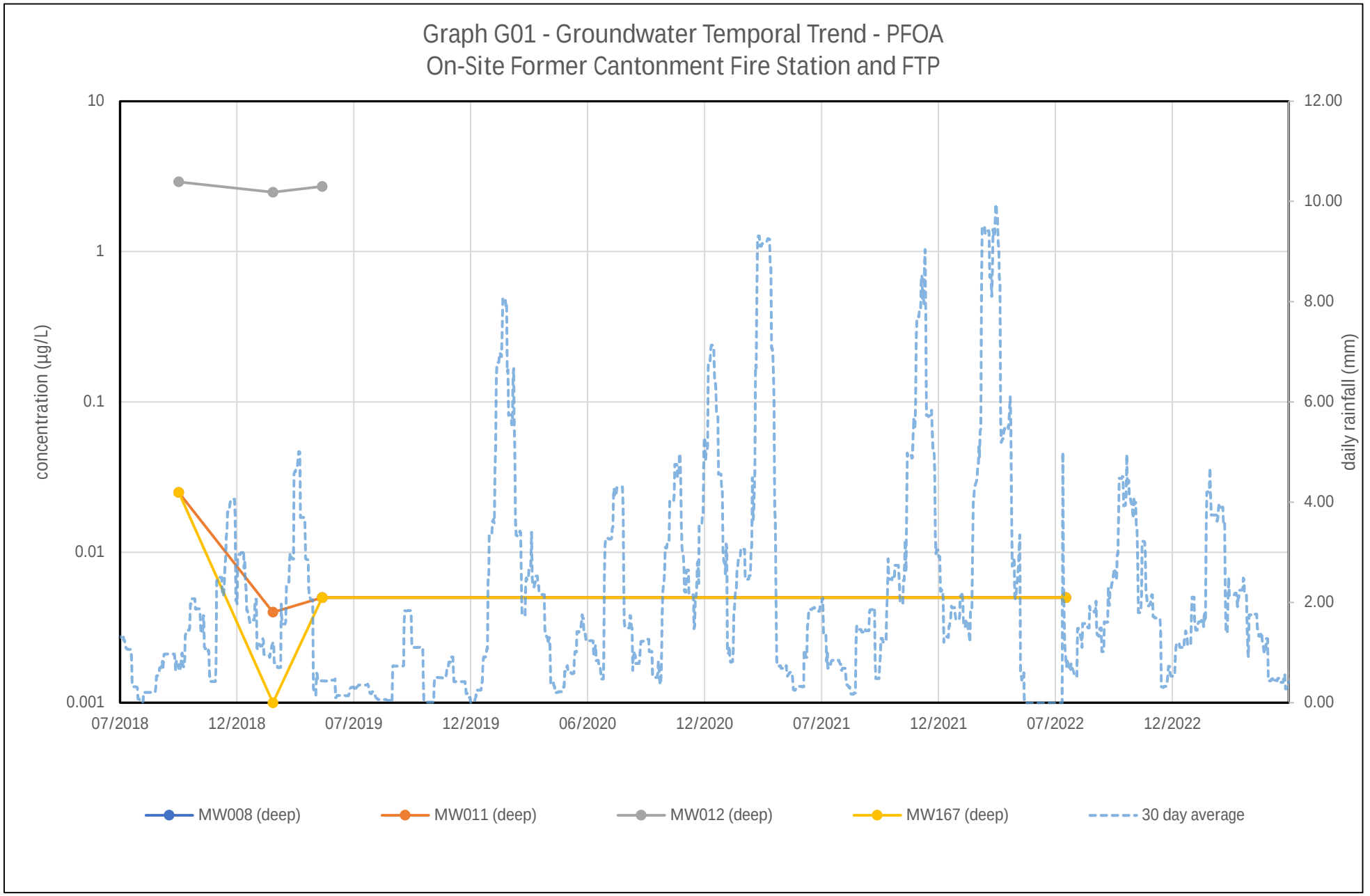
Notes:

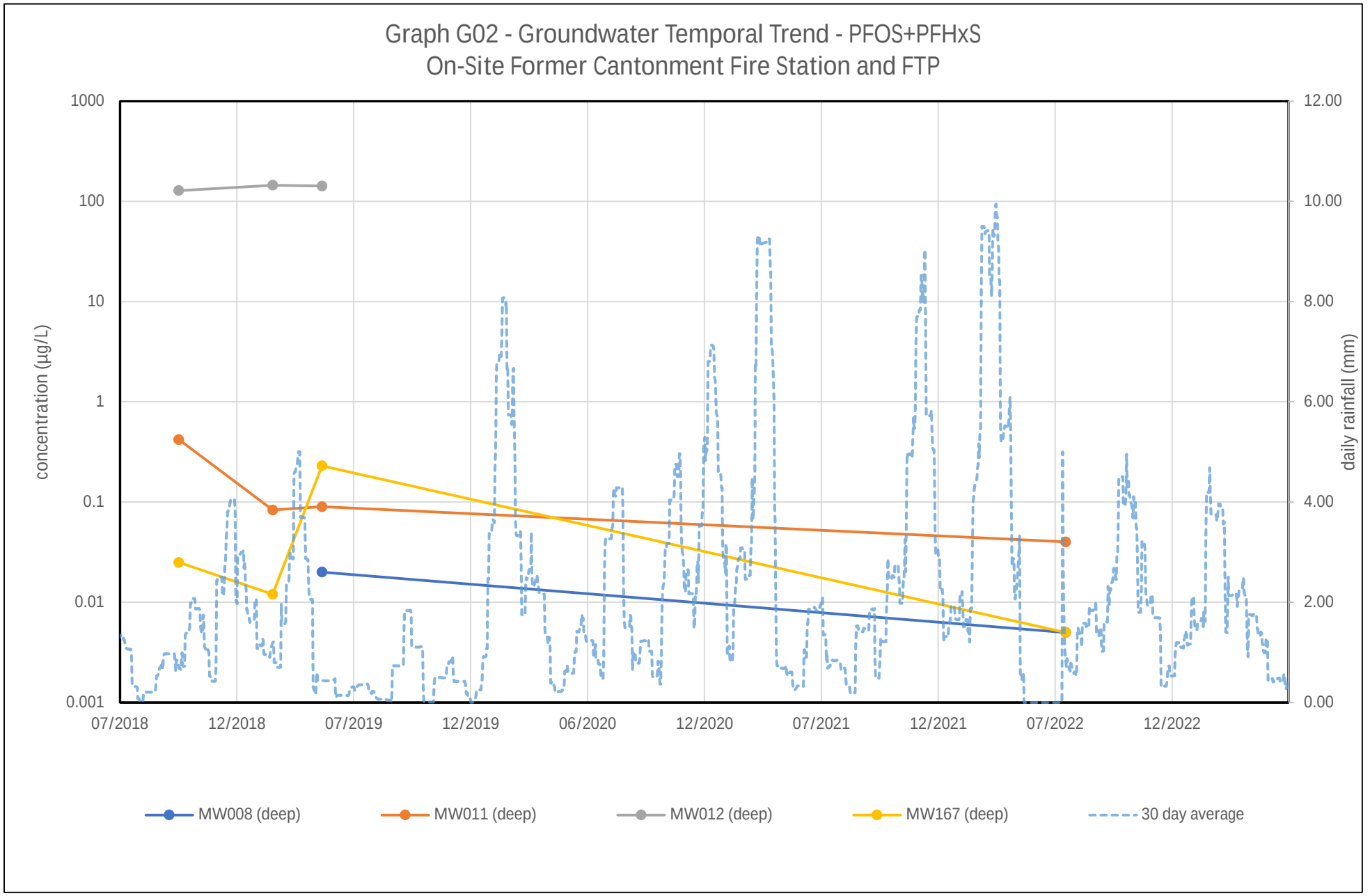
LOR	Limit of Reporting
Normal	Primary sample
Field_D	Intra-laboratory duplicate sample
Interlab_D	Inter-laboratory duplicate sample

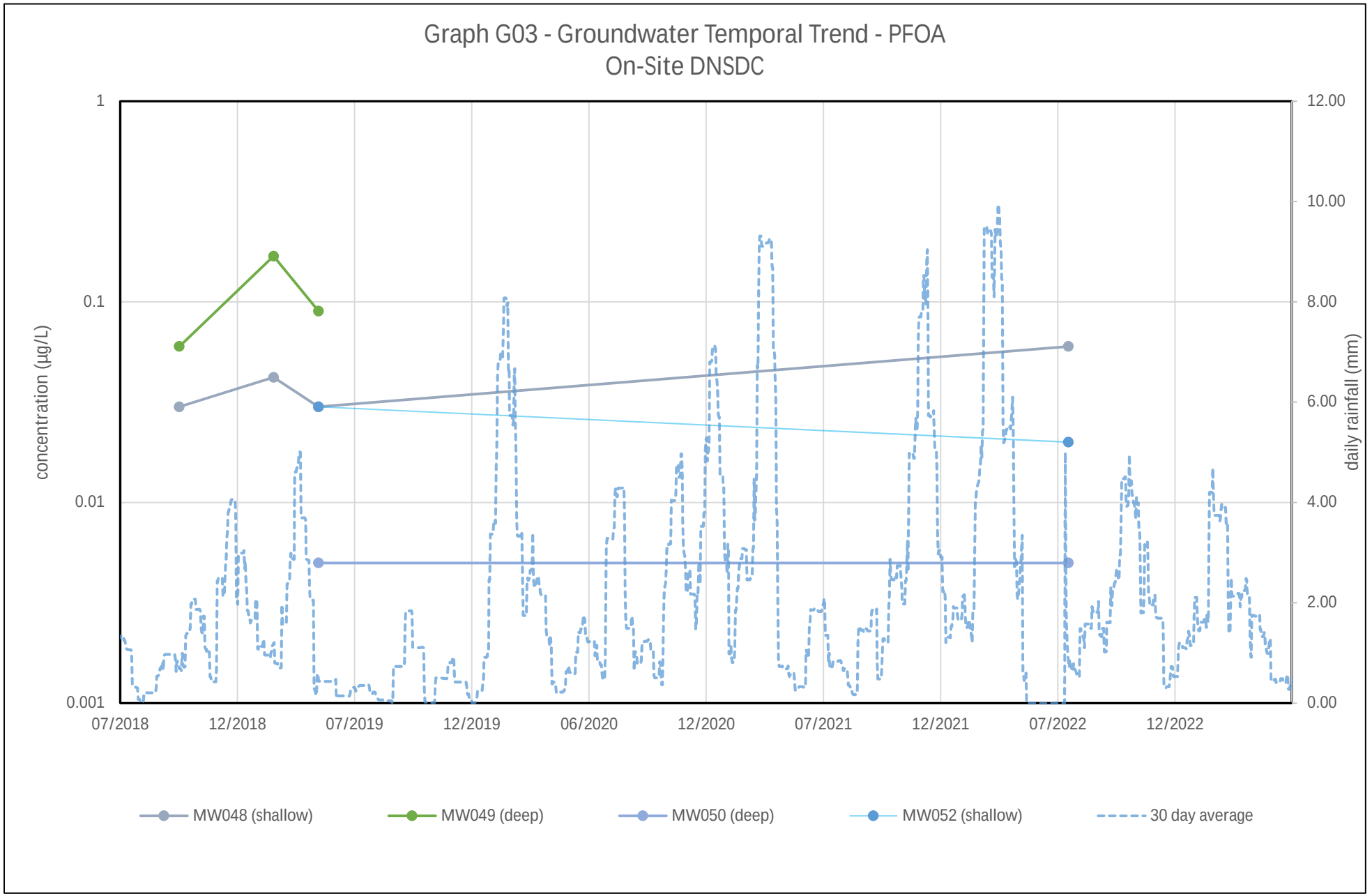
Appendix C

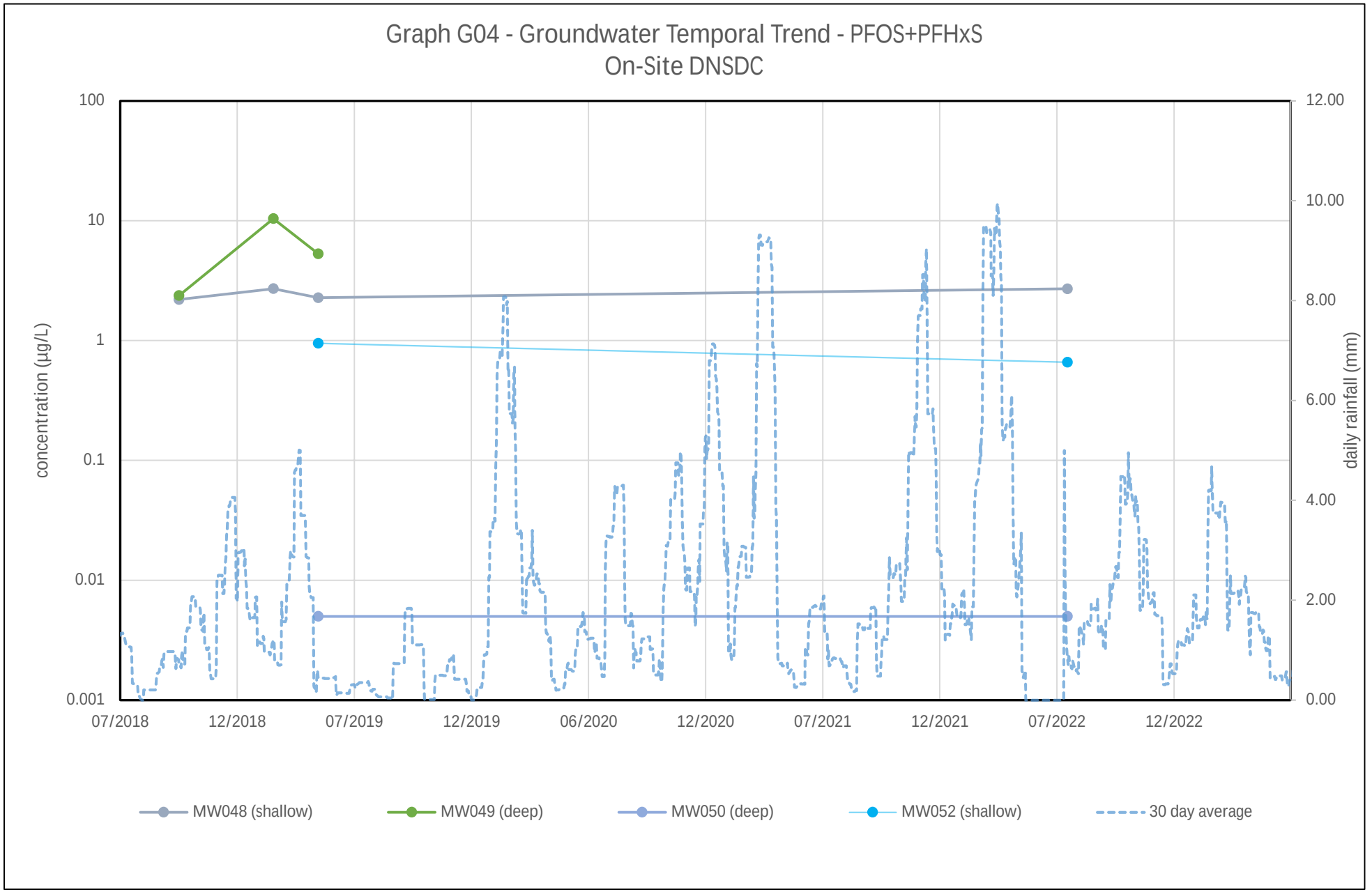
Temporal Trend Graphs and Mann Kendall Analysis

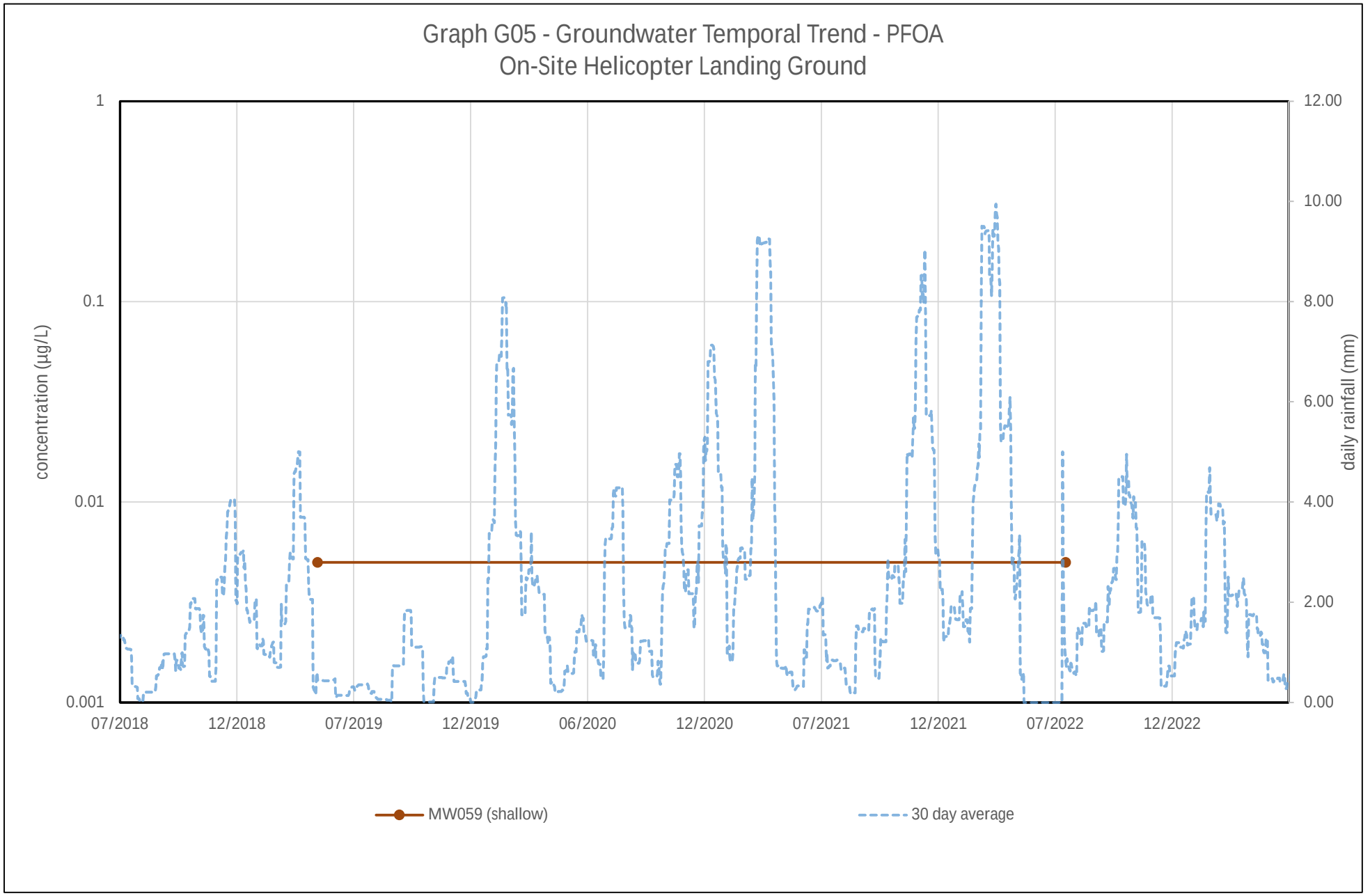
Temporal Trend Graphs

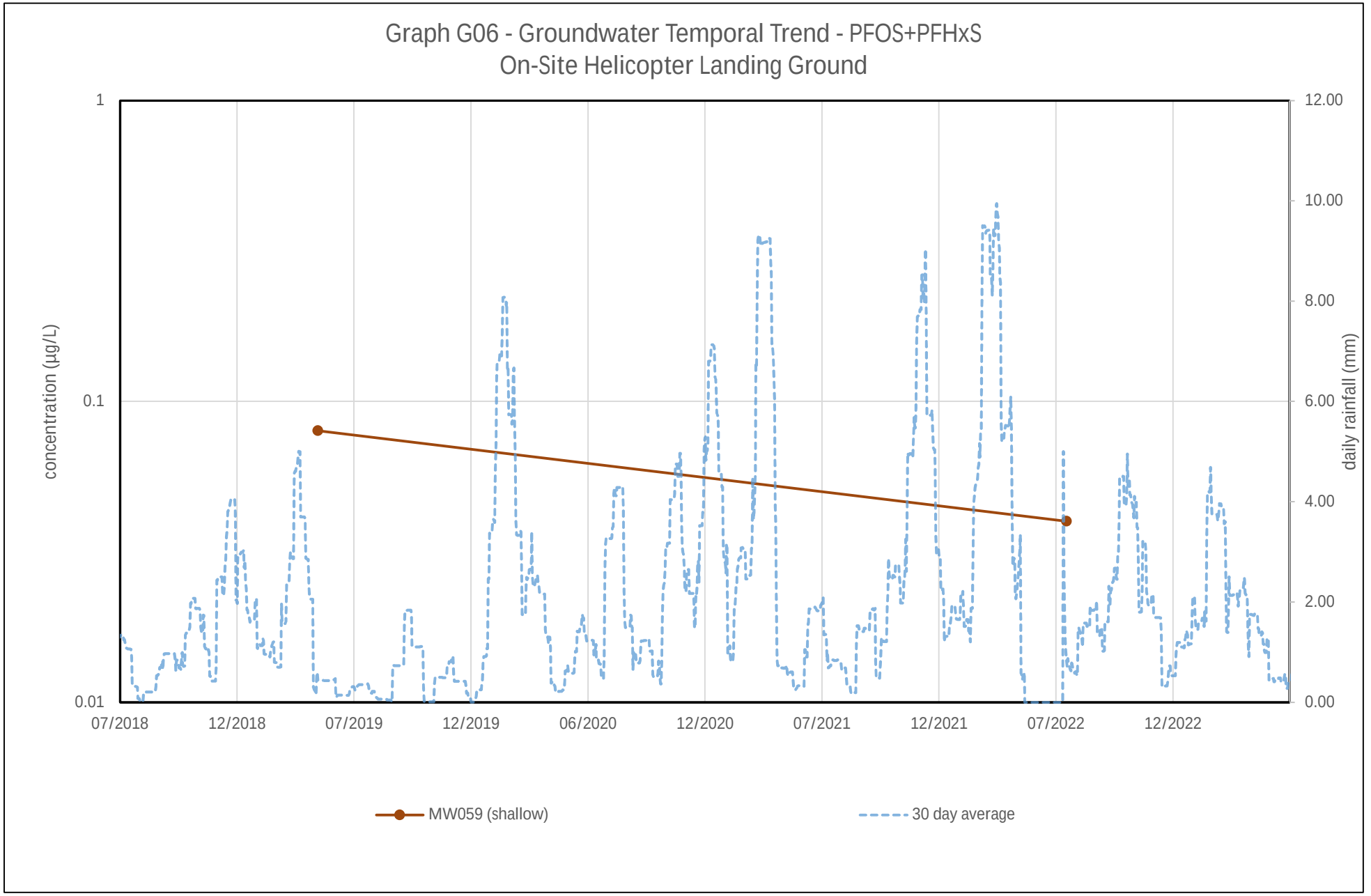

Graph G01 - Groundwater Temporal Trend - PFOA
On-Site Former Cantonment Fire Station and FTP
concentration (µg/L)
daily rainfall (mm)
10
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW008 (deep)
MW011 (deep)
MW012 (deep)
MW167 (deep)
30 day average

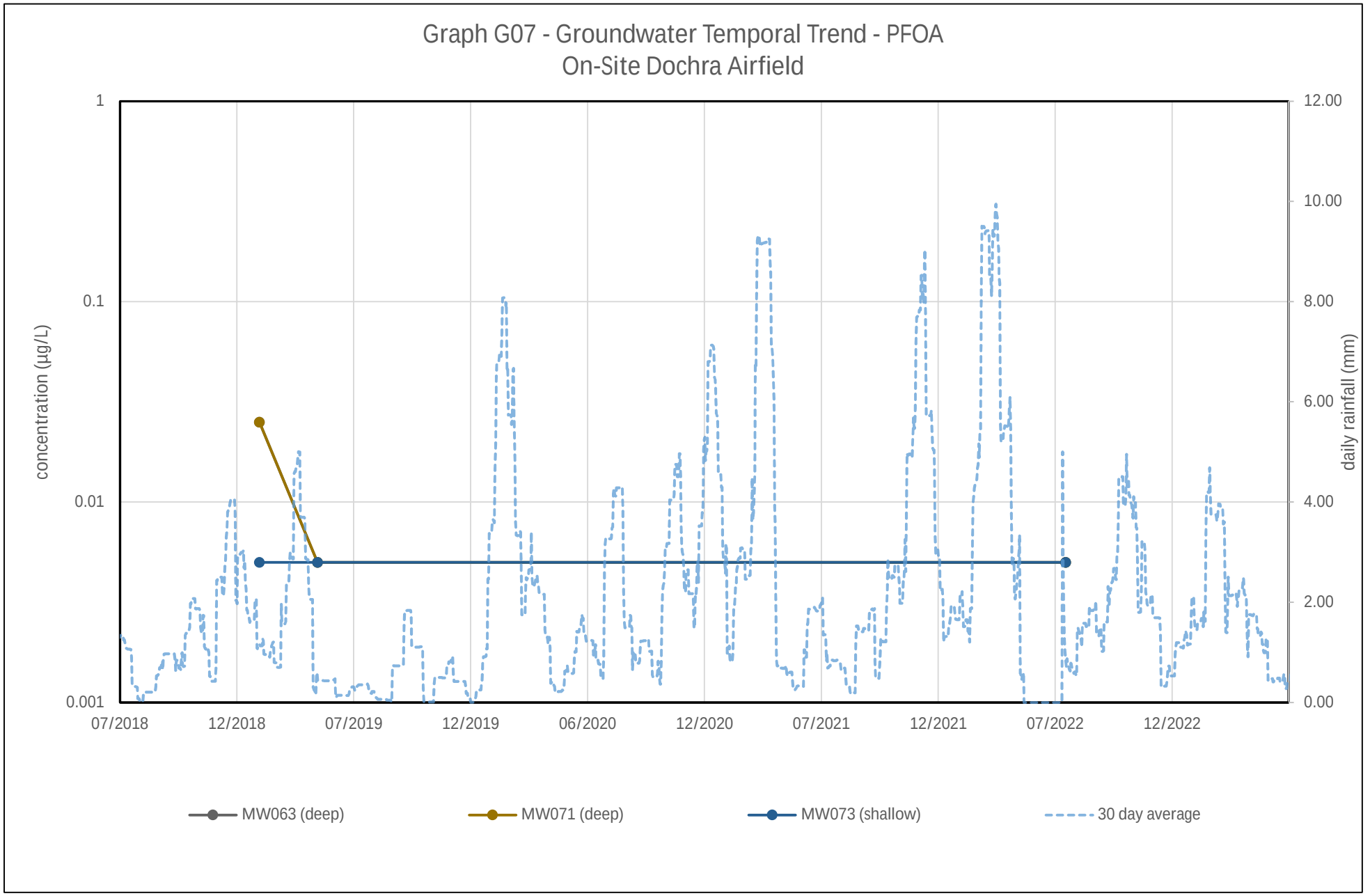

Graph G02 - Groundwater Temporal Trend - PFOS+PFHxS
On-Site Former Cantonment Fire Station and FTP
concentration (µg/L)
1000
100
10
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW008 (deep)
MW011 (deep)
MW012 (deep)
MW167 (deep)
30 day average

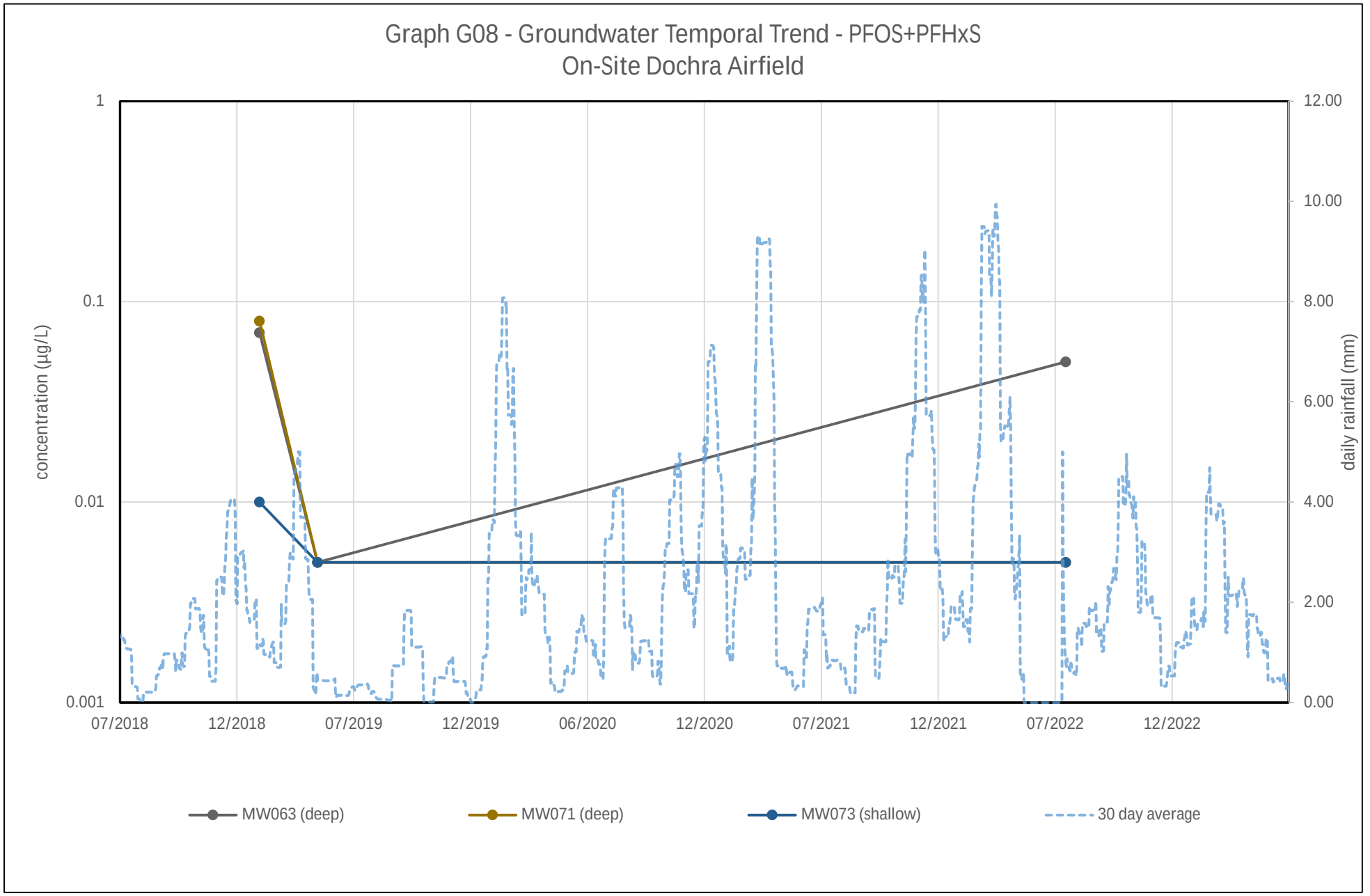

Graph G03 - Groundwater Temporal Trend - PFOA
On-Site DNSDC
concentration (µg/L)
daily rainfall (mm)
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW048 (shallow)
MW049 (deep)
MW050 (deep)
MW052 (shallow)
30 day average

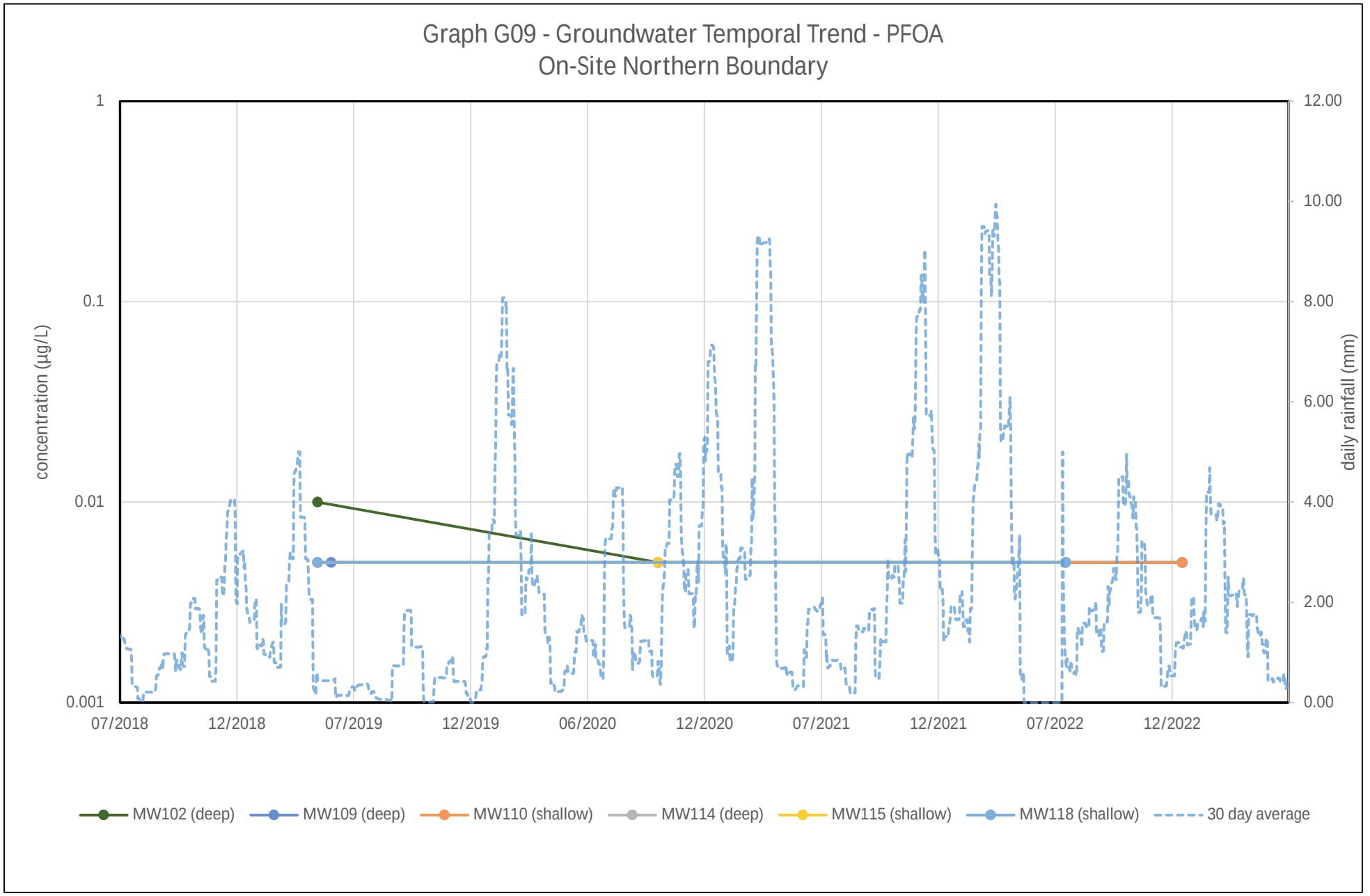

Graph G04 - Groundwater Temporal Trend - PFOS+PFHxS
On-Site DNSDC
concentration (µg/L)
daily rainfall (mm)
100
10
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW048 (shallow)
MW049 (deep)
MW050 (deep)
MW052 (shallow)
30 day average

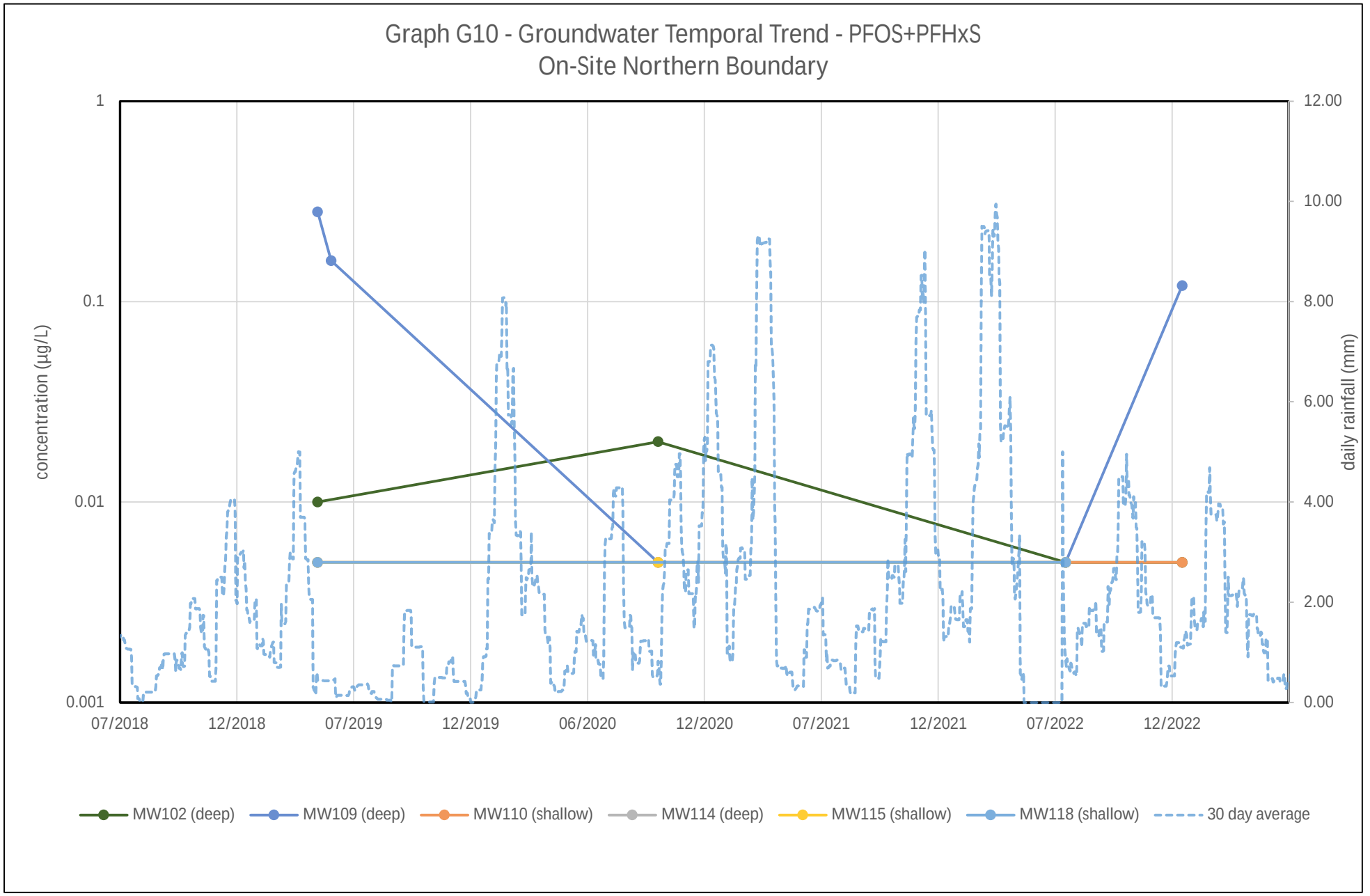

Graph G05 - Groundwater Temporal Trend - PFOA
On-Site Helicopter Landing Ground
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW059 (shallow)
30 day average

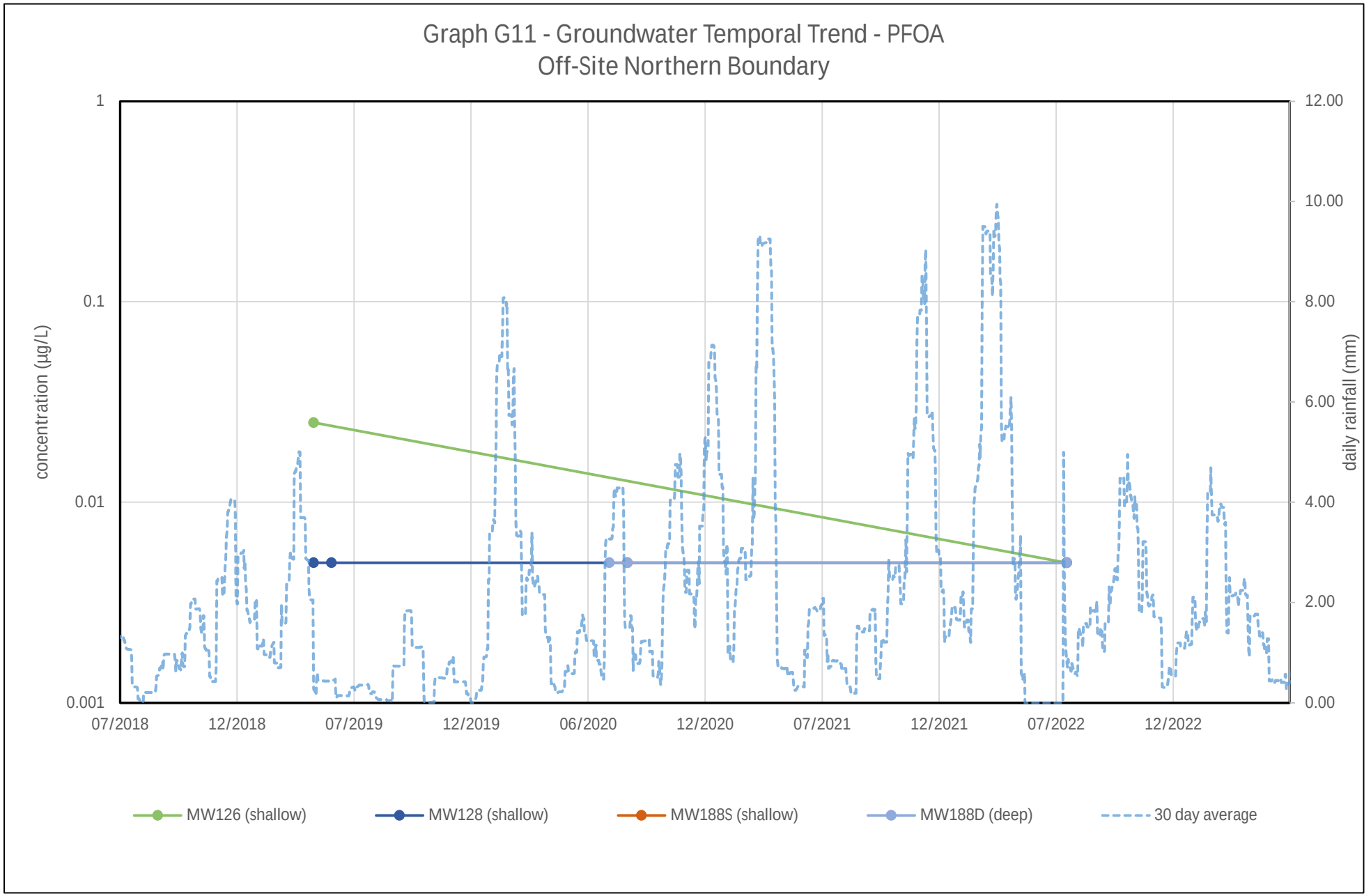

Graph G06 - Groundwater Temporal Trend - PFOS+PFHxS
On-Site Helicopter Landing Ground
concentration (µg/L)
1
0.1
0.01
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW059 (shallow)
30 day average

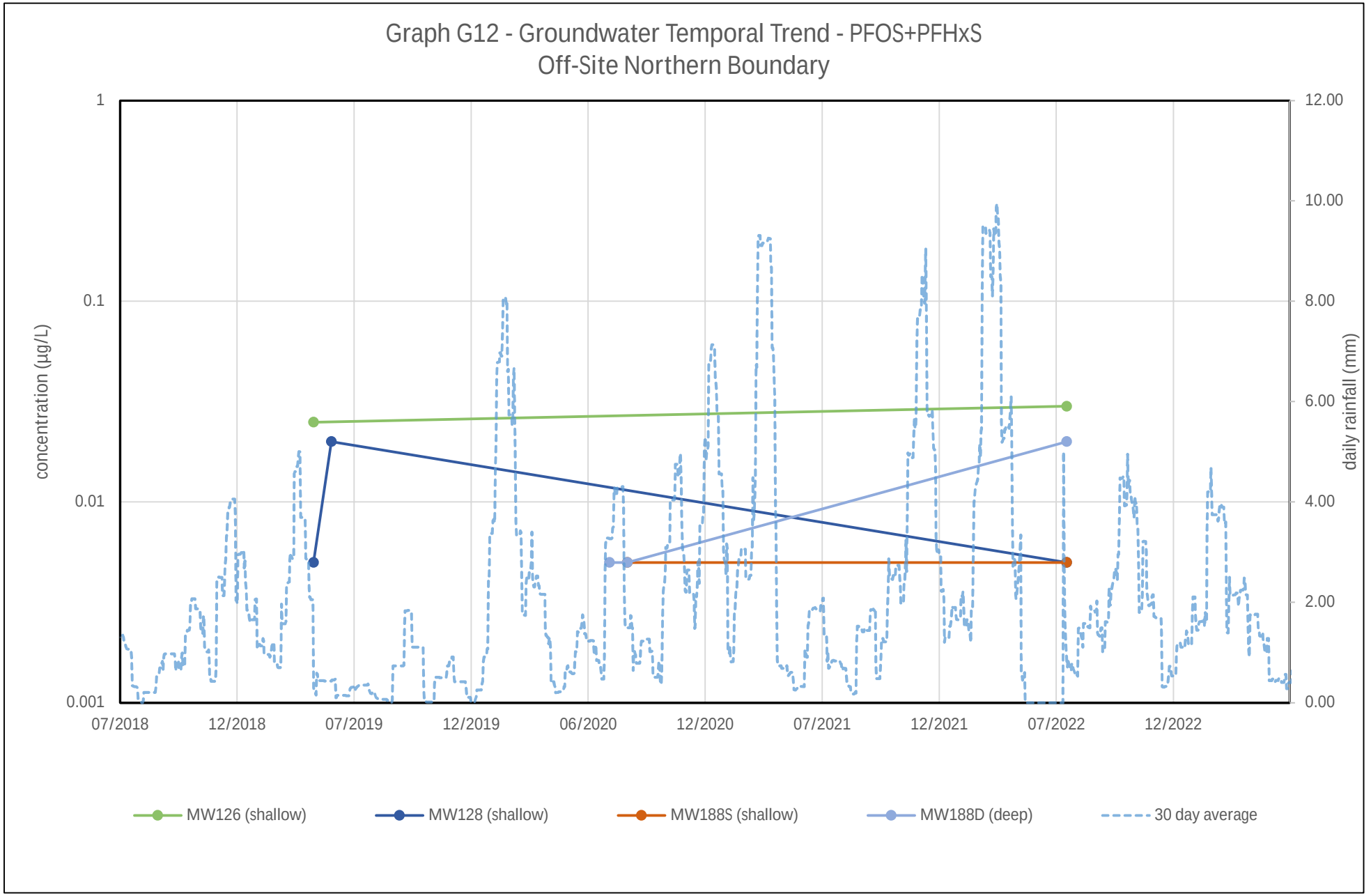

Graph G07 - Groundwater Temporal Trend - PFOA
On-Site Dochra Airfield
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW063 (deep)
MW071 (deep)
MW073 (shallow)
30 day average

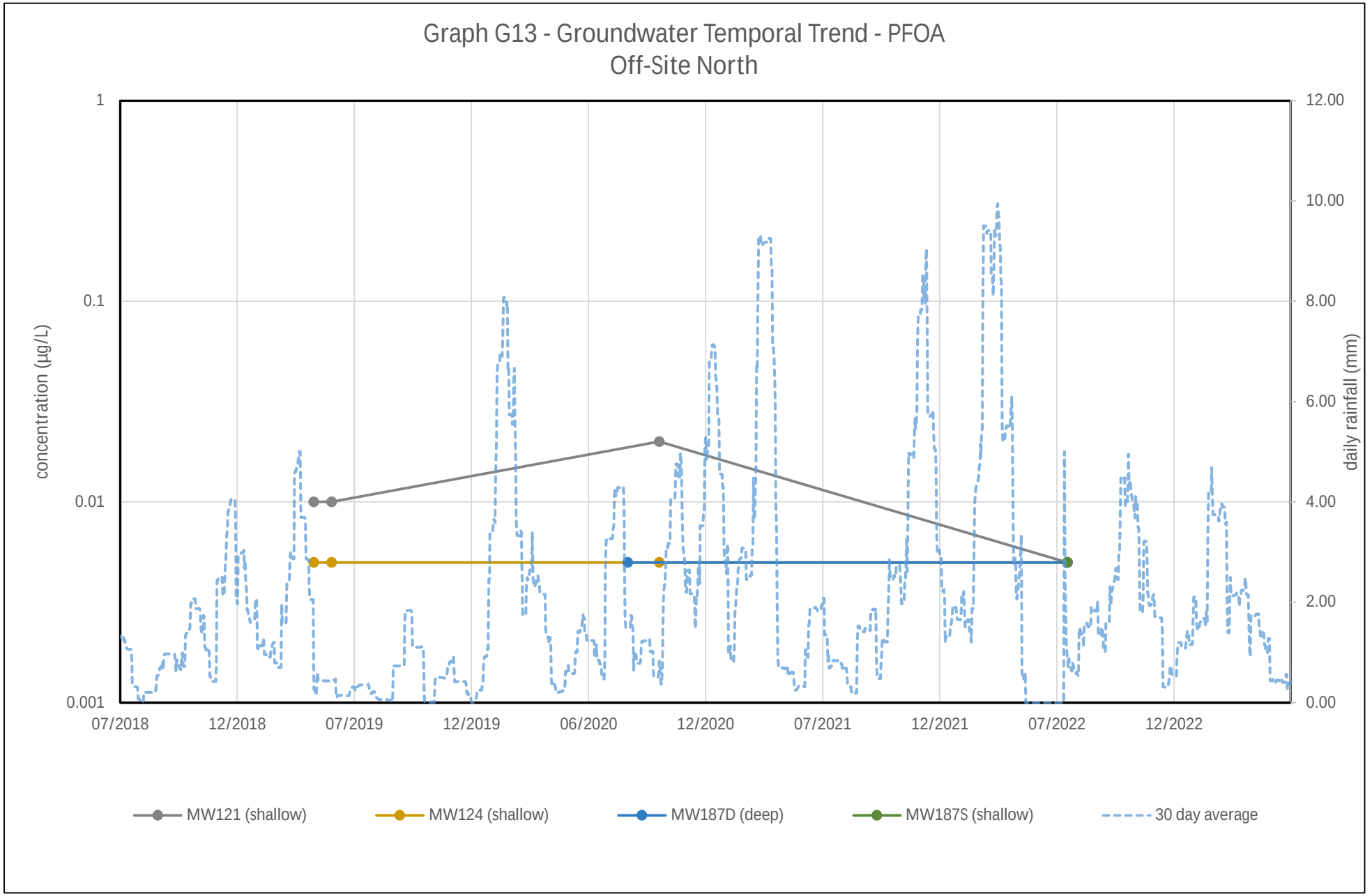

Graph G08 - Groundwater Temporal Trend - PFOS+PFHxS
On-Site Dochra Airfield
concentration (µg/L)
daily rainfall (mm)
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW063 (deep)
MW071 (deep)
MW073 (shallow)
30 day average

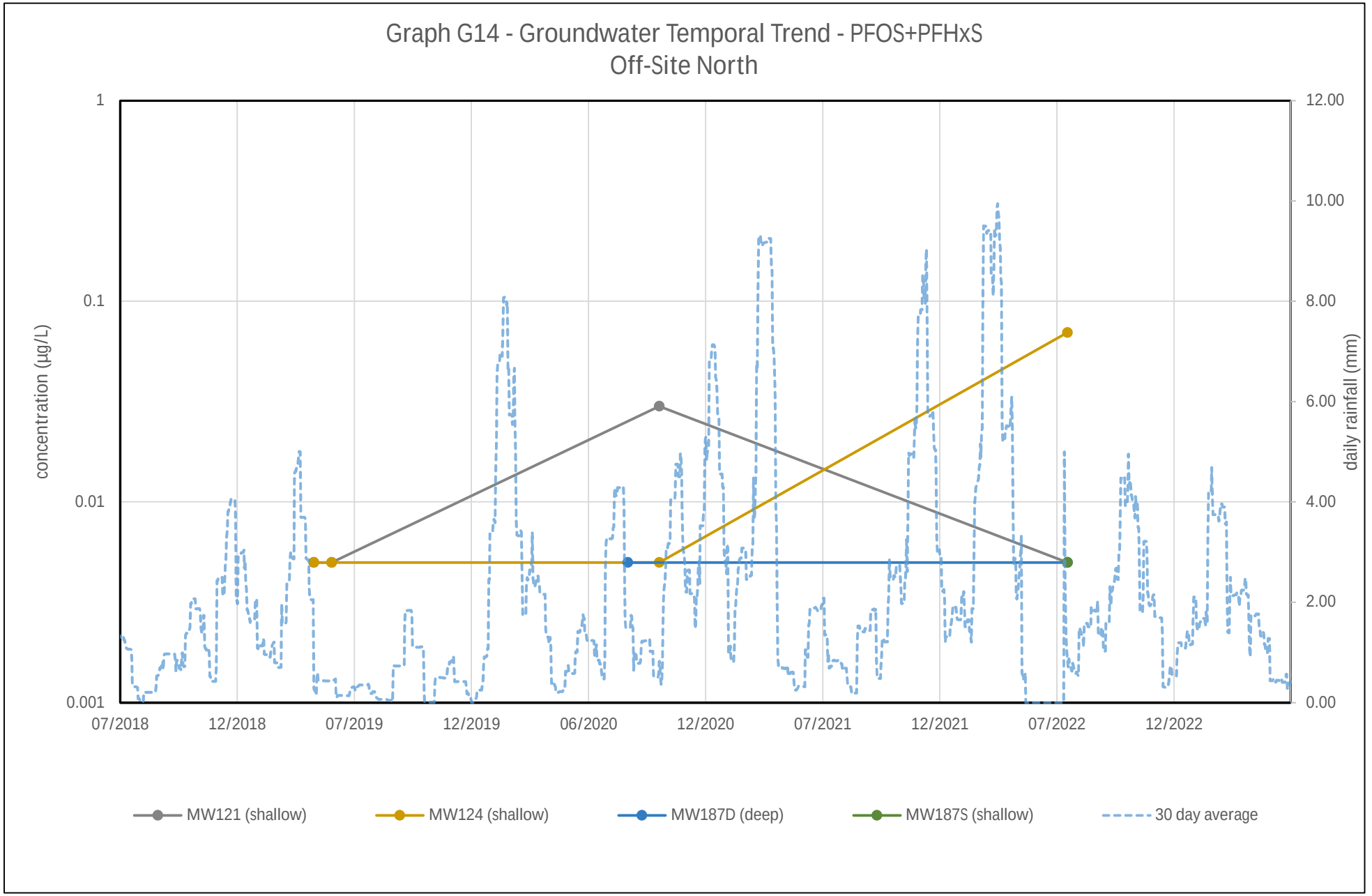

Graph G09 - Groundwater Temporal Trend - PFOA
On-Site Northern Boundary
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW102 (deep)
MW109 (deep)
MW110 (shallow)
MW114 (deep)
MW115 (shallow)
MW118 (shallow)
30 day average

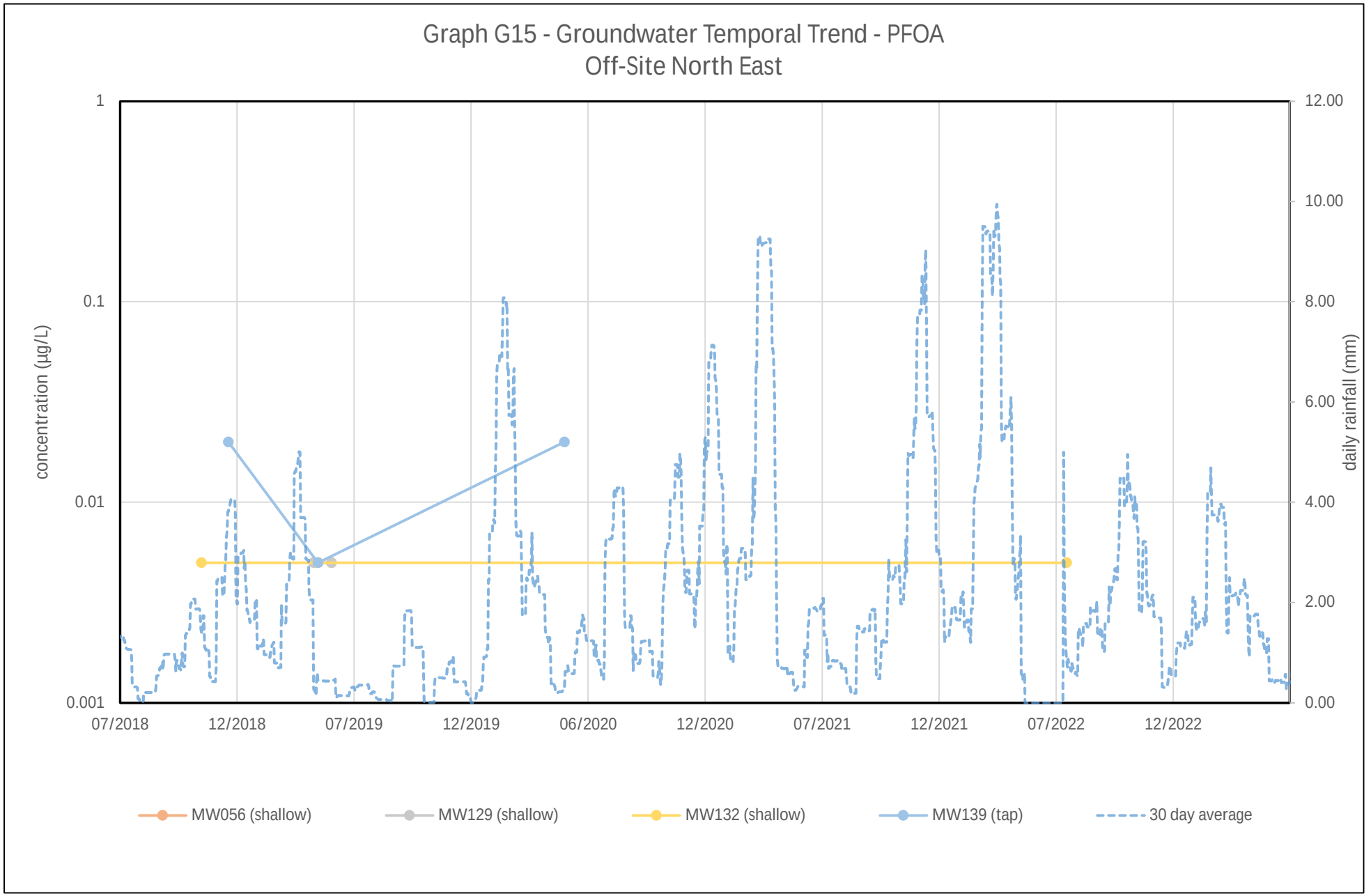

Graph G10 - Groundwater Temporal Trend - PFOS+PFHxS
On-Site Northern Boundary
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW102 (deep)
MW109 (deep)
MW110 (shallow)
MW114 (deep)
MW115 (shallow)
MW118 (shallow)
30 day average

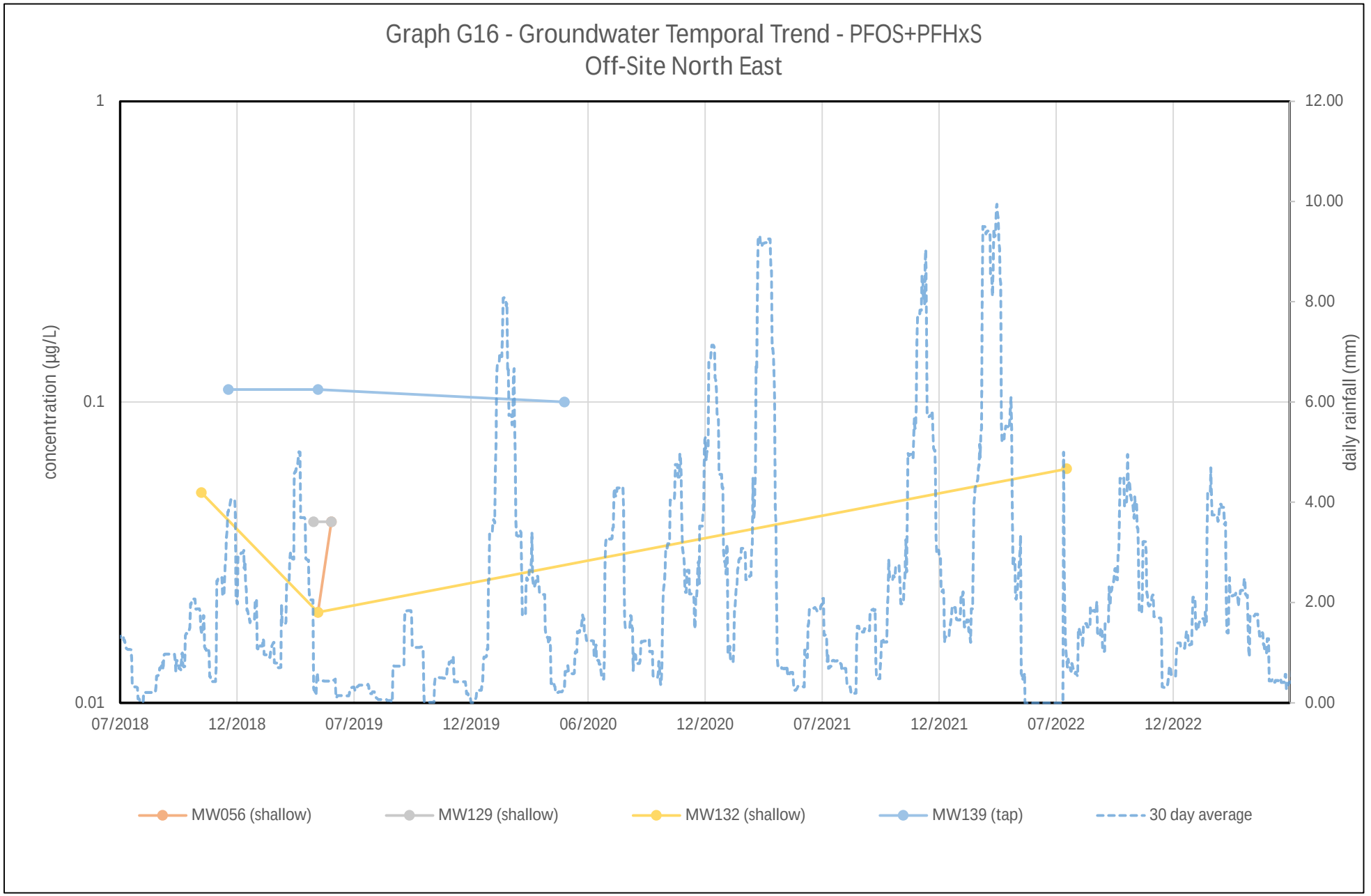

Graph G11 - Groundwater Temporal Trend - PFOA
Off-Site Northern Boundary
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW126 (shallow)
MW128 (shallow)
MW188S (shallow)
MW188D (deep)
30 day average

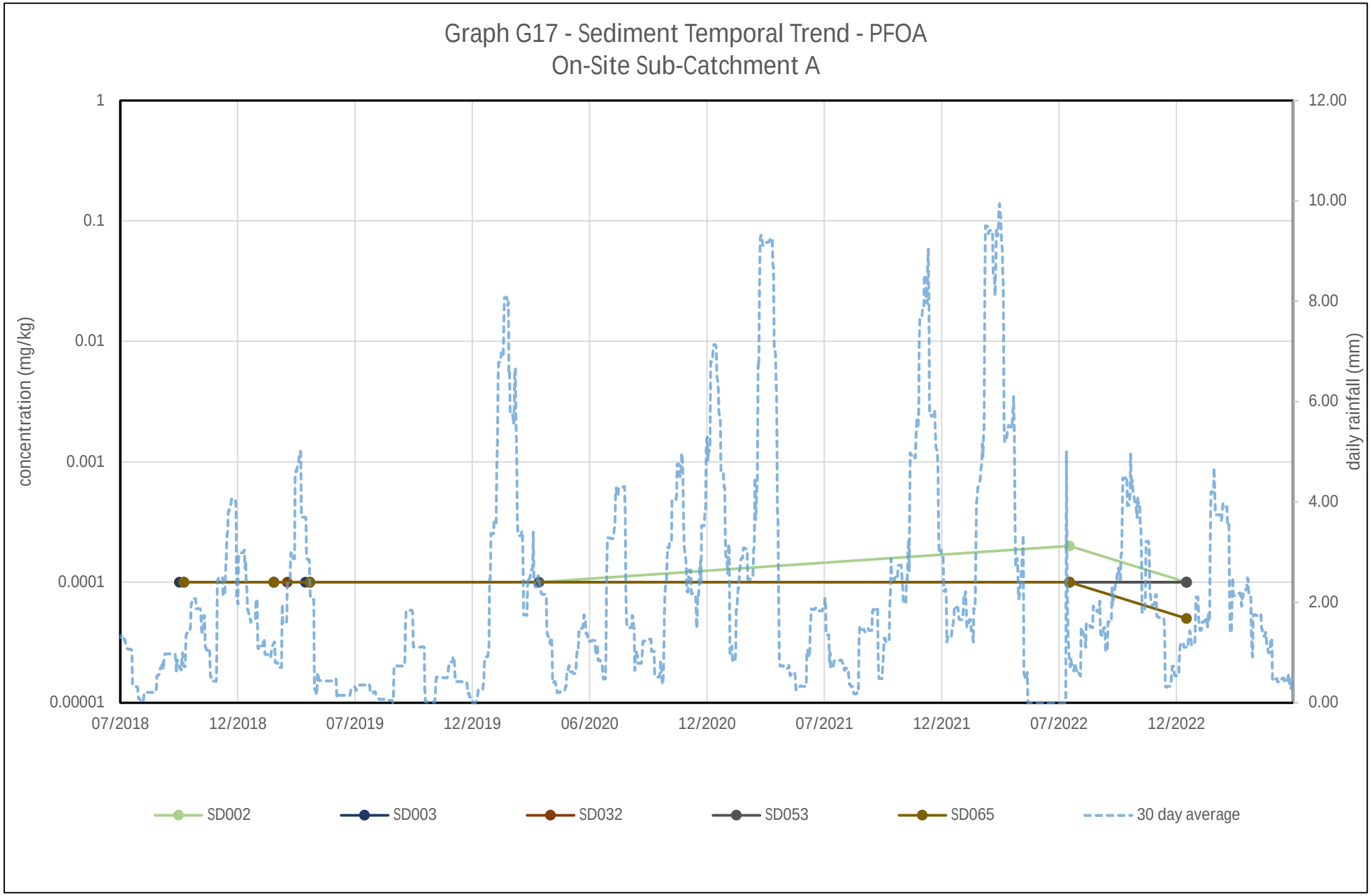

Graph G12 - Groundwater Temporal Trend - PFOS+PFHxS
Off-Site Northern Boundary
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW126 (shallow)
MW128 (shallow)
MW188S (shallow)
MW188D (deep)
30 day average

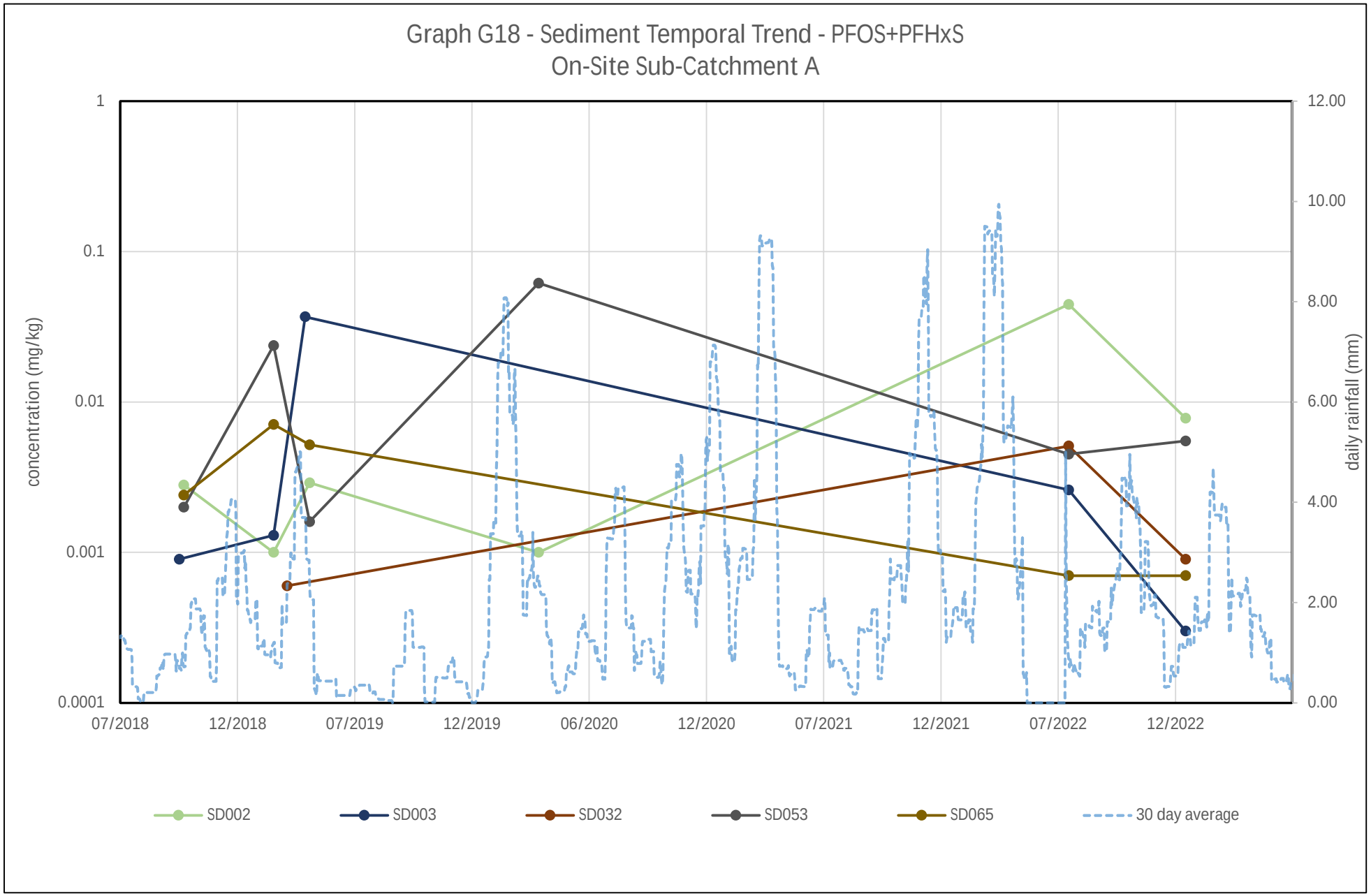

Graph G13 - Groundwater Temporal Trend - PFOA
Off-Site North
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW121 (shallow)
MW124 (shallow)
MW187D (deep)
MW187S (shallow)
30 day average

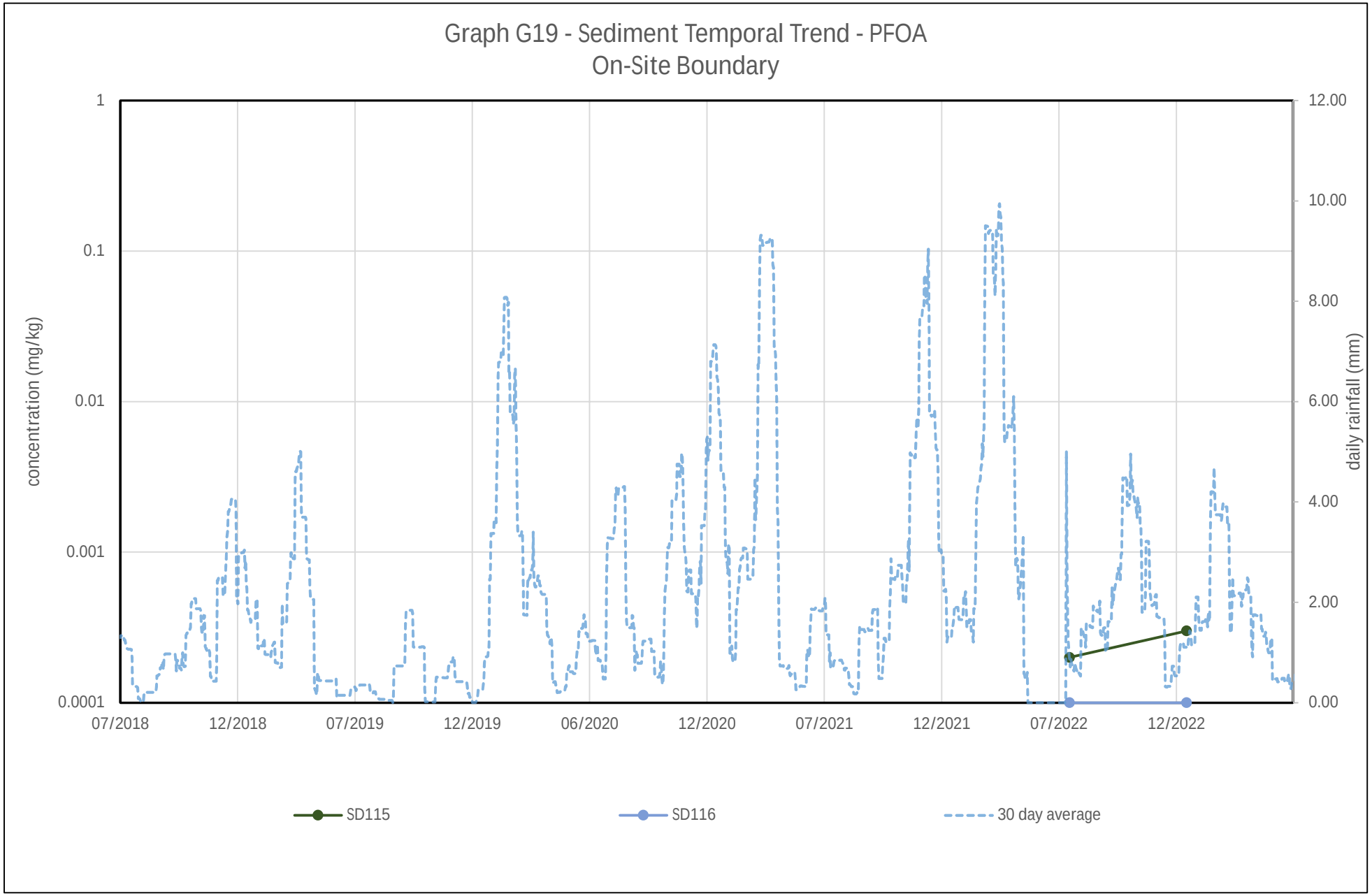

Graph G14 - Groundwater Temporal Trend - PFOS+PFHxS
Off-Site North
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW121 (shallow)
MW124 (shallow)
MW187D (deep)
MW187S (shallow)
30 day average

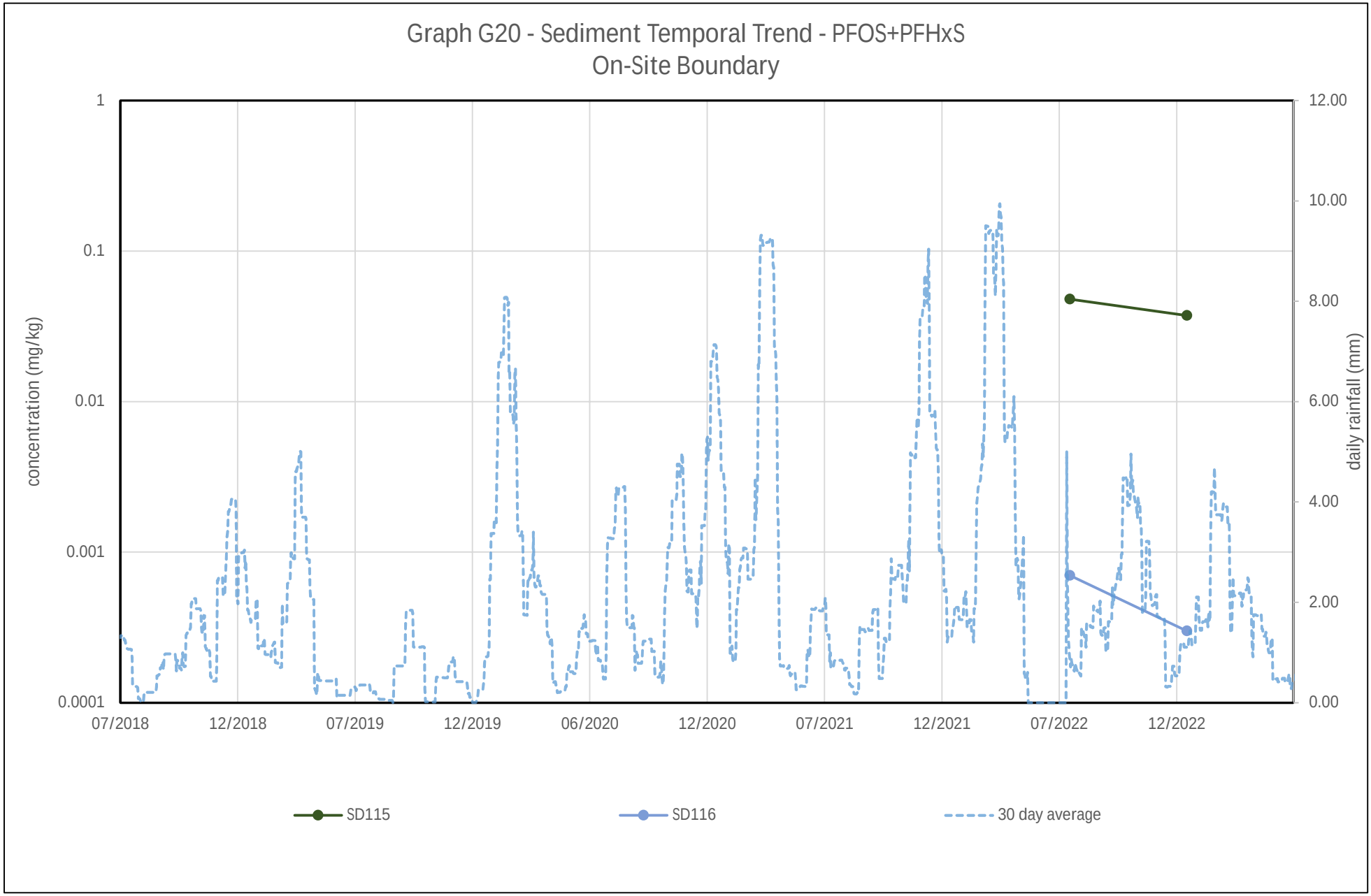

Graph G15 - Groundwater Temporal Trend - PFOA
Off-Site North East
concentration (µg/L)
daily rainfall (mm)
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW056 (shallow)
MW129 (shallow)
MW132 (shallow)
MW139 (tap)
30 day average

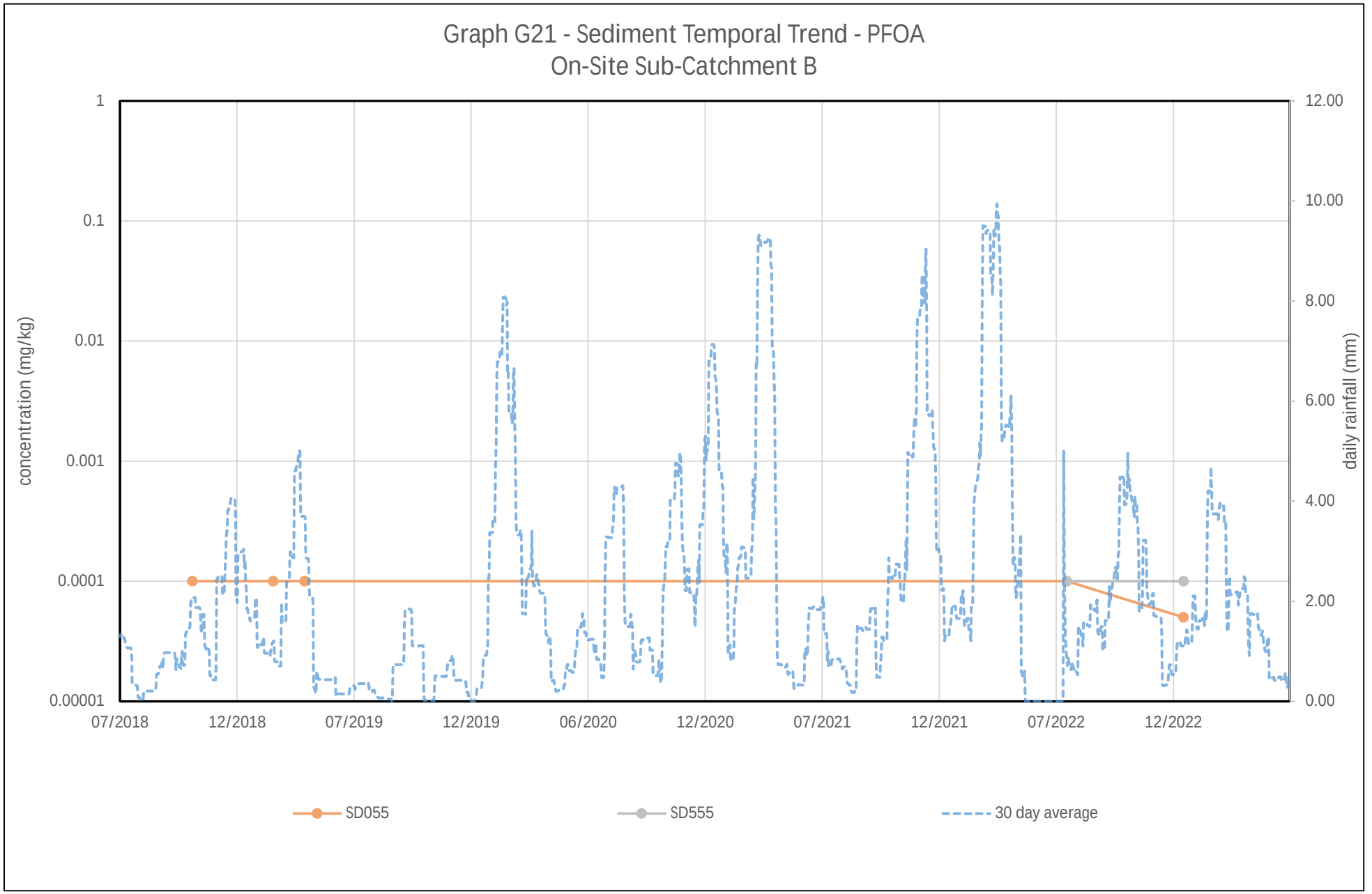

Graph G16 - Groundwater Temporal Trend - PFOS+PFHxS
Off-Site North East
concentration (µg/L)
1
0.1
0.01
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
MW056 (shallow)
MW129 (shallow)
MW132 (shallow)
MW139 (tap)
30 day average

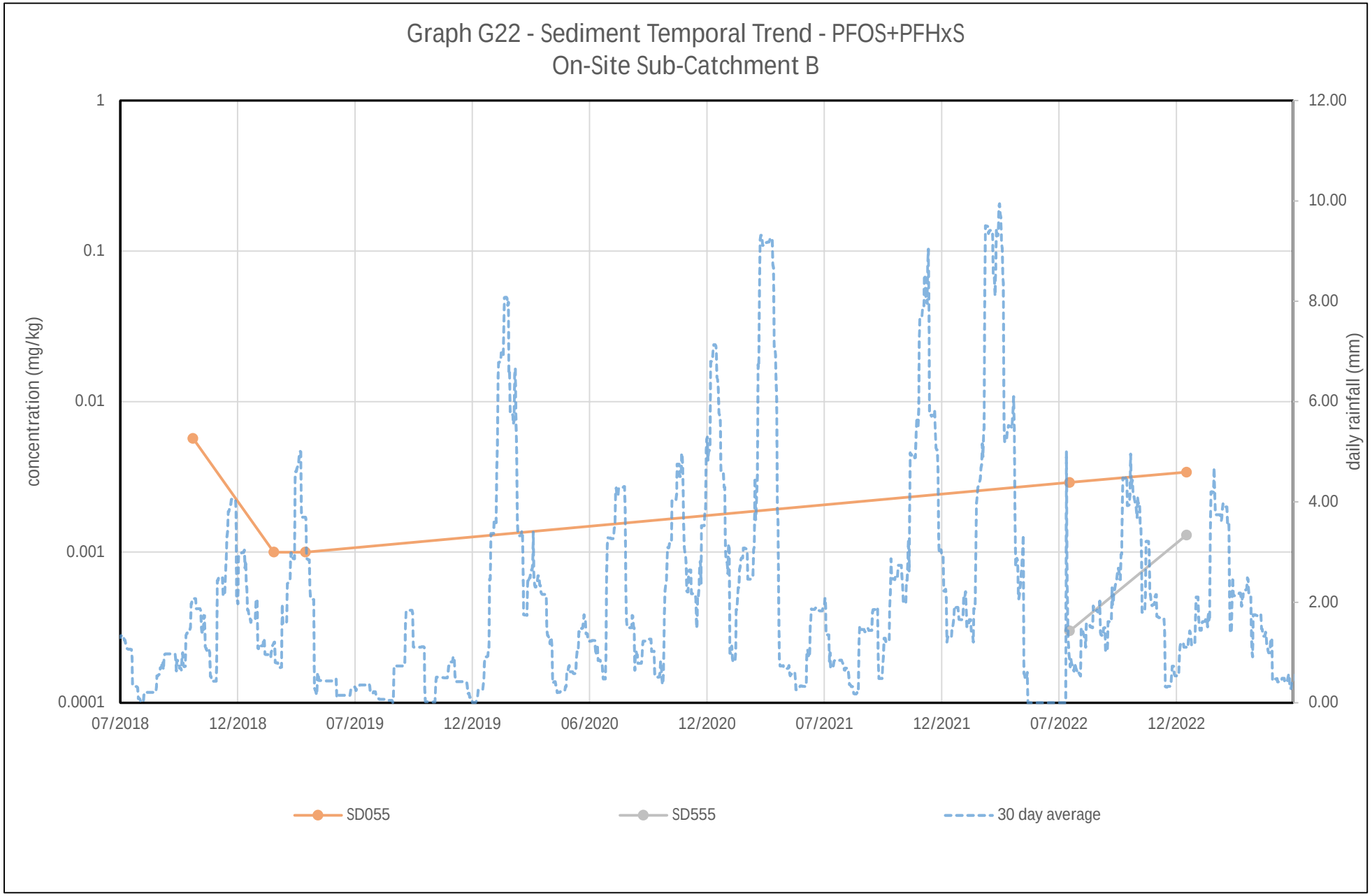

Graph G17 - Sediment Temporal Trend - PFOA
On-Site Sub-Catchment A
concentration (mg/kg)
daily rainfall (mm)
1
0.1
0.01
0.001
0.0001
0.00001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD002
SD003
SD032
SD053
SD065
30 day average

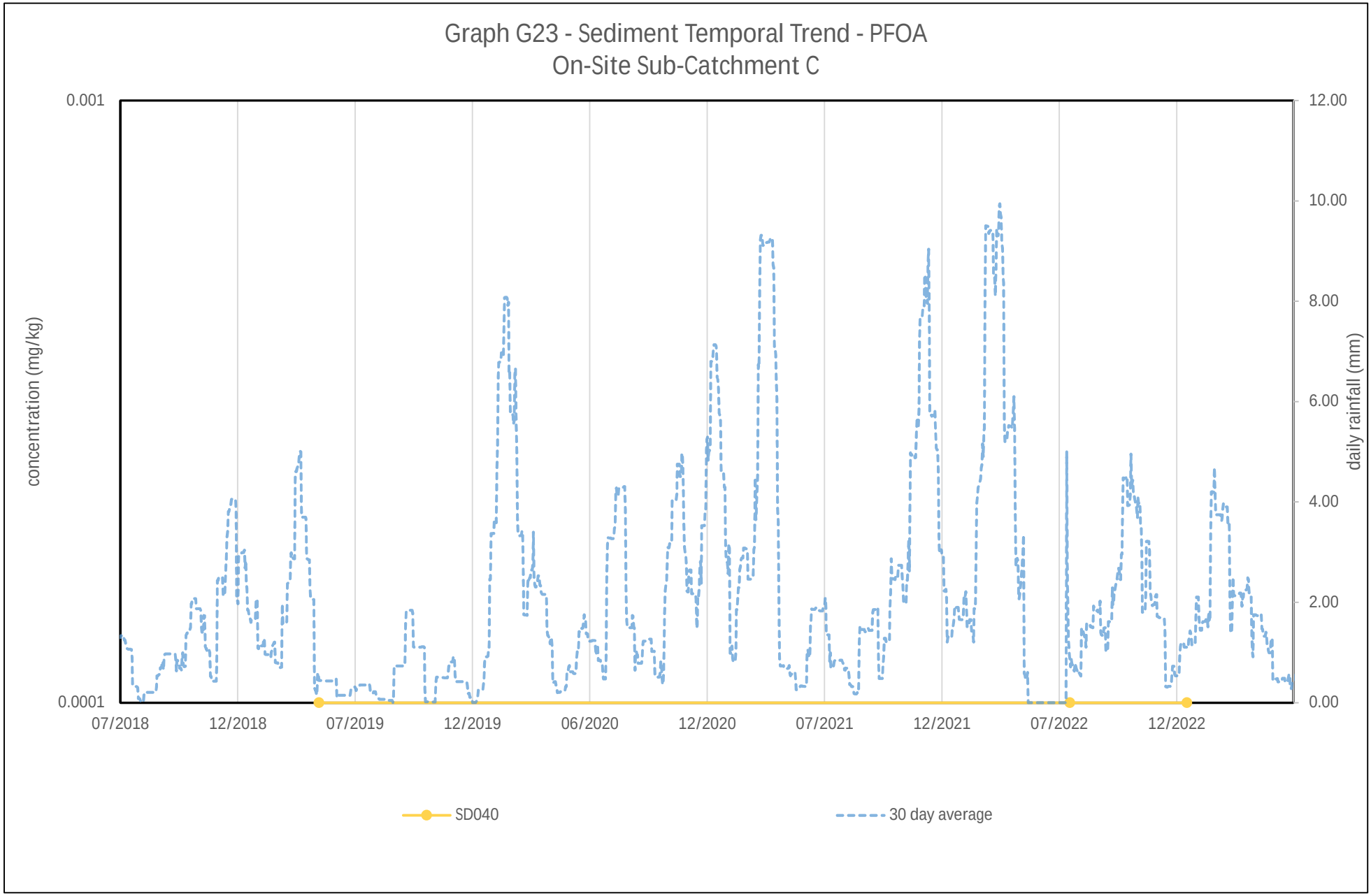

Graph G18 - Sediment Temporal Trend - PFOS+PFHxS
On-Site Sub-Catchment A
concentration (mg/kg)
daily rainfall (mm)
1
0.1
0.01
0.001
0.0001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD002
SD003
SD032
SD053
SD065
30 day average

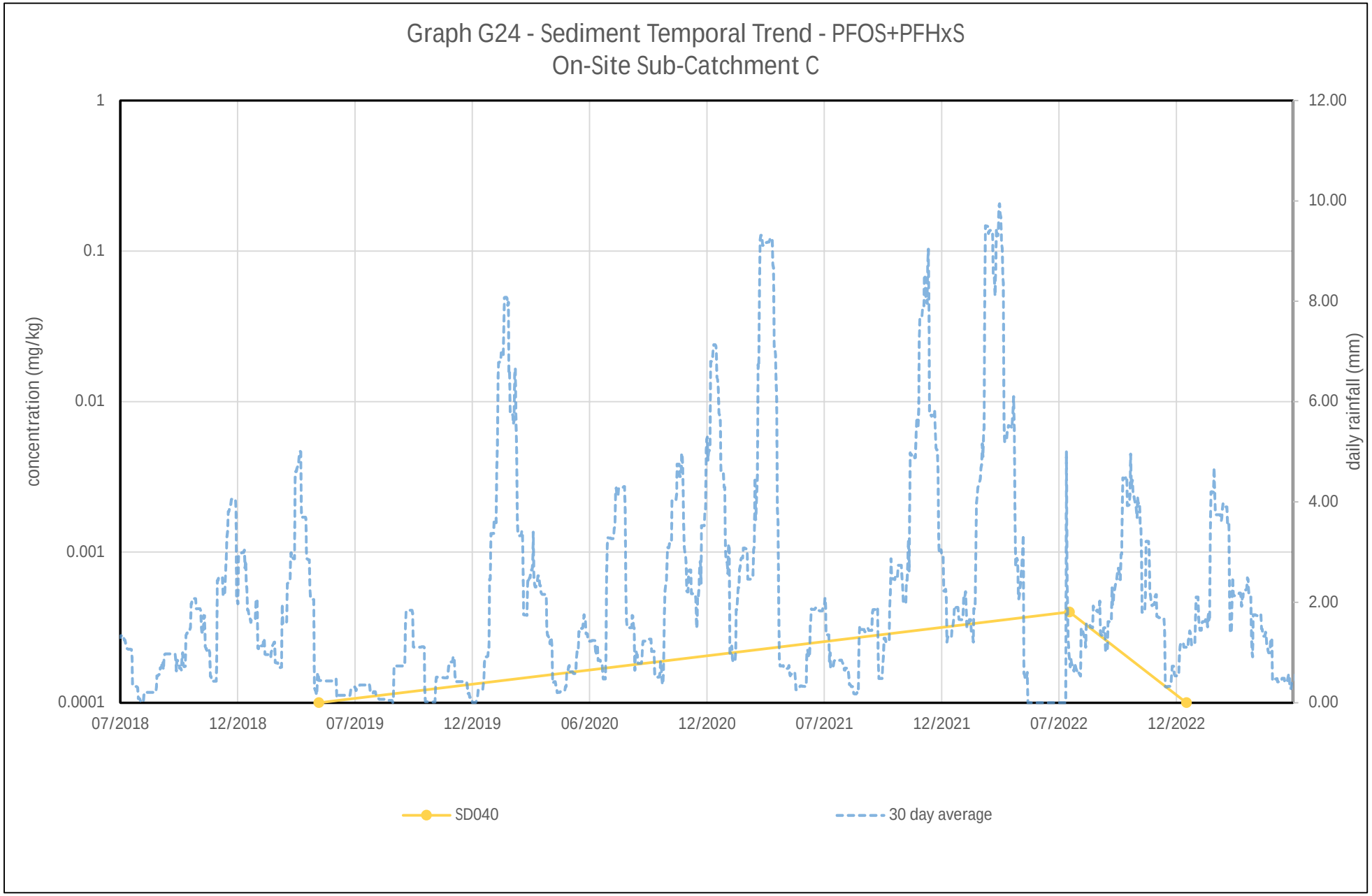

Graph G19 - Sediment Temporal Trend - PFOA
On-Site Boundary
concentration (mg/kg)
daily rainfall (mm)
1
0.1
0.01
0.001
0.0001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD115
SD116
30 day average

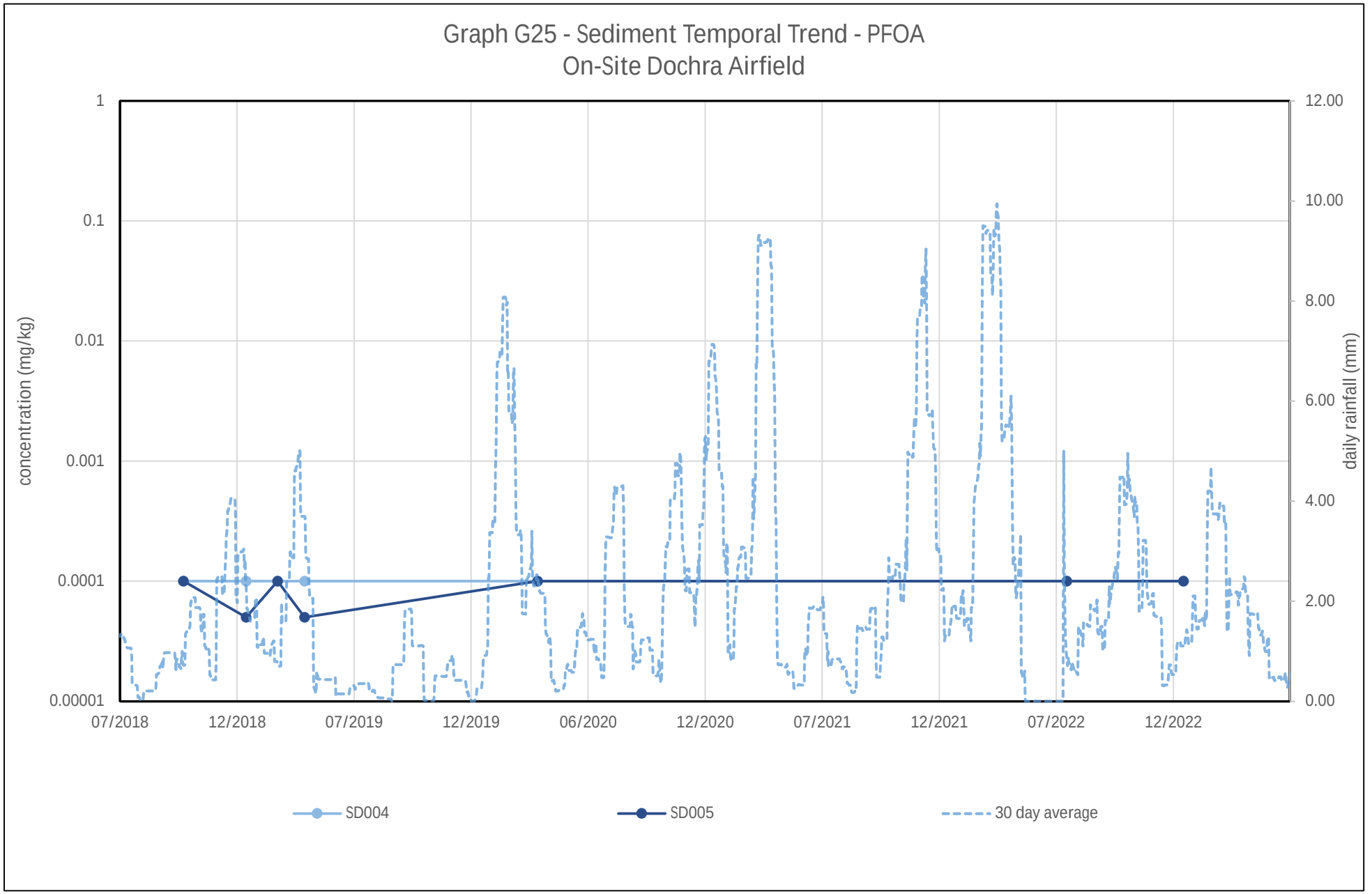

Graph G20 - Sediment Temporal Trend - PFOS+PFHxS
On-Site Boundary
concentration (mg/kg)
daily rainfall (mm)
1
0.1
0.01
0.001
0.0001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD115
SD116
30 day average

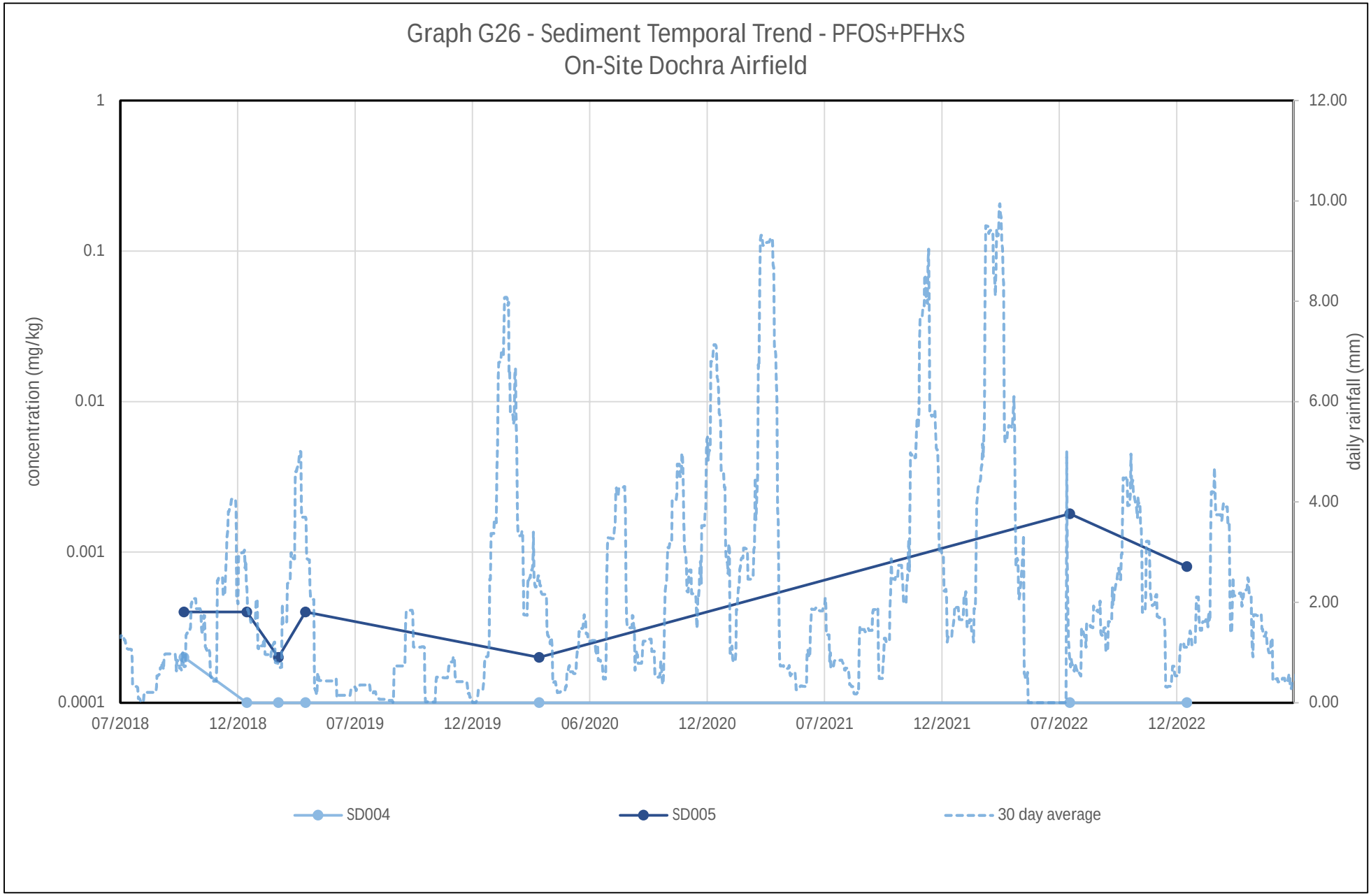

Graph G21 - Sediment Temporal Trend - PFOA
On-Site Sub-Catchment B
concentration (mg/kg)
1
0.1
0.01
0.001
0.0001
0.00001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD055
SD555
30 day average

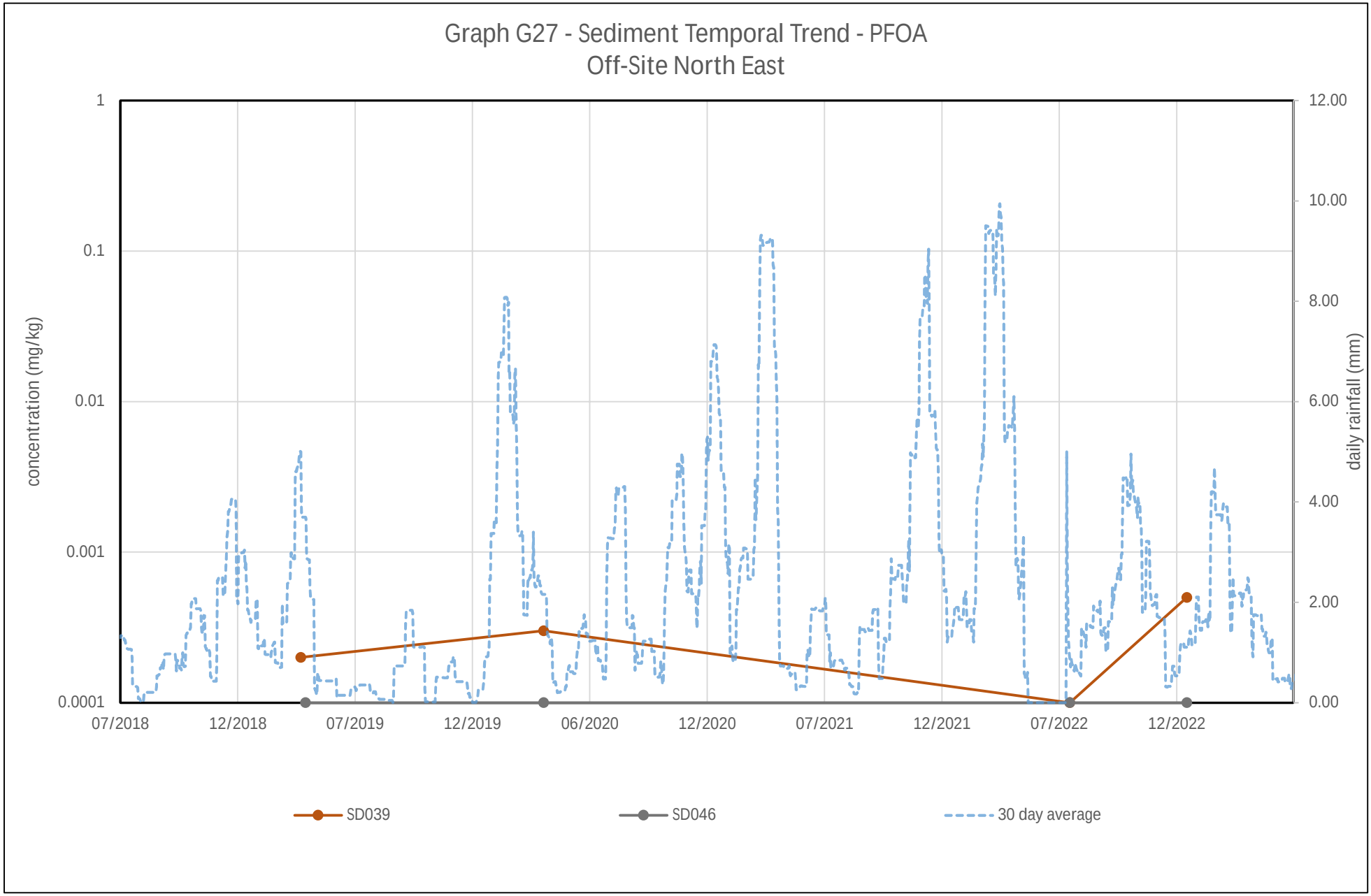

Graph G22 - Sediment Temporal Trend - PFOS+PFHxS
On-Site Sub-Catchment B
concentration (mg/kg)
daily rainfall (mm)
1
0.1
0.01
0.001
0.0001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD055
SD555
30 day average

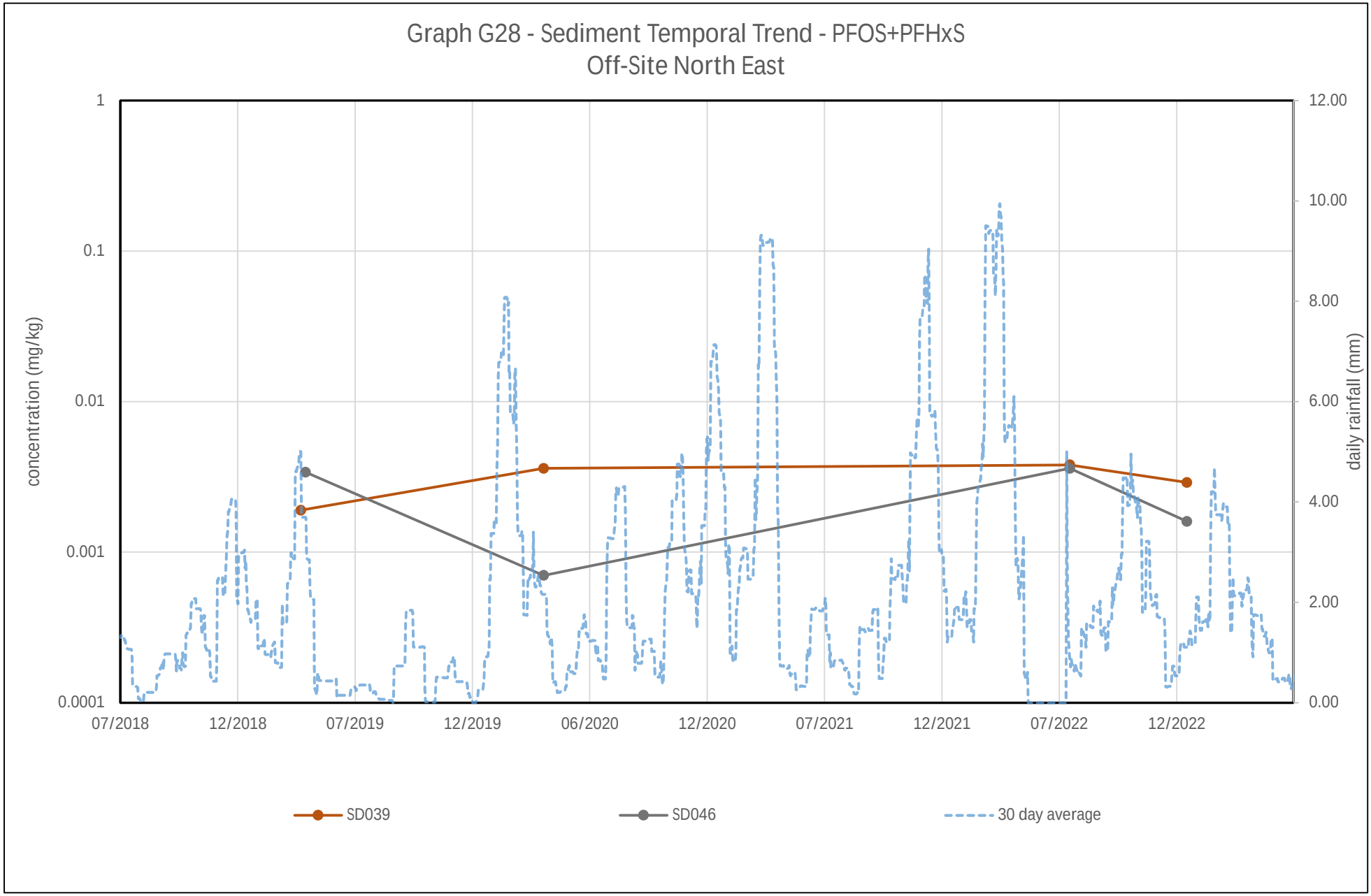

Graph G23 - Sediment Temporal Trend - PFOA
On-Site Sub-Catchment C
0.001
0.0001
concentration (mg/kg)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
daily rainfall (mm)
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD040
30 day average

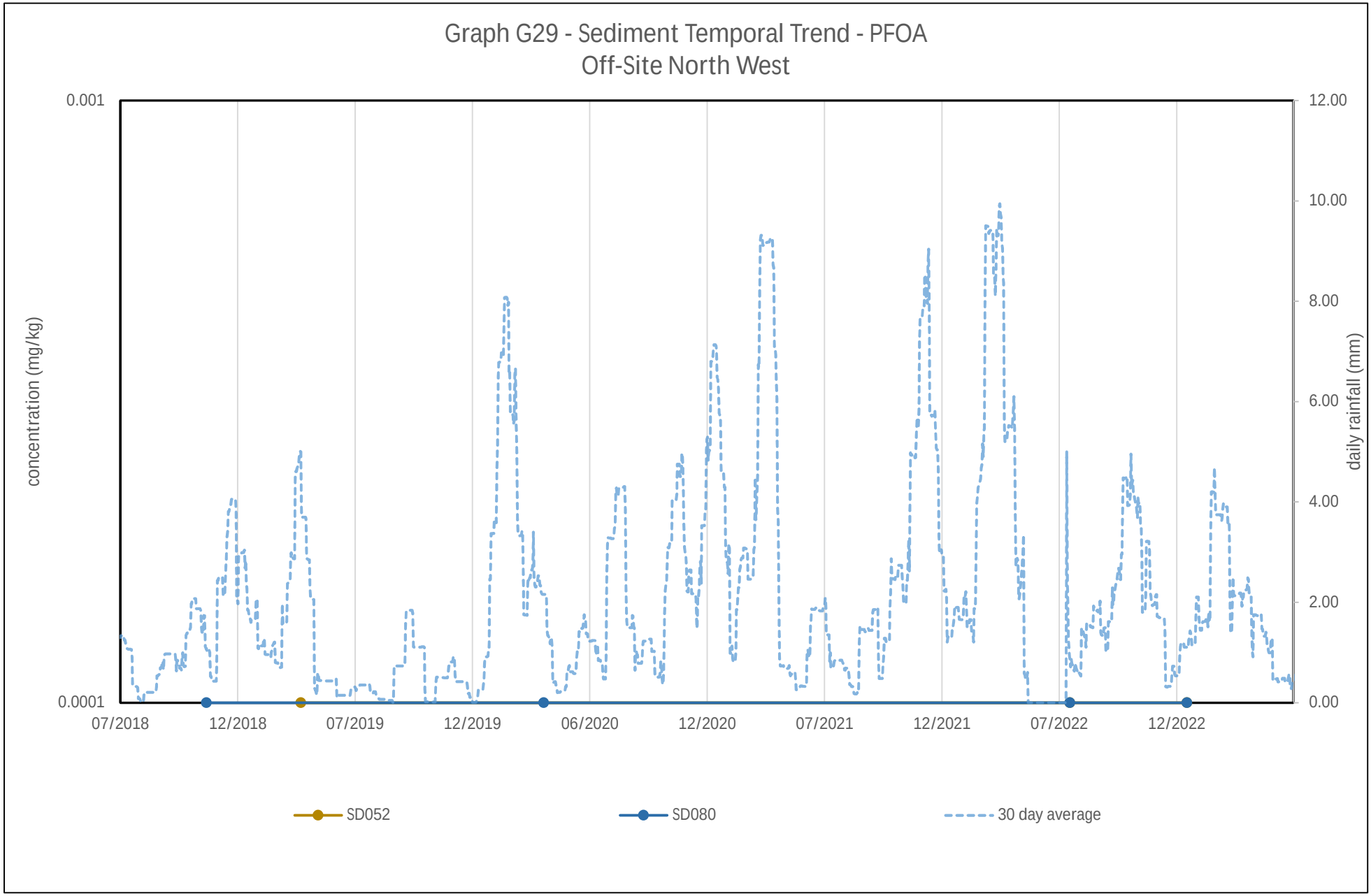

Graph G24 - Sediment Temporal Trend - PFOS+PFHxS
On-Site Sub-Catchment C
concentration (mg/kg)
daily rainfall (mm)
1
0.1
0.01
0.001
0.0001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD040
30 day average

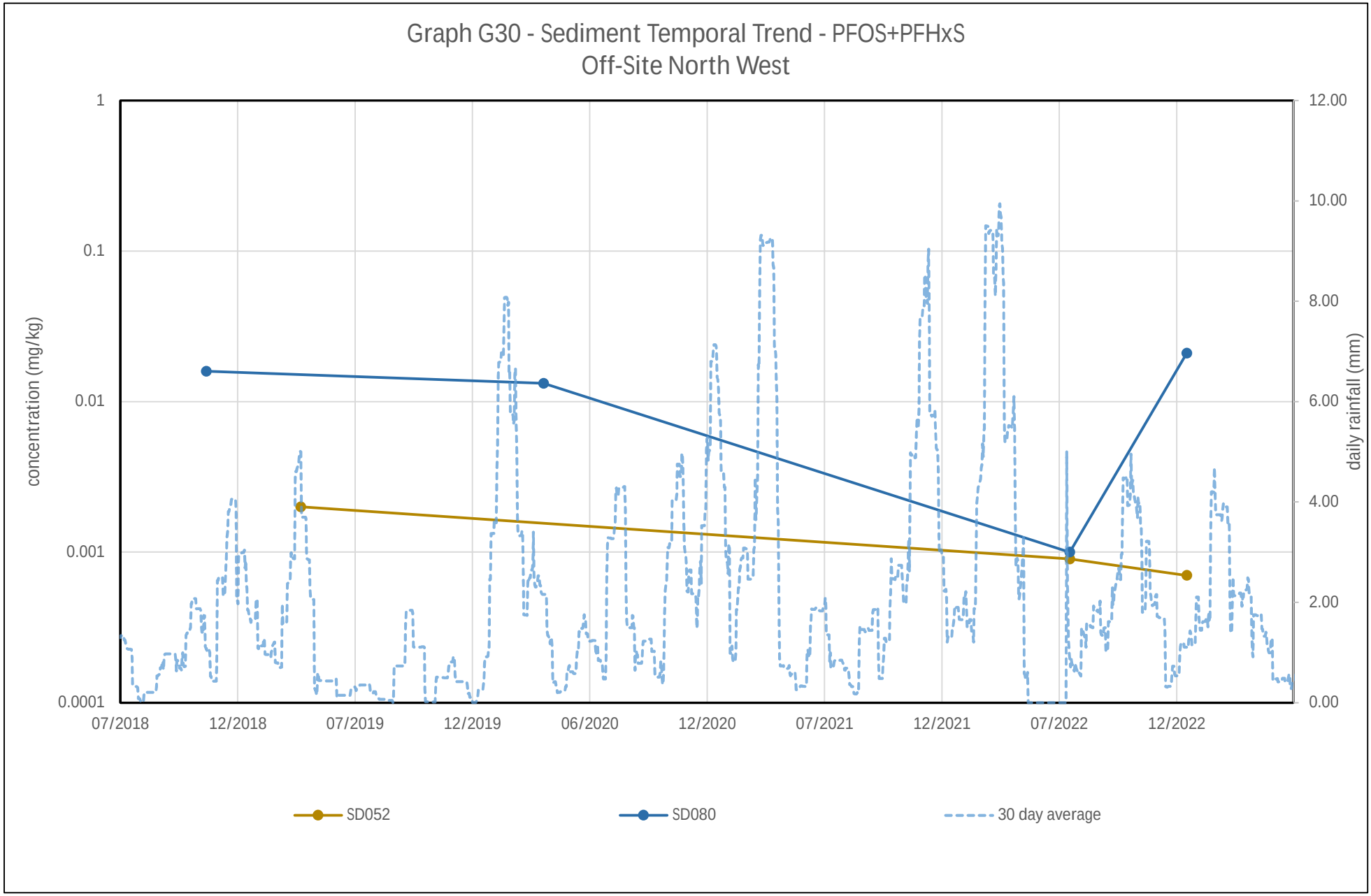

Graph G25 - Sediment Temporal Trend - PFOA
On-Site Dochra Airfield
concentration (mg/kg)
1
0.1
0.01
0.001
0.0001
0.00001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD004
SD005
30 day average

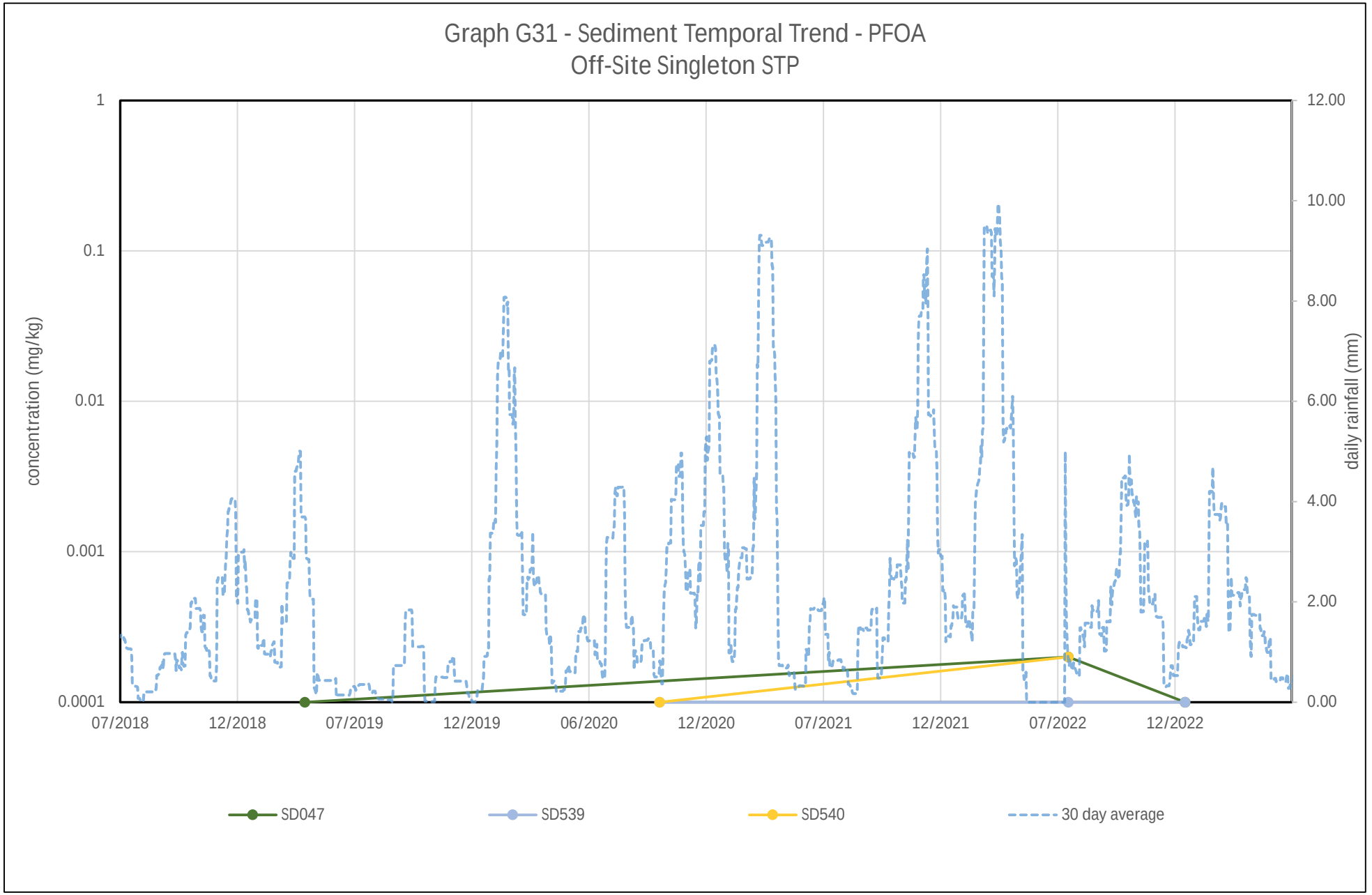

Graph G26 - Sediment Temporal Trend - PFOS+PFHxS
On-Site Dochra Airfield
concentration (mg/kg)
daily rainfall (mm)
1
0.1
0.01
0.001
0.0001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD004
SD005
30 day average

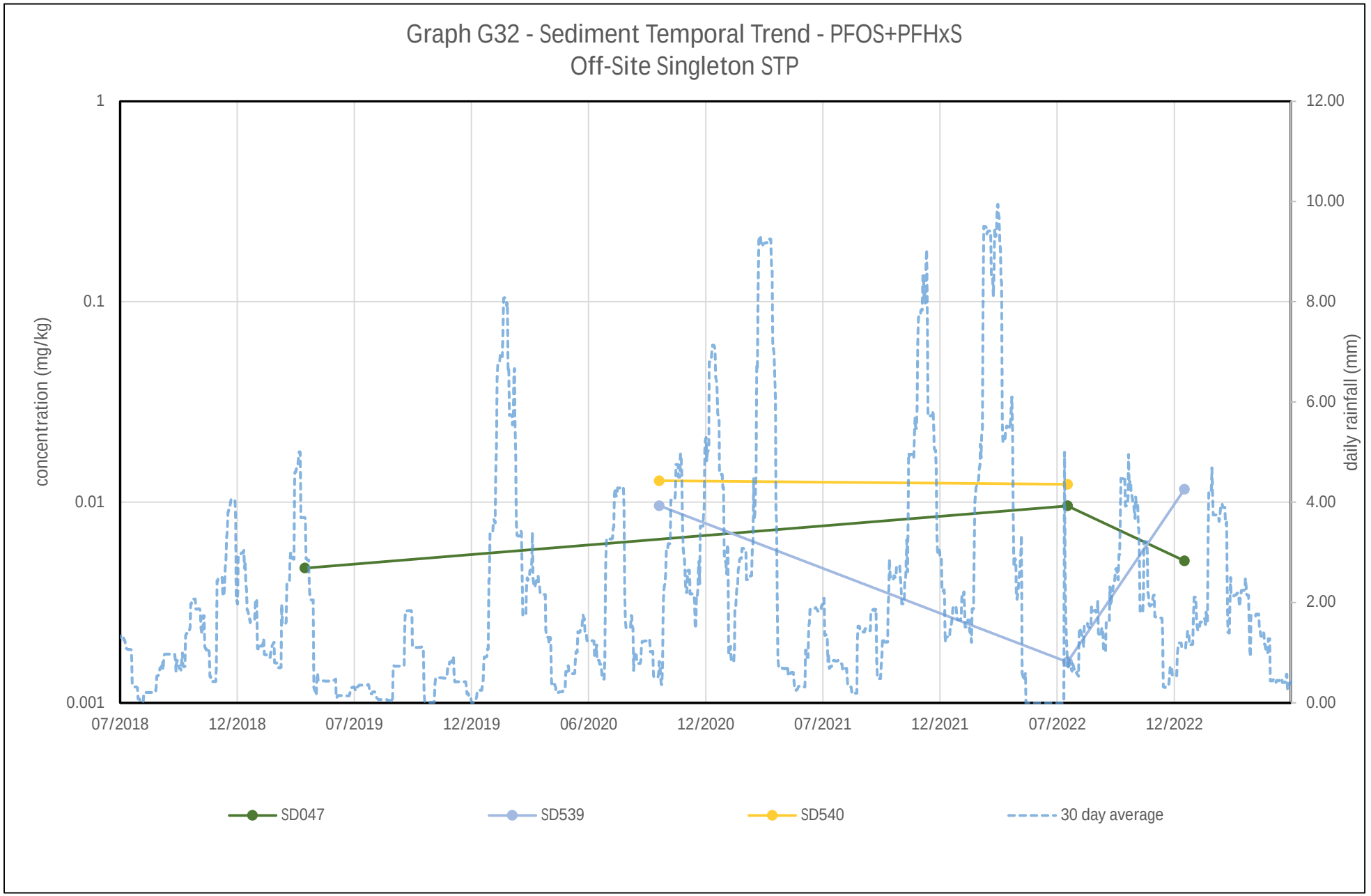

Graph G27 - Sediment Temporal Trend - PFOA
Off-Site North East
concentration (mg/kg)
daily rainfall (mm)
1
0.1
0.01
0.001
0.0001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD039
SD046
30 day average

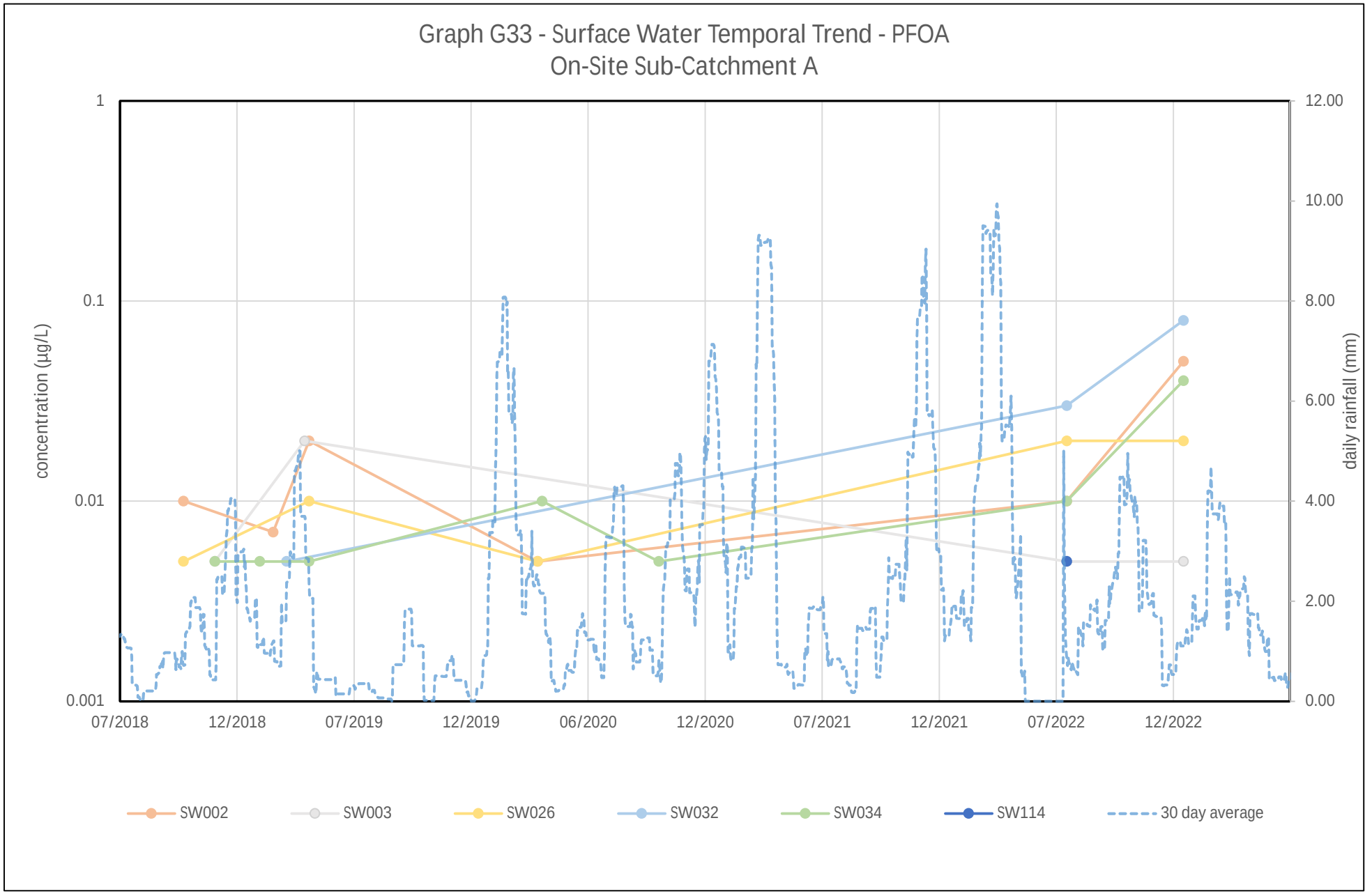

Graph G28 - Sediment Temporal Trend - PFOS+PFHxS
Off-Site North East
concentration (mg/kg)
daily rainfall (mm)
1
0.1
0.01
0.001
0.0001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD039
SD046
30 day average

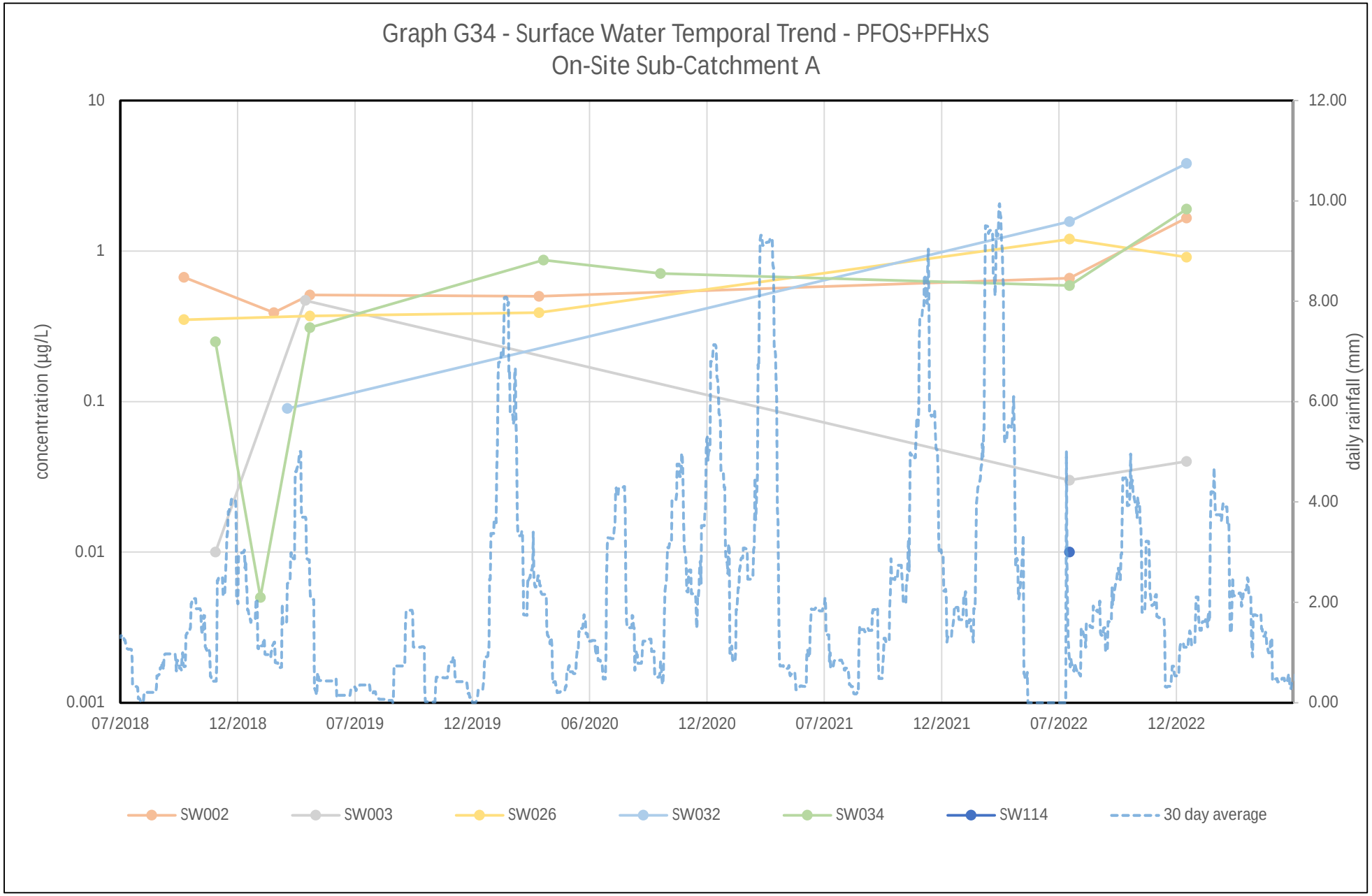

Graph G29 - Sediment Temporal Trend - PFOA
Off-Site North West
0.001
0.0001
concentration (mg/kg)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
daily rainfall (mm)
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD052
SD080
30 day average

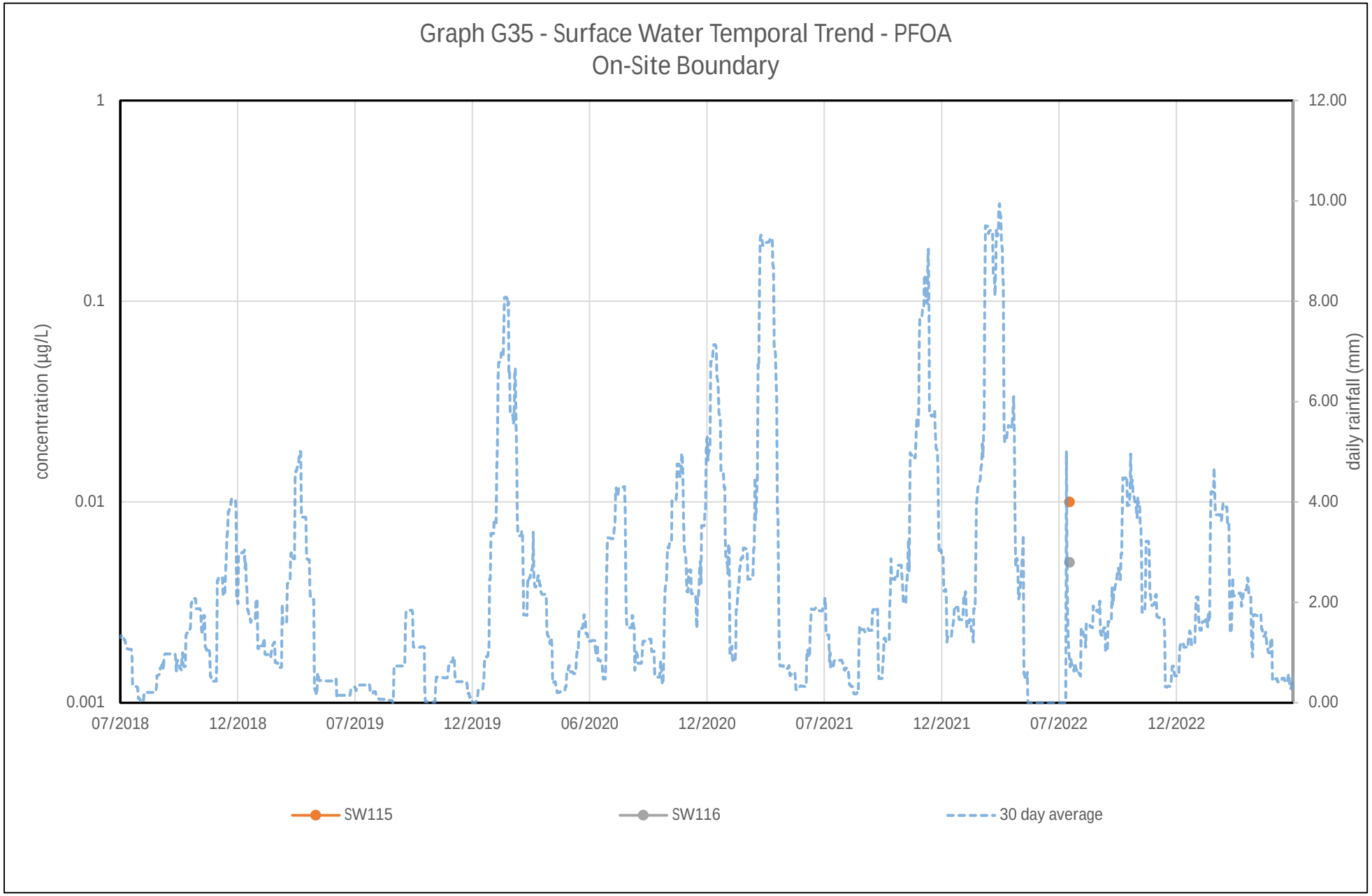

Graph G30 - Sediment Temporal Trend - PFOS+PFHxS
Off-Site North West
concentration (mg/kg)
daily rainfall (mm)
1
0.1
0.01
0.001
0.0001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD052
SD080
30 day average

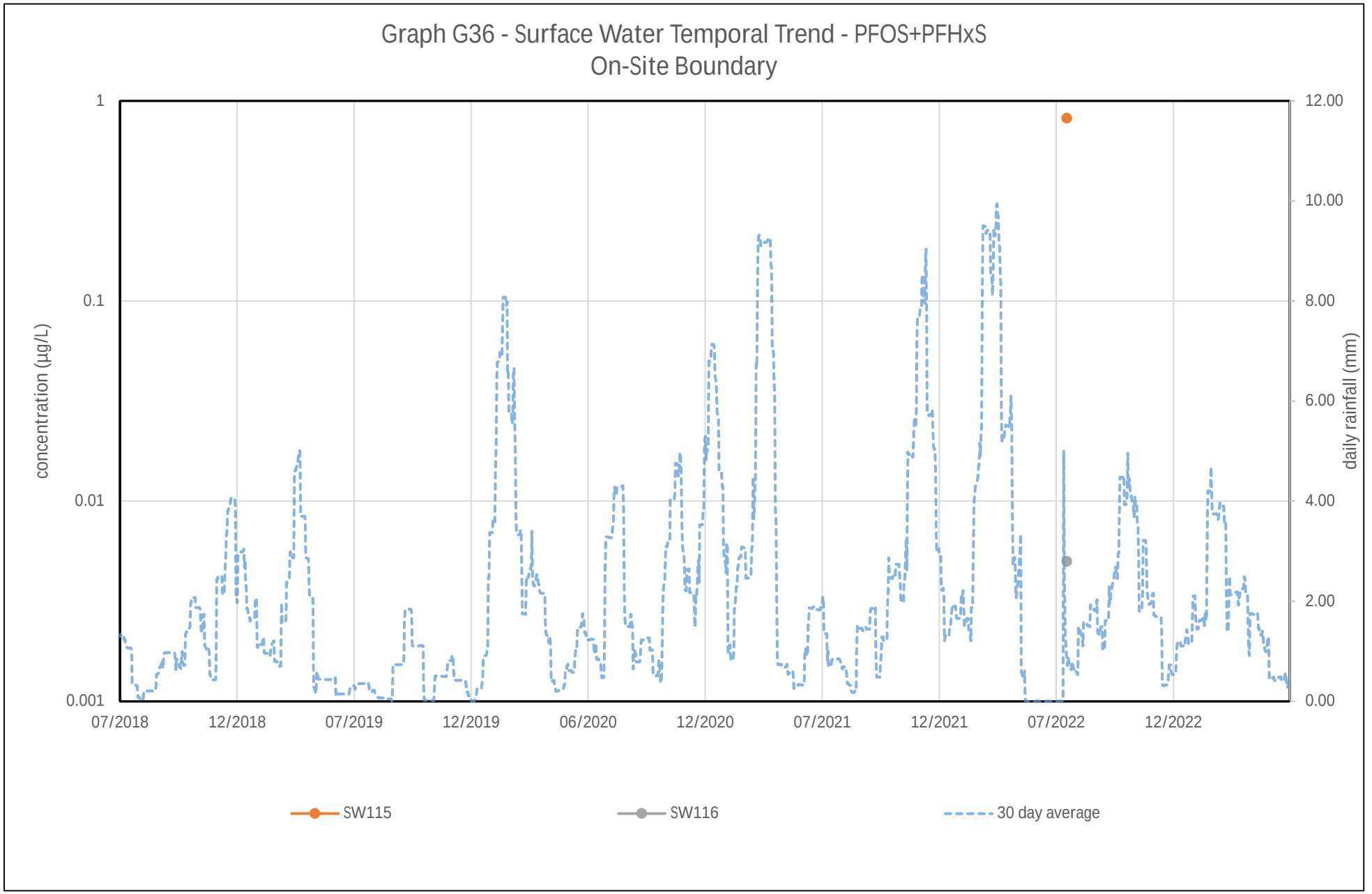

Graph G31 - Sediment Temporal Trend - PFOA
Off-Site Singleton STP
concentration (mg/kg)
daily rainfall (mm)
1
0.1
0.01
0.001
0.0001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD047
SD539
SD540
30 day average

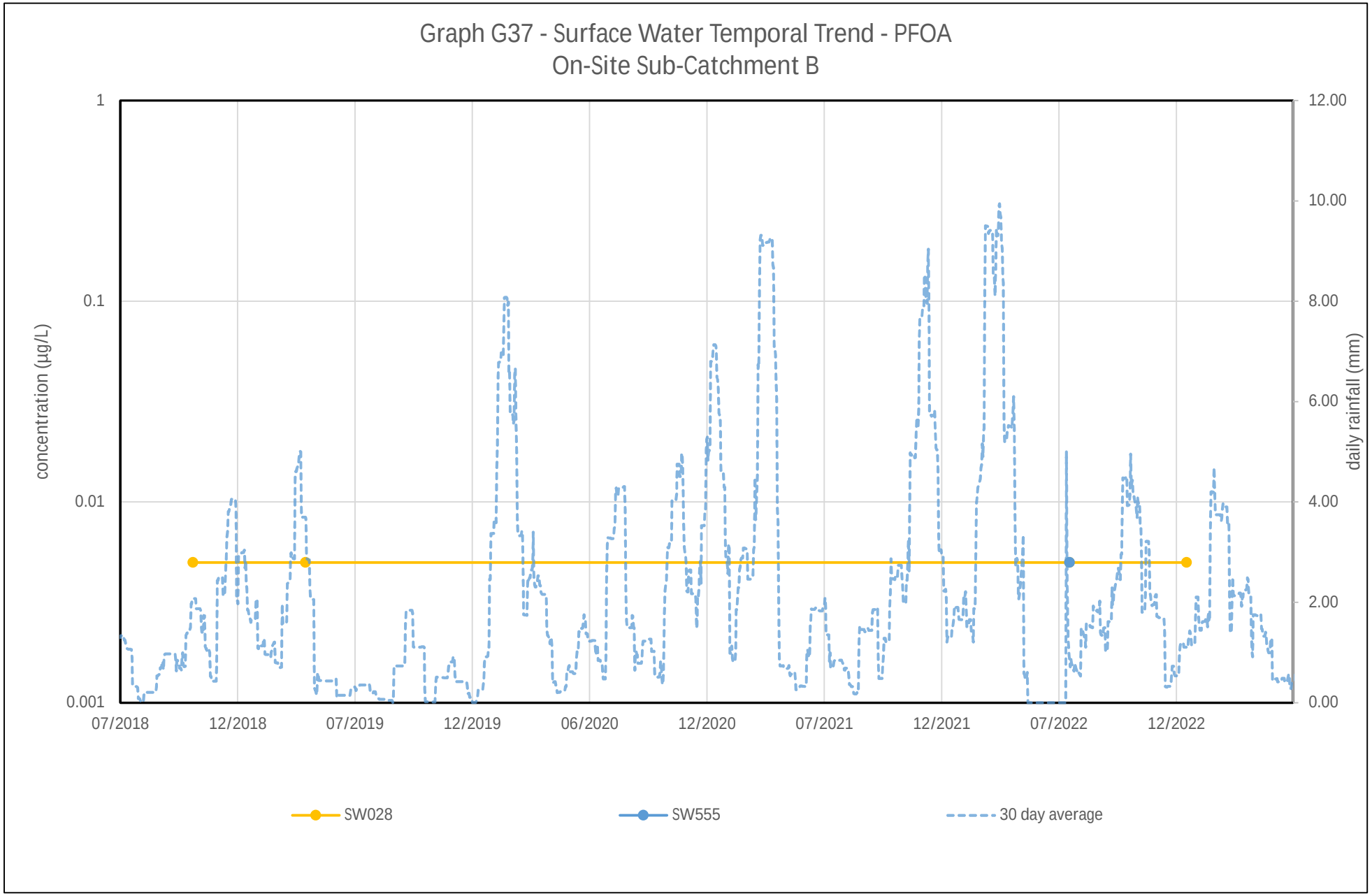

Graph G32 - Sediment Temporal Trend - PFOS+PFHxS
Off-Site Singleton STP
concentration (mg/kg)
daily rainfall (mm)
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SD047
SD539
SD540
30 day average

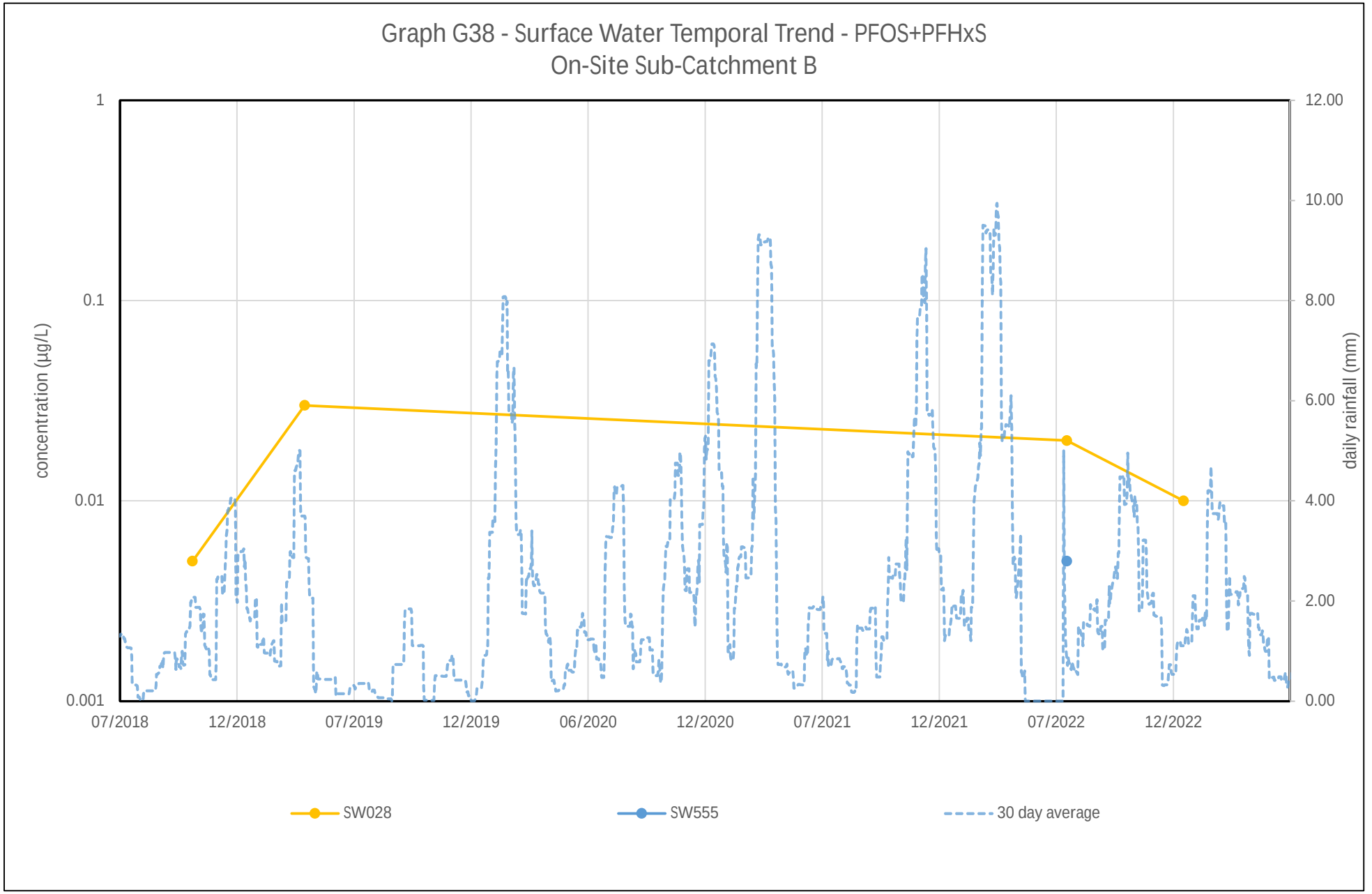

Graph G33 - Surface Water Temporal Trend - PFOA
On-Site Sub-Catchment A
concentration (µg/L)
daily rainfall (mm)
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW002
SW003
SW026
SW032
SW034
SW114
30 day average

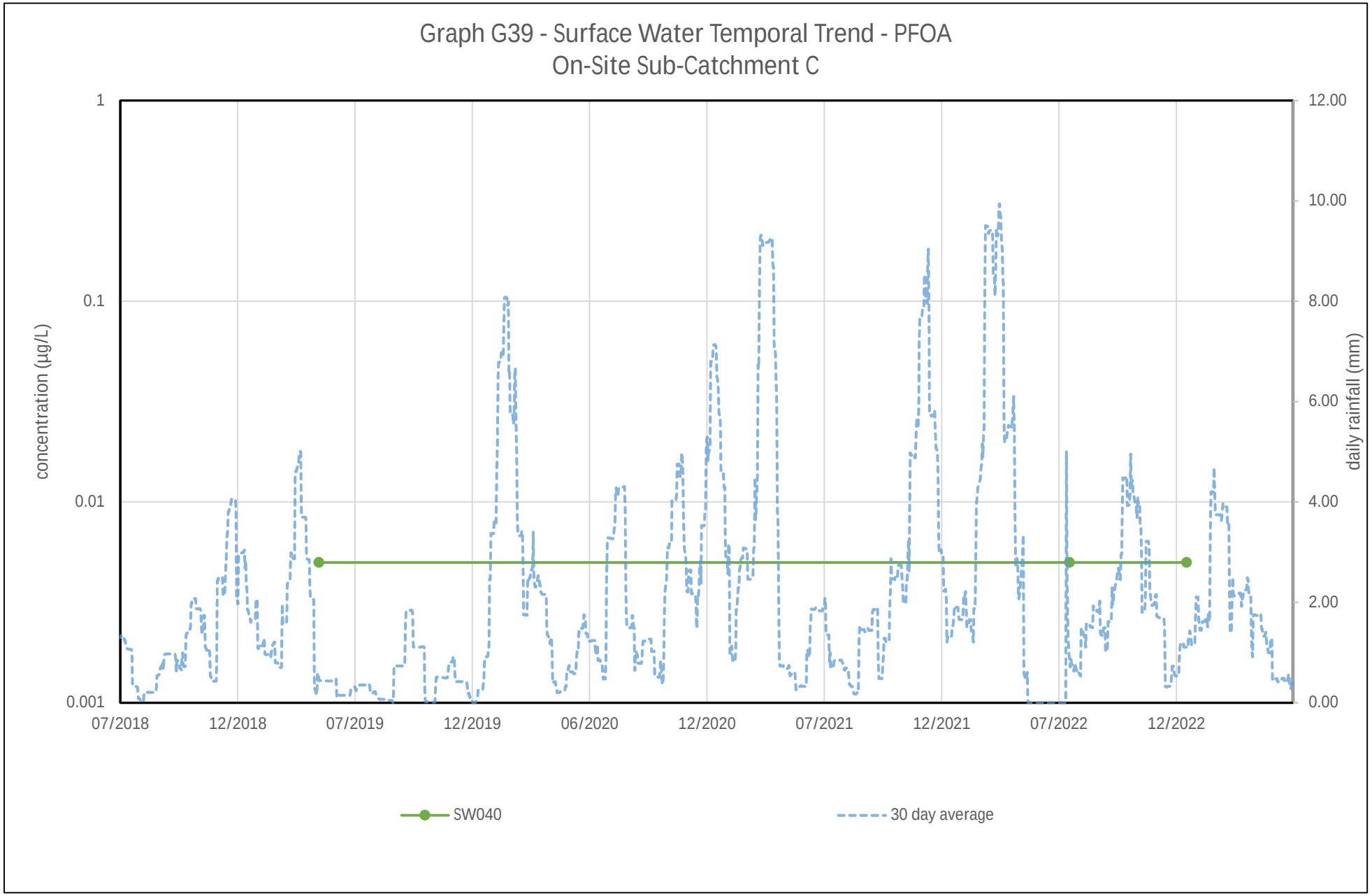

Graph G34 - Surface Water Temporal Trend - PFOS+PFHxS
On-Site Sub-Catchment A
concentration (µg/L)
daily rainfall (mm)
10
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW002
SW003
SW026
SW032
SW034
SW114
30 day average

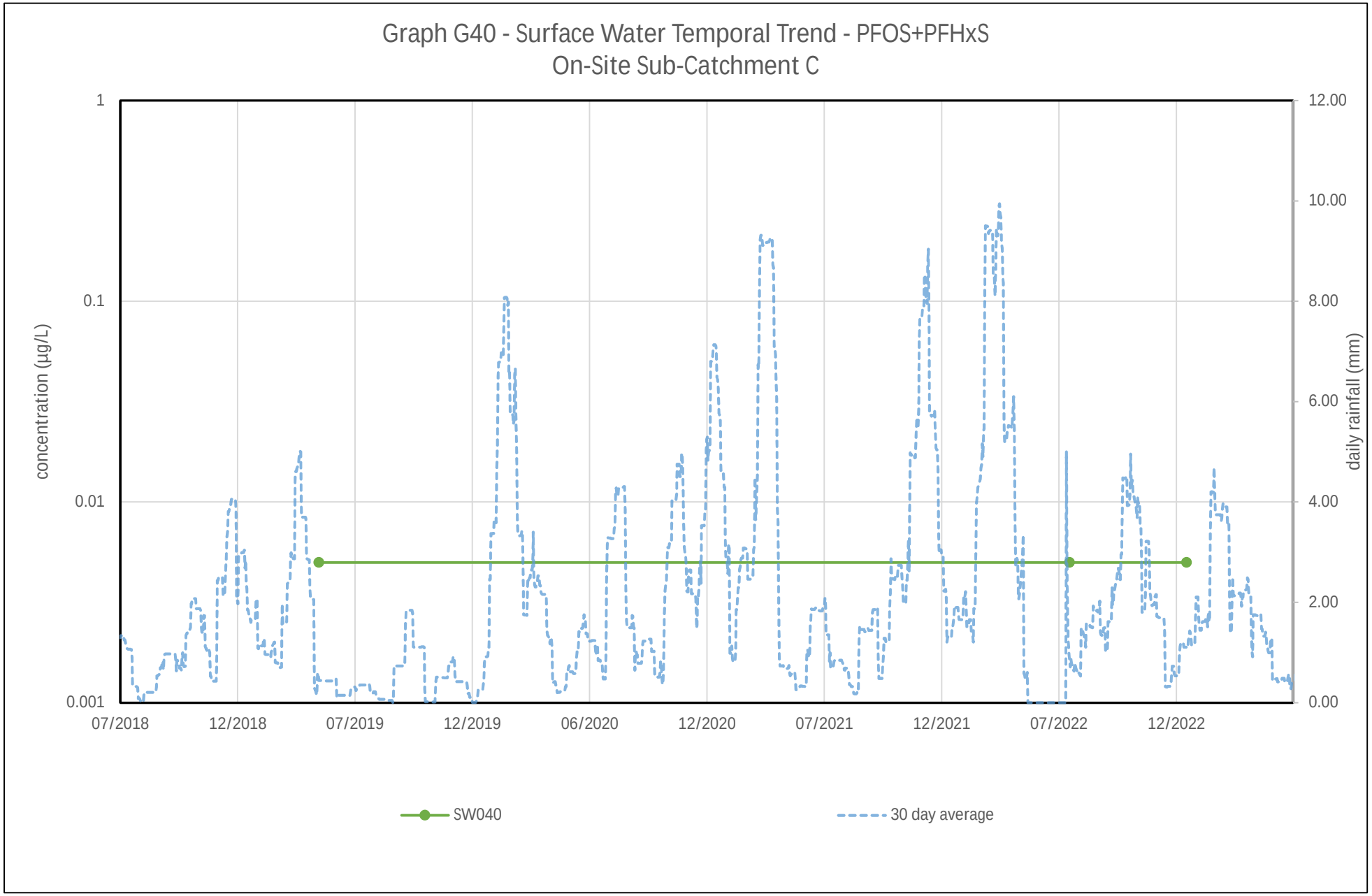

Graph G35 - Surface Water Temporal Trend - PFOA
On-Site Boundary
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW115
SW116
30 day average

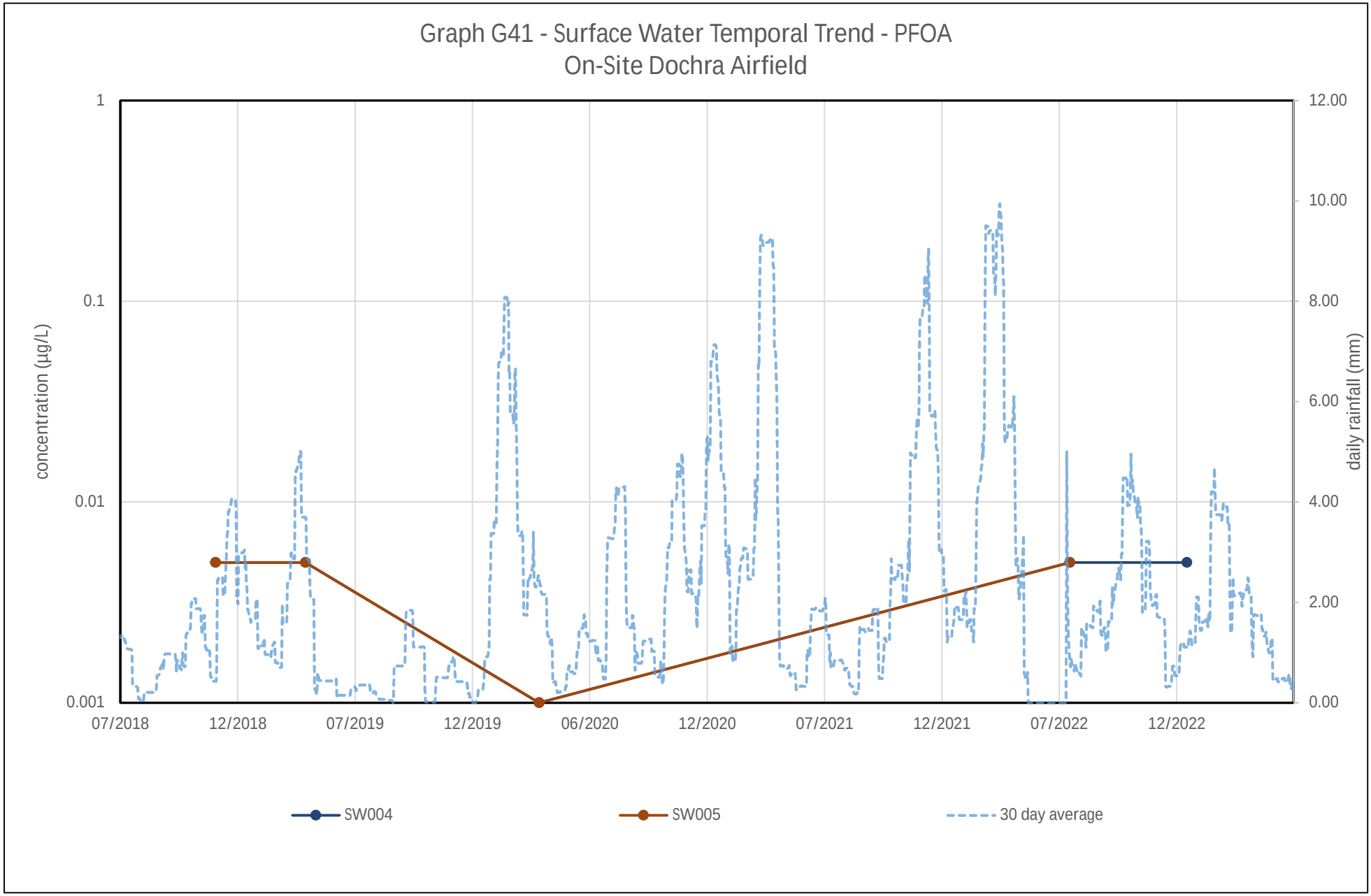

Graph G36 - Surface Water Temporal Trend - PFOS+PFHxS
On-Site Boundary
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW115
SW116
30 day average

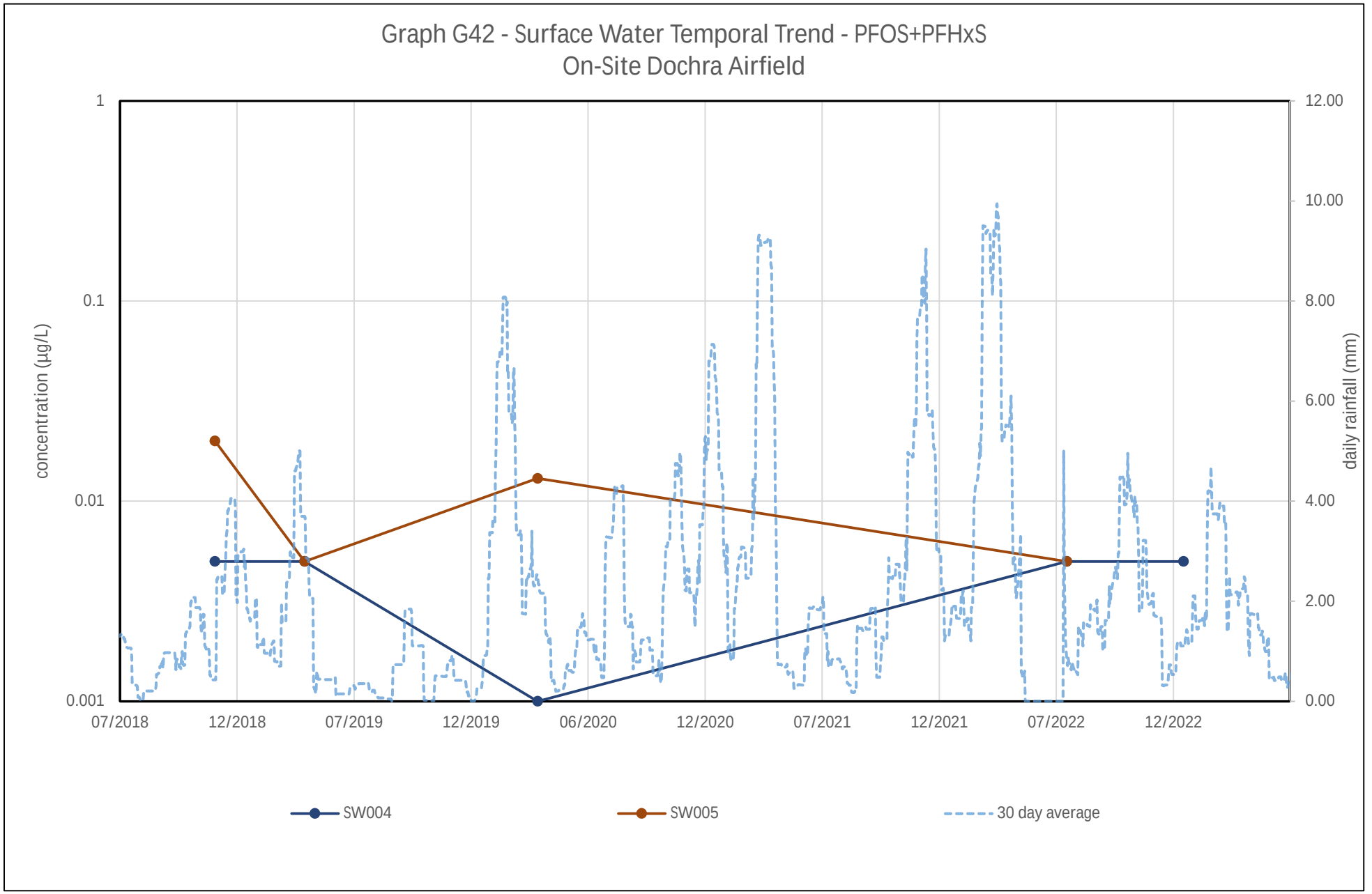

Graph G37 - Surface Water Temporal Trend - PFOA
On-Site Sub-Catchment B
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW028
SW555
30 day average

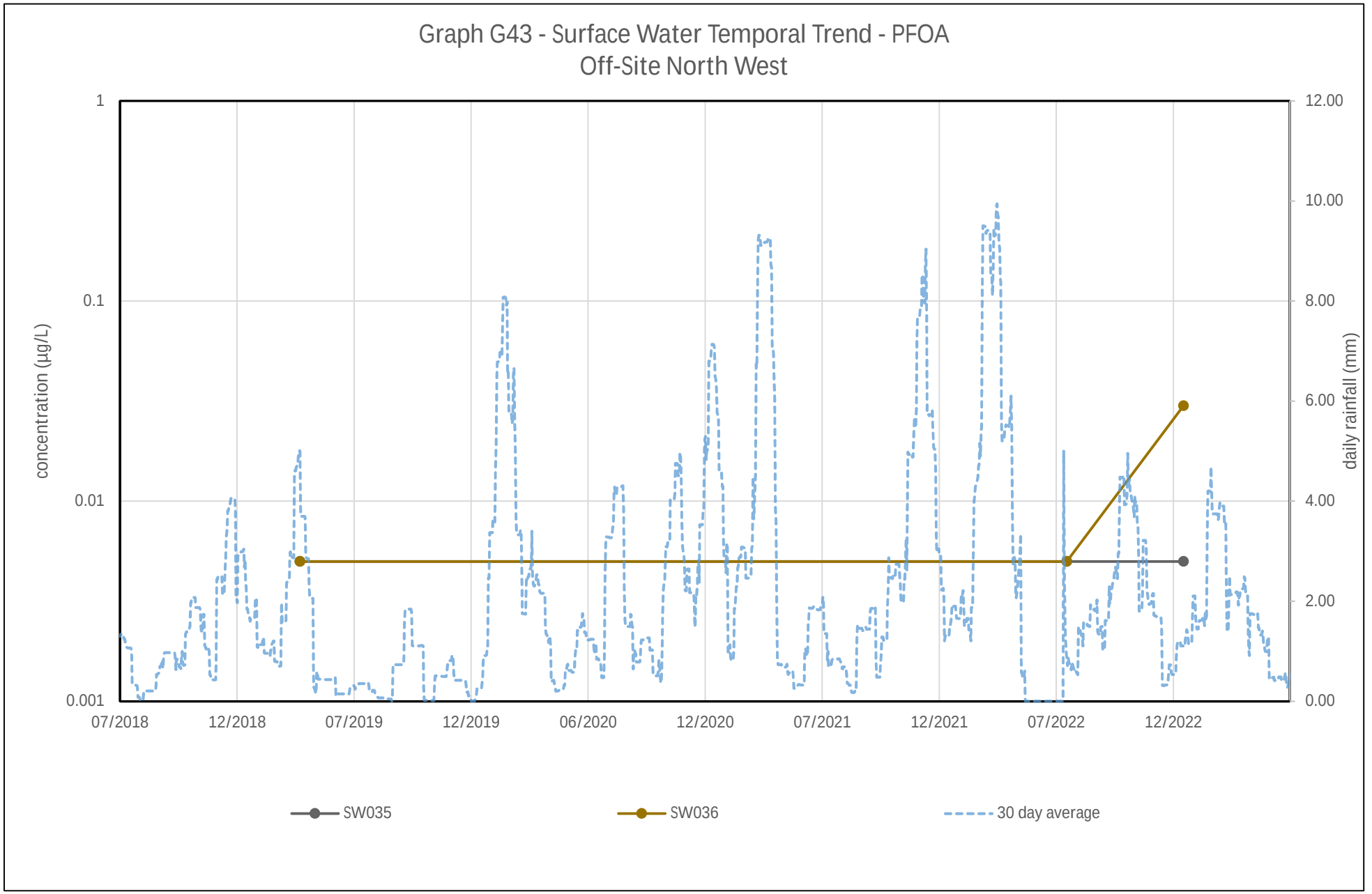

Graph G38 - Surface Water Temporal Trend - PFOS+PFHxS
On-Site Sub-Catchment B
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW028
SW555
30 day average

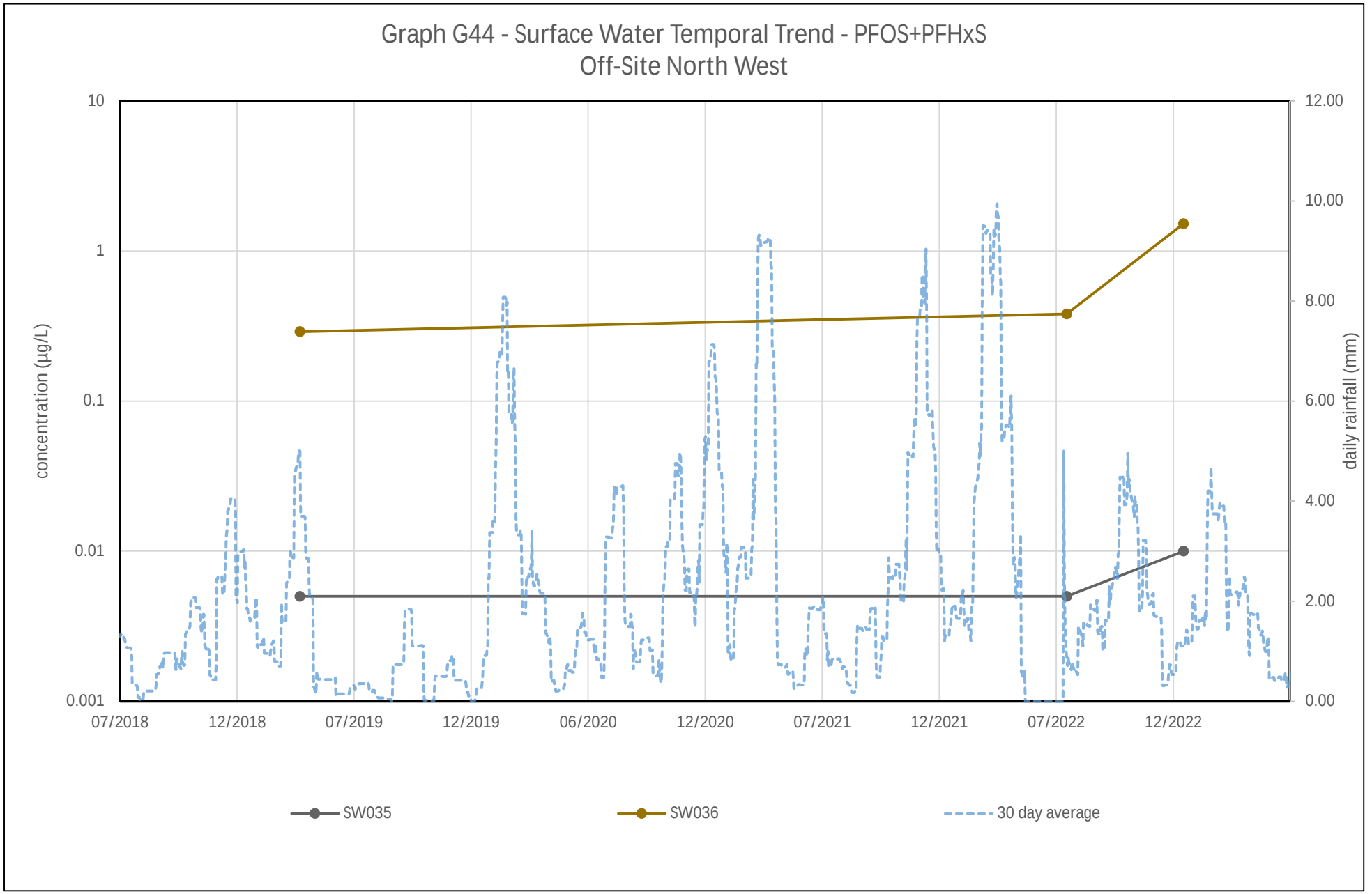

Graph G39 - Surface Water Temporal Trend - PFOA
On-Site Sub-Catchment C
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW040
30 day average

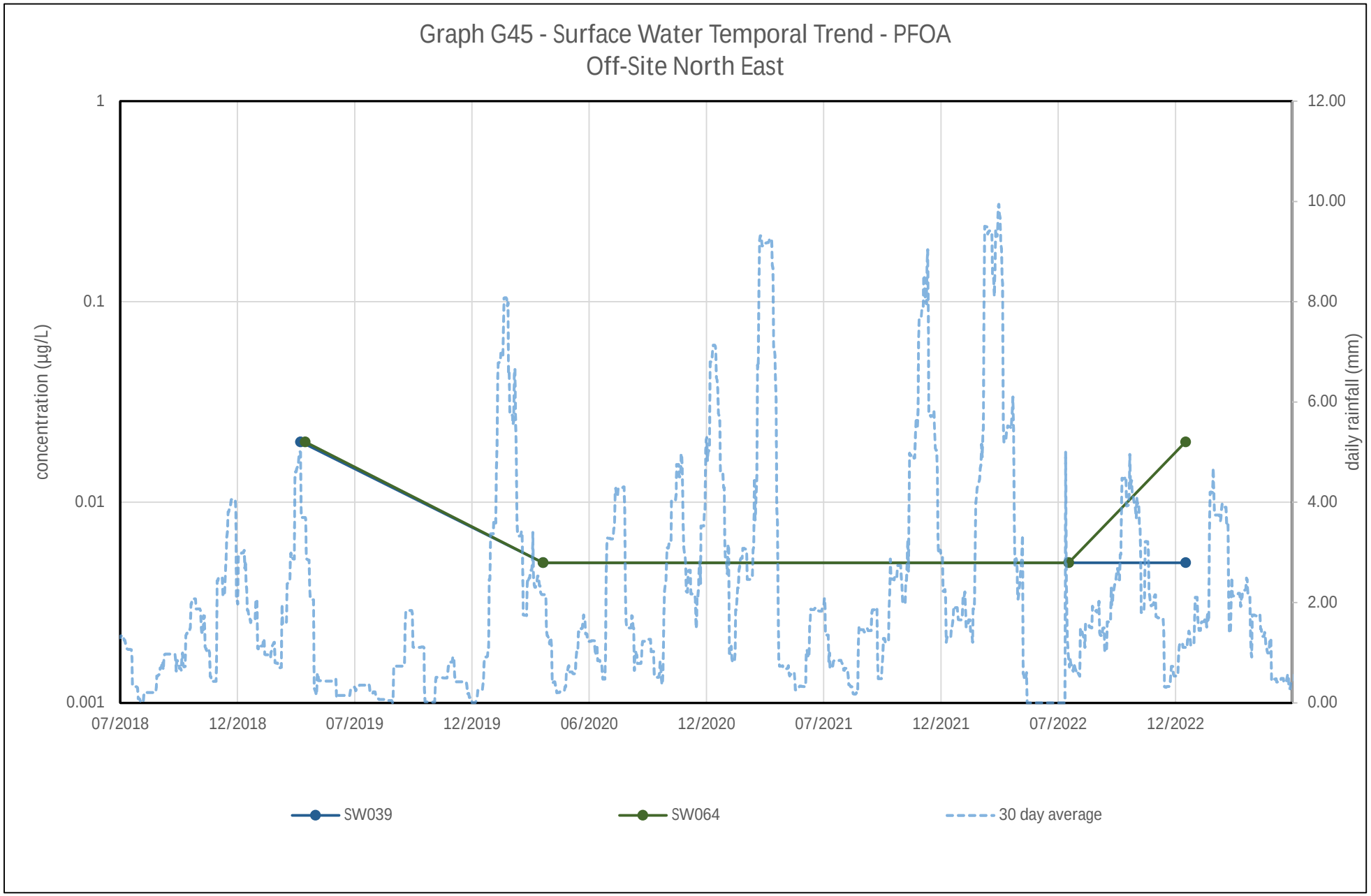

Graph G40 - Surface Water Temporal Trend - PFOS+PFHxS
On-Site Sub-Catchment C
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW040
30 day average

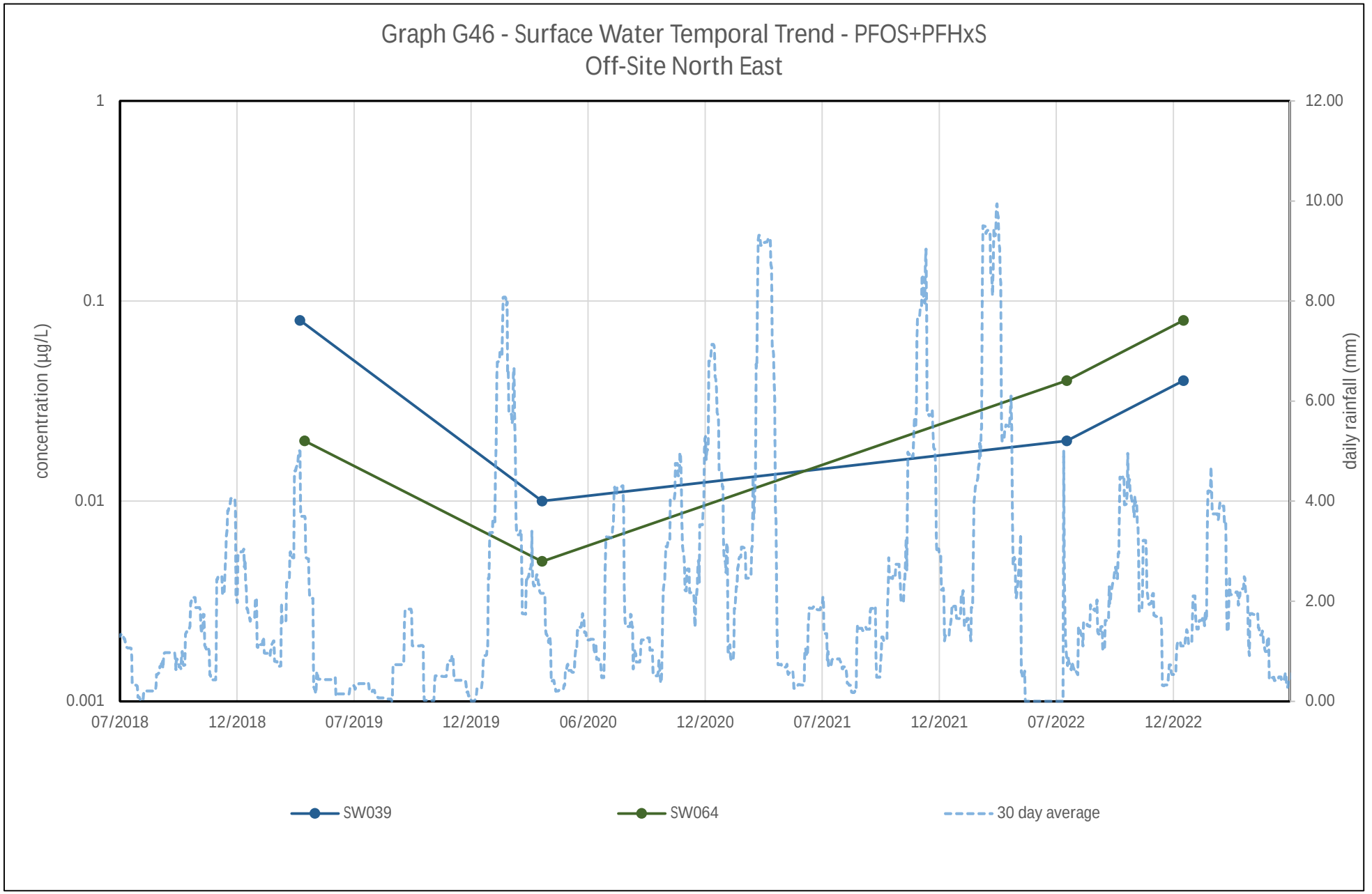

Graph G41 - Surface Water Temporal Trend - PFOA
On-Site Dochra Airfield
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW004
SW005
30 day average

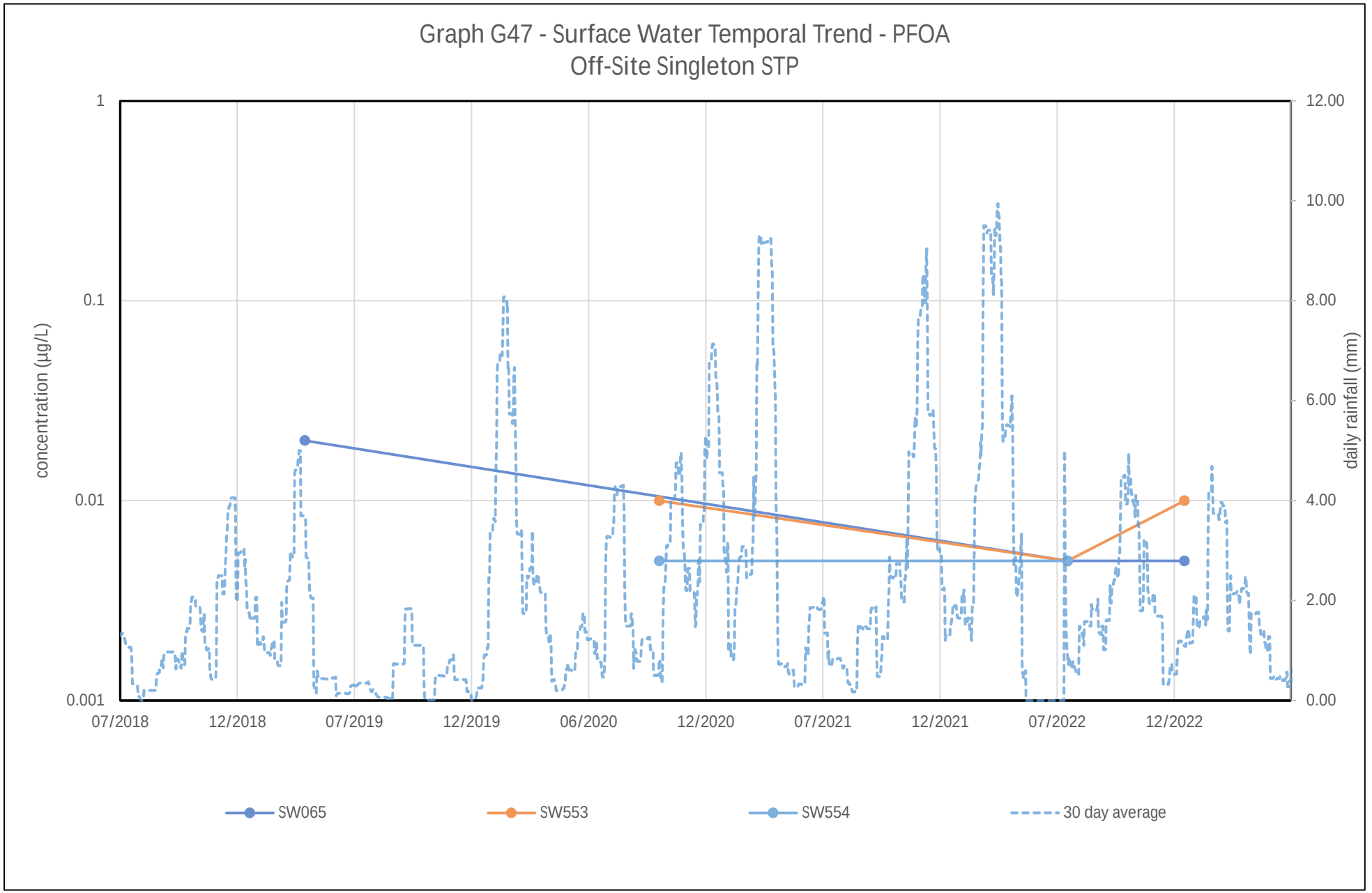

Graph G42 - Surface Water Temporal Trend - PFOS+PFHxS
On-Site Dochra Airfield
concentration (µg/L)
daily rainfall (mm)
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW004
SW005
30 day average

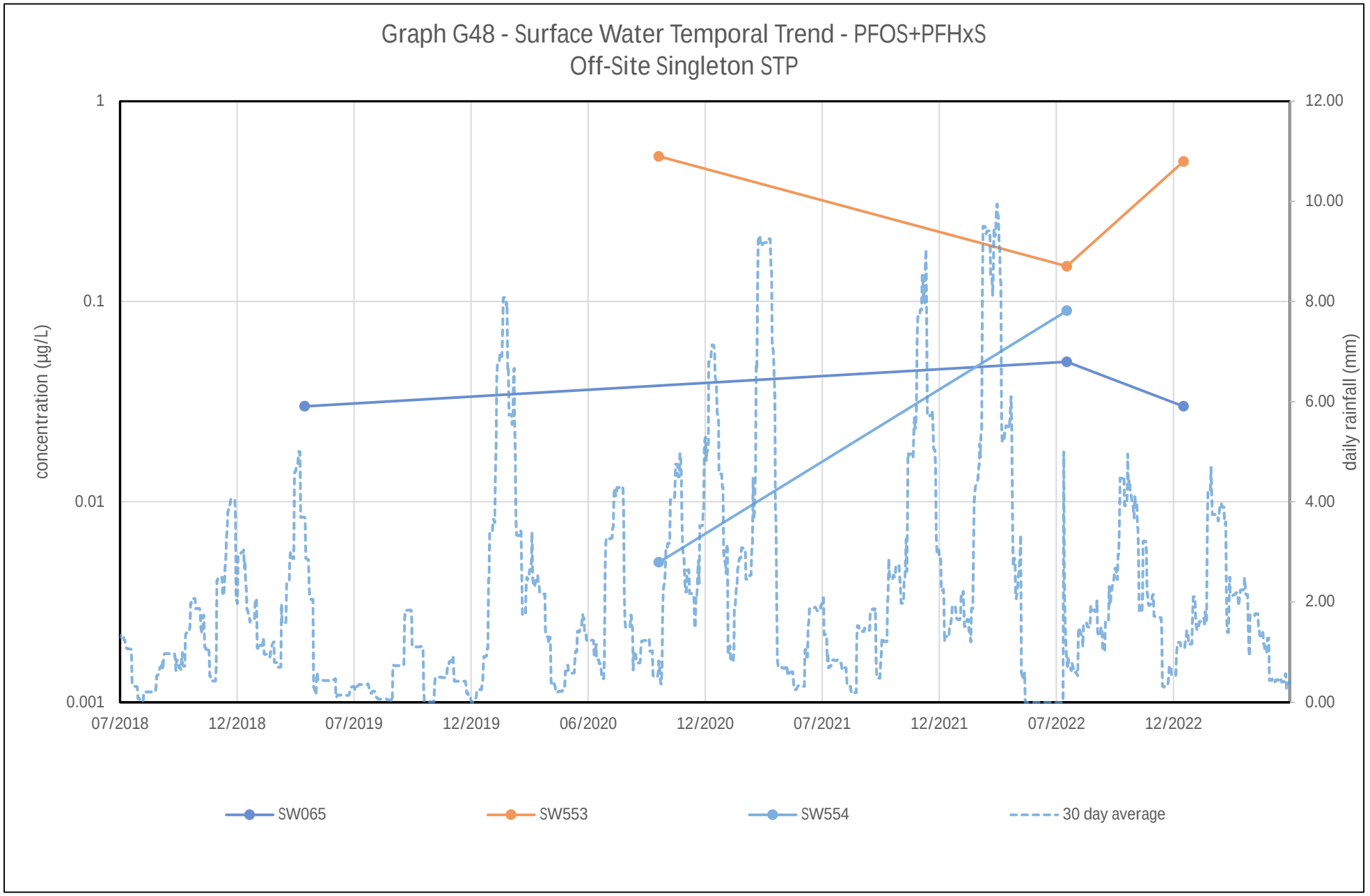

Graph G43 - Surface Water Temporal Trend - PFOA
Off-Site North West
concentration (µg/L)
daily rainfall (mm)
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW035
SW036
30 day average


Graph G44 - Surface Water Temporal Trend - PFOS+PFHxS
Off-Site North West
concentration (µg/L)
daily rainfall (mm)
10
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW035
SW036
30 day average


Graph G45 - Surface Water Temporal Trend - PFOA
Off-Site North East
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW039
SW064
30 day average


Graph G46 - Surface Water Temporal Trend - PFOS+PFHxS
Off-Site North East
concentration (µg/L)
1
0.1
0.01
0.001
daily rainfall (mm)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW039
SW064
30 day average


Graph G47 - Surface Water Temporal Trend - PFOA
Off-Site Singleton STP
concentration (µg/L)
daily rainfall (mm)
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW065
SW553
SW554
30 day average


Graph G48 - Surface Water Temporal Trend - PFOS+PFHxS
Off-Site Singleton STP
concentration (µg/L)
daily rainfall (mm)
1
0.1
0.01
0.001
12.00
10.00
8.00
6.00
4.00
2.00
0.00
07/2018
12/2018
07/2019
12/2019
06/2020
12/2020
07/2021
12/2021
07/2022
12/2022
SW065
SW553
SW554
30 day average

Mann Kendall Analysis

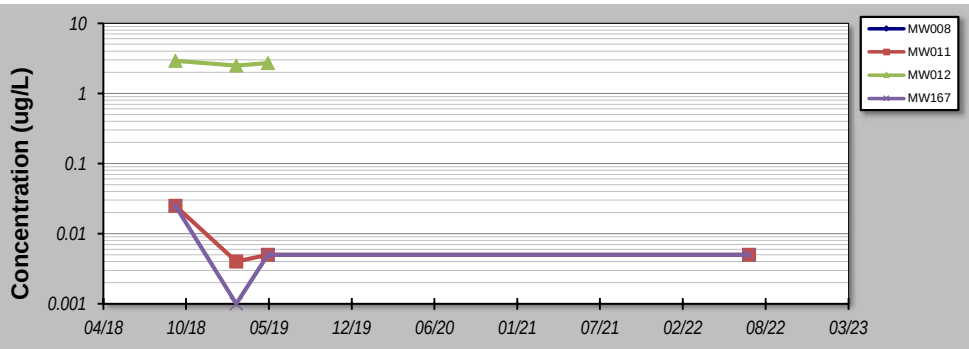
Mann Kendall Analysis - Groundwater
On-Site Former Cantonment FS and FTP

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 3-Nov-23
Facility Name: Singleton Military Area
Conducted By: DDT

Job ID: 60612562
Constituent: PFOA
Concentration Units: ug/L

Sampling Point ID:	MW008	MW011	MW012	MW167			
Sampling Event	Sampling Date	PFOA CONCENTRATION (ug/L)						
1	1/10/2018		0.025	2.91	0.025			
2	25/02/2019		0.004	2.48	0.001			
3	13/05/2019	0.005	0.005	2.71	0.005			
4	18/07/2022	0.005	0.005		0.005			
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	1.04	0.08	1.20			
Mann-Kendall Statistic (S):		0	-1	-1	-1			
Confidence Factor:			50.0%		50.0%			
Concentration Trend:		Not analysed	No Trend	Not analysed	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.

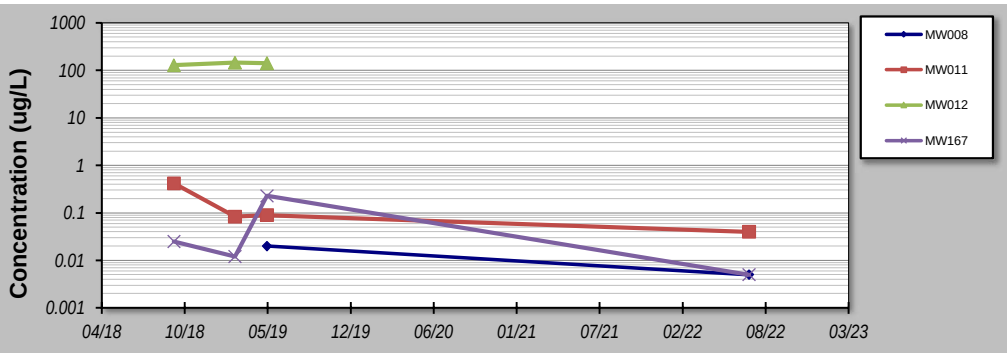
Mann Kendall Analysis - Groundwater
On-Site Former Cantonment FS and FTP

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **3-Nov-23**
Facility Name: **Singleton Military Area**
Conducted By: **DDT**

Job ID: **60612562**
Constituent: **PFHxS+PFOS**
Concentration Units: **ug/L**

Sampling Point ID:	MW008	MW011	MW012	MW167			
Sampling Event	Sampling Date	PFHXS+PFOS CONCENTRATION (ug/L)						
1	1/10/2018		0.42	128.2	0.025			
2	25/02/2019		0.083	145	0.012			
3	13/05/2019	0.02	0.09	142	0.23			
4	18/07/2022	0.005	0.04		0.005			
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.85	1.11	0.06	1.59			
Mann-Kendall Statistic (S):		-1	-4	1	-2			
Confidence Factor:			83.3%		62.5%			
Concentration Trend:		Not analysed	No Trend	Not analysed	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.

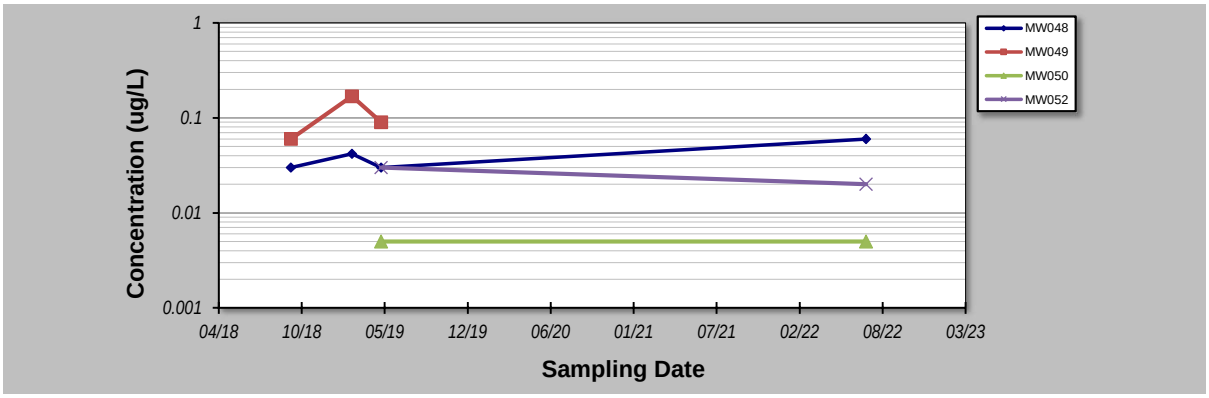
Mann Kendall Analysis - Groundwater
On-Site DNSDC

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **3-Nov-23**
Facility Name: **Singleton Military Area**
Conducted By: **DDT**

Job ID: **60612562**
Constituent: **PFOA**
Concentration Units: **ug/L**

Sampling Point ID:	MW048	MW049	MW050	MW052			
Sampling Event	Sampling Date	PFOA CONCENTRATION (ug/L)						
1	1/10/2018	0.03	0.06					
2	25/02/2019	0.04	0.17					
3	6/05/2019	0.03	0.09	0.01	0.03			
4	18/07/2022	0.06		0.01	0.02			
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.35	0.53	0.00	0.28			
Mann-Kendall Statistic (S):		3	1	0	-1			
Confidence Factor:		72.9%						
Concentration Trend:		No Trend	Not analysed	Not analysed	Not analysed			



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.

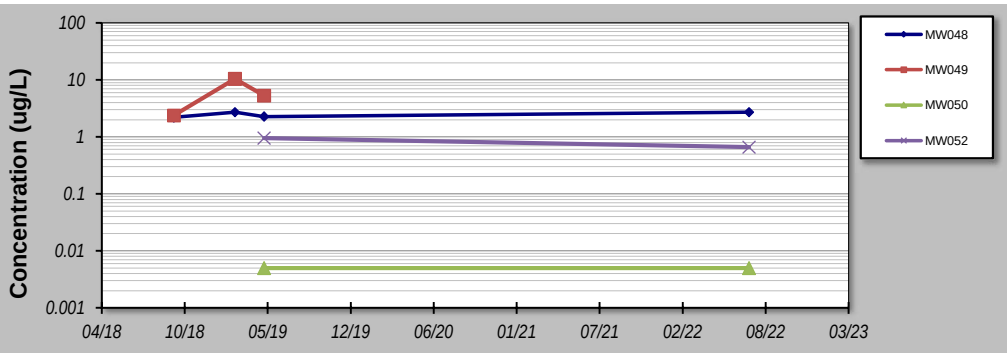
Mann Kendall Analysis - Groundwater
On-Site DNSDC

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **3-Nov-23**
Facility Name: **Singleton Military Area**
Conducted By: **DDT**

Job ID: **60612562**
Constituent: **PFHxS+PFOS**
Concentration Units: **ug/L**

Sampling Point ID:	MW048	MW049	MW050	MW052			
Sampling Event	Sampling Date	PFHXS+PFOS CONCENTRATION (ug/L)						
1	1/10/2018	2.2	2.38					
2	25/02/2019	2.71	10.4					
3	6/05/2019	2.28	5.29	0.005	0.95			
4	18/07/2022	2.7		0.005	0.66			
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.11	0.67	0.00	0.25			
Mann-Kendall Statistic (S):		2	1	0	-1			
Confidence Factor:		62.5%						
Concentration Trend:		No Trend	Not analysed	Not analysed	Not analysed			



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.

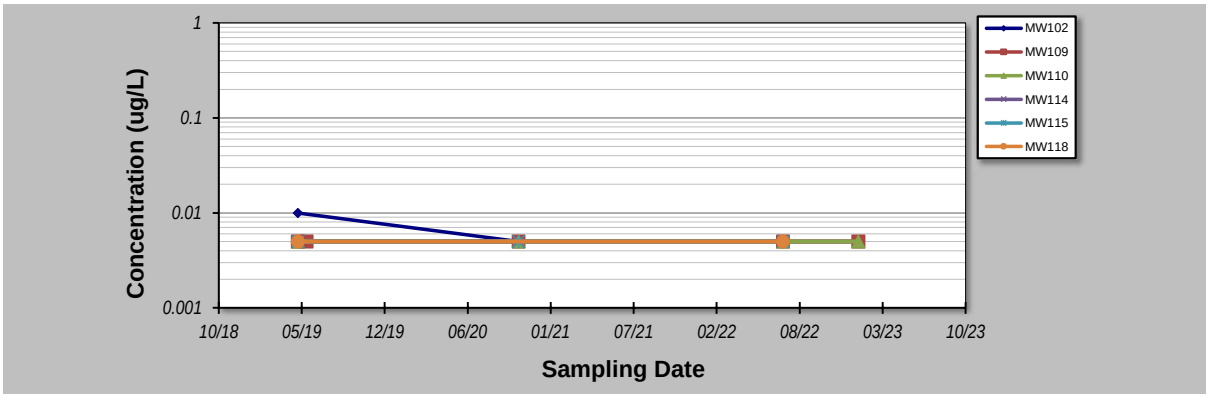
Mann Kendall Analysis - Groundwater
On-Site Northern Boundary

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **3-Nov-23**
Facility Name: **Singleton Military Area**
Conducted By: **DDT**

Job ID: **60612562**
Constituent: **PFOA**
Concentration Units: **ug/L**

Sampling Point ID:	MW102	MW109	MW110	MW114	MW115	MW118	
Sampling Event	Sampling Date	PFOA CONCENTRATION (ug/L)						
1	6/05/2019	0.01	0.005	0.005	0.005	0.005	0.005	
2	27/05/2019		0.005					
3	19/10/2020	0.005	0.005	0.005	0.005	0.005		
4	18/07/2022	0.005	0.005	0.005	0.005	0.005	0.005	
5	16/01/2023	0.005	0.005	0.005				
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.40	0.00	0.00	0.00	0.00	0.00	
Mann-Kendall Statistic (S):		-3	0	0	0	0	0	
Confidence Factor:		72.9%	40.8%	37.5%				
Concentration Trend:		Stable	Stable	Stable	Not analysed	Not analysed	Not analysed	



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.

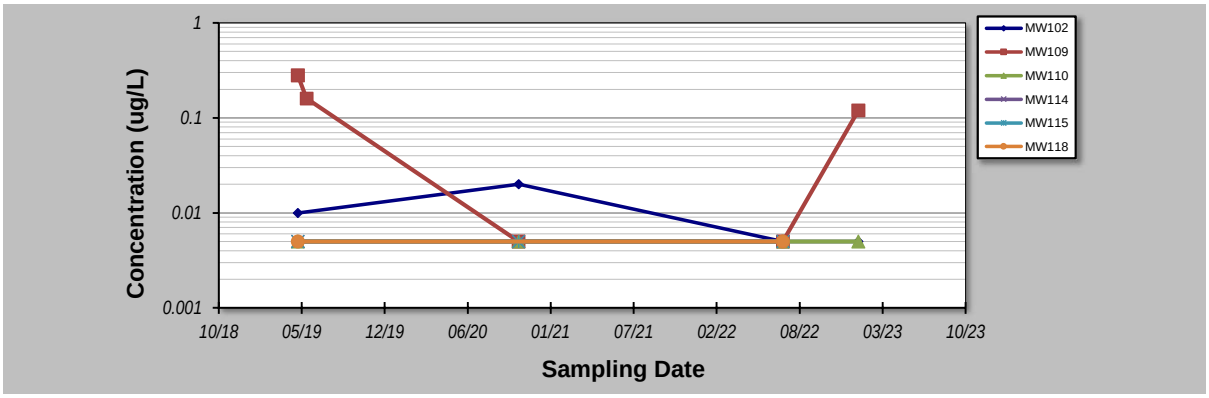
Mann Kendall Analysis - Groundwater
On-Site Northern Boundary

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **3-Nov-23**
Facility Name: **Singleton Military Area**
Conducted By: **DDT**

Job ID: **60612562**
Constituent: **PFHxS+PFOS**
Concentration Units: **ug/L**

Sampling Point ID:	MW102	MW109	MW110	MW114	MW115	MW118
Sampling Event	Sampling Date	PFHXS+PFOS CONCENTRATION (ug/L)					
1	6/05/2019	0.01	0.28	0.005	0.005	0.005	0.005
2	27/05/2019		0.16				
3	19/10/2020	0.02	0.005	0.005	0.005	0.005	
4	18/07/2022	0.005	0.005	0.005	0.005	0.005	0.005
5	16/01/2023	0.005	0.12	0.005			
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Coefficient of Variation:		0.71	1.01	0.00	0.00	0.00	0.00
Mann-Kendall Statistic (S):		-3	-5	0	0	0	0
Confidence Factor:		72.9%	82.1%	37.5%			
Concentration Trend:		Stable	No Trend	Stable	Not analysed	Not analysed	Not analysed



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.

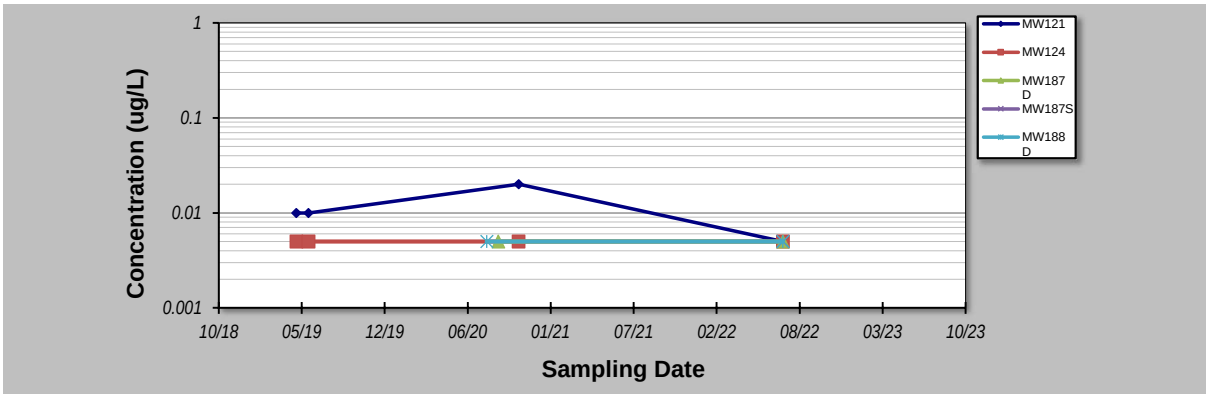
Mann Kendall Analysis - Groundwater
Off-Site North

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **3-Nov-23**
Facility Name: **Singleton Military Area**
Conducted By: **DDT**

Job ID: **60612562**
Constituent: **PFOA**
Concentration Units: **ug/L**

Sampling Point ID:	MW121	MW124	MW187D	MW187S	MW188D		
Sampling Event	Sampling Date	PFOA CONCENTRATION (ug/L)						
1	2/05/2019	0.01	0.005					
2	6/05/2019							
3	13/05/2019							
4	31/05/2019	0.01	0.005					
5	13/04/2020							
6	20/04/2020							
7	25/05/2020							
8	3/08/2020					0.005		
9	31/08/2020			0.005				
10	19/10/2020	0.02	0.005					
11	18/07/2022	0.005	0.005	0.005	0.005	0.005		
12	16/01/2023							
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.56	0.00	0.00		0.00		
Mann-Kendall Statistic (S):		-1	0	0		0		
Confidence Factor:		50.0%	37.5%					
Concentration Trend:		Stable	Stable	Not analysed	Not analysed	Not analysed		



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.

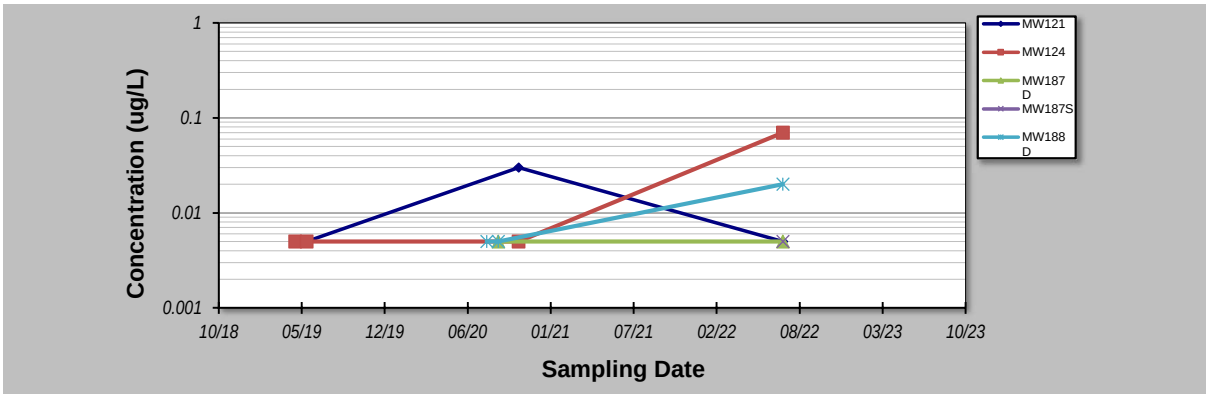
Mann Kendall Analysis - Groundwater
Off-Site North

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **3-Nov-23**
Facility Name: **Singleton Military Area**
Conducted By: **DDT**

Job ID: **60612562**
Constituent: **PFHxS+PFOS**
Concentration Units: **ug/L**

Sampling Point ID:	MW121	MW124	MW187D	MW187S	MW188D		
Sampling Event	Sampling Date	PFHXS+PFOS CONCENTRATION (ug/L)						
1	29/04/2019	0.005	0.005					
2	6/05/2019							
3	13/05/2019							
4	27/05/2019	0.005	0.005					
5	13/04/2020							
6	20/04/2020							
7	25/05/2020							
8	3/08/2020					0.005		
9	31/08/2020			0.005		0.005		
10	19/10/2020	0.03	0.005					
11	18/07/2022	0.005	0.07	0.005	0.005	0.02		
12	16/01/2023							
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		1.11	1.53	0.00		0.87		
Mann-Kendall Statistic (S):		1	3	0		2		
Confidence Factor:		50.0%	72.9%					
Concentration Trend:		No Trend	No Trend	Not analysed	Not analysed	Not analysed		



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.

Appendix D

SAQP

Prepared for
Department of Defence
ABN: 68 706 814 312

Sampling and Analysis Quality Plan

Singleton Lone Pine Barracks (Site ID 0356)

11-Jan-2023
PFAS Ongoing Monitoring ProgramPFAS Ongoing Monitoring Program
Doc No. 20230111_OMP002_SMA_SAQP_Rev 320221222_OMP002_SMA_SAQP_Rev 2

Sampling and Analysis Quality Plan

Singleton Lone Pine Barracks (Site ID 0356)

Client: Department of Defence

ABN: 68 706 814 312

Prepared by

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11-Jan-2023

Job No.: 60612562

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Quality Information

Document Sampling and Analysis Quality Plan

Ref 60612562

Date 11-Jan-2023

Prepared by [redacted]

Reviewed by [redacted]

Revision History

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1	09-Dec-2022	Final		
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3	11-Jan-2023	Final		[redacted]

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1.0 Introduction

1.1 Preamble

AECOM Australia Pty Ltd (AECOM) has prepared this Sampling and Analysis Quality Plan (SAQP) for the implementation of the per- and poly-fluoroalkyl substance (PFAS) Ongoing Monitoring Plan (OMP) at the Singleton Military Area (SMA, hereafter referred to as the "site") Management Area (also referred to as the Former Investigation Area).

The Site and surrounding areas are presented on **Figure F1** in **Appendix A**.

The SAQP supports the OMP (Defence, 2021a) developed as part of the PFAS Management Area Plan (PMAP) (Defence, 2021b) for the SMA Management Area.

The purpose of the OMP program is to collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration, transport (migration pathways and rates) and transformation of PFAS in the SMA Management Area. The OMP (Defence, 2021a) aims to achieve the following:

- an evidence base for targeted and effective risk management of PFAS contamination to protect human health and environmental receptors
- an early indication that additional management of PFAS contamination may be warranted in areas not currently 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, 2021b) throughout the initial three-year implementation period.

1.2 SAQP Objectives

The objectives of this SAQP are to outline the proposed:

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

1.3 Scope of Works

To meet the objectives, the following scope of works are proposed as per the OMP (Defence, 2021a):

- monitor the nature and extent of PFAS impact in groundwater, surface water and sediment in the SMA Management Area
- monitor changes in PFAS in the catchments of the key surface water drainage lines from the Site including Doughboy Hollow Creek, Emigrant Creek and Mudies Creek
- monitor changes in PFAS concentrations in groundwater in and near PFAS source areas on- and off-site
- monitor changes in PFAS concentrations in groundwater along and near the northern boundary of the Lone Pine Barracks (Barracks) (also referred to as the Cantonment) to act as a sentinel system for PFAS migration across the Site boundary
- collect data to further refine the understanding of the contribution of PFAS from the Site to off-site surface water, including the Singleton Sewerage Treatment Plant (STP), and groundwater
- provide supporting data for assessment of management actions, where relevant.

1.4 Guidelines and Legislation

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

- Department of Defence, Contamination Management Manual, 2018 amended June 2021
- Department of Health (DoH), Health Based Guidance Values for PFAS. September 2019
- National Environment Protection (Assessment of Site Contamination) Measure (NEPM), National Environment Protection Council (NEPC), 1999 as amended in 2013
- National Health and Medical Research Council (NHMRC), Guidance on PFAS in Recreational Water. August 2019
- PFAS National Environmental Management Plan (NEMP) Version 2.0, Heads of Environmental Protection Agencies (HEPA), January 2020
- Standards Australia 1998. AS/NZ 5667:1998 Water Quality – Sampling.

2.0 Site Identification

2.1 Study Area Details

The Site is located approximately 8 km south of the township of Singleton, in the vicinity of Newcastle, NSW. The Site comprises the Cantonment and the Singleton Training Area (STA).

The Lone Pine Barracks (the Barracks) house the School of Infantry, Joint Logistics Unit East (Hunter Valley), the Australian Army Infantry Museum, as well as Estate & Infrastructure Group SMA. Support activities undertaken primarily at the Barracks include vehicle maintenance, storage and distribution of fuels and equipment wash-down.

A fire station was operational at the Barracks between 1963 and 1994, and associated activities included historical firefighting training with aqueous film forming foam (AFFF) and equipment maintenance and testing.

The STA is an approximately 15,000 hectare firing range located between the Cantonment (to the north), Brokenback Range (south), the Hunter Vineyards (east), and the Mount Thorley Mine area (west). The STA is comprised of a number of former and active ranges for weapons firing, vehicle training and explosives testing.

The Site, together with the Singleton STP located off-site and the neighbouring properties to the north, north west and north east, form the 'Management Area'.

The PMAP (Defence, 2021b) describe the 'Management Area' as comprising of two distinct areas:

- the on-site Management Area, which included the SMA
- the off-site Management Area, which includes the private properties to the north west, north and north east of the SMA, which fall within the extent of the former investigation area (**Figure F1** in **Appendix A**)

The Site and surrounding areas are presented in **Figure F1** in **Appendix A**.

2.2 Conceptual Site Model

The Conceptual Site Model (CSM) is presented in the PMAP (Defence, 2021b) which summarises the linkages between sources, exposure pathways and receptors identified across the former investigation area (**Figure F1** in **Appendix A**). The PMAP (Defence, 2021b) is based on the assessments of risk exposure pathways presented in the Detailed Site Investigation (DSI) (AECOM, 2019), and then further refined in the DSI Addendum (AECOM, 2021a) and the Human Health and Ecological Risk Assessment (HHERA) (AECOM, 2021b).

3.0 Data Quality Assessment

3.1 Data Quality Objectives

The amended National Environmental Protection Measure (NEPM, Schedule B [2]) Guideline on Site Characterisation (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 seven steps summarised in **Table 1** below:

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 outlined in the OMP (Defence, 2021a), and provided below:

3.1.1 Step 1 – State the Problem

PFAS source areas at the Site are contributing to the presence of PFAS in surface water and to a limited extent groundwater off-site.

Defence and State regulatory agencies require up-to-date data to assess the ongoing nature and extent of PFAS in the management area, assess the performance of implemented management actions and enable informed risk management decisions to protect human health and the environment.

The data collected by implementing this OMP will provide a periodic / longitudinal dataset that can be used to assist with assessment of temporal changes in PFAS concentrations in groundwater and surface water / sediment on- and off-site as well how groundwater and surface water levels respond to natural fluctuations.

The OMP will continue for a nominal period of 3 years and cover the primary implementation period of the PMAP in which PMAP remediation actions (or other short-medium term actions) are likely to be completed. The need for ongoing monitoring following this period will be assessed with advice from NSW Government.

3.1.2 Step 2 – Identify the Goal of the Study

The goal of the study is to establish a systematic routine groundwater and surface water / sediment sampling and analysis program to:

- refine current understanding of the distribution of PFAS in groundwater and surface water/sediment in the Management Area
- monitor changes to PFAS distribution and variability due to management actions and seasonal variations
- collect additional data to inform future management actions.

This will allow decisions to be made regarding the assessment of risks to human and ecological receptors into the future (for example, updating the conceptual site model), and whether the OMP needs to be amended to reflect these updates.

3.1.3 Step 3 – Identify Information Inputs

To allow assessment of the data against the goal of the study listed in Step 2 above, the following inputs will be considered:

- PFAS results[1] from previous environmental investigations including the DSI (AECOM, 2019), DSI Addendum (AECOM, 2021a) and HHERA (AECOM, 2021b), and the residential sampling program
- groundwater and surface water flow regimes identified in the DSI (AECOM, 2019) and DSI Addendum (AECOM, 2021a)
- meteorological data including rainfall
- groundwater, surface water and sediment data collected and analysed for PFAS, as part of this OMP
- advances in laboratory analytical approaches and changes in regulatory requirements.

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 limited to the on-site and off-site Management Area, however, is subject to change with input from the NSW Government
- the sampling completed as part of the OMP will be limited to groundwater, surface water and sediment, at the frequencies defined in **Sections 4.2** and **0**.

The monitoring will be long term (initial period of 3 years) and potentially ongoing, based on review of the data and refinement of the OMP, as appropriate.

3.1.5 Step 5 – Develop the Analytical Approach

The decision rules can be defined as:

Analytical:

- 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
- if the sample / laboratory quality assurance / quality control data are within the acceptable ranges, the data will be considered suitable for use.

Project:

- 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 the Management Area in

[1] Where permission to use the residential sampling data has been obtained from the relevant landowners

surface water and groundwater, and to assist with refinement of Management Area boundary over time, as required

- if PFAS concentrations are reported above the laboratory LOR, where it was previously <LOR, then it will be considered whether further assessment of the data will be required (refer to Table 4-3 of the OMP [Defence, 2021a])
- if the PFAS is reported at a concentration that is above drinking water guideline in groundwater, then it will be considered that further assessment is required and / or notification (refer to Table 4-3 of the OMP [Defence, 2021a])
- if the PFAS is reported at a concentration that is inside a trigger value or acceptable range, then it will be considered whether monitoring is continued or reduced, this assessment will be undertaken after two years of monitoring (refer to Table 4-3 of the OMP [Defence, 2021a]).

3.1.6 Step 6 – Specify Performance or Acceptance Criteria

Specific limits for the works included in the OMP 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 or groundwater 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.
- limitations in ability to acquire useful and representative information from the data collected. The data are proposed to be collected from multiple locations and sample media. Some examples of this scenario include:
  - Some of the data are proposed to be collected from landholder bores, which are not purpose-built for groundwater monitoring. In some cases, there is limited information on the bore construction, and the likely presence of dedicated pumps or windmills may prevent groundwater depths being accurately recorded while also preventing groundwater being sampled using low flow techniques.
- 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.

- laboratories to report quality assurance/ quality control data for comparison with the DQIs established for the OMP.

3.1.7 Step 7 – Optimise the Design for Obtaining Data

The methodology presented in this OMP is designed to meet the 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 in accordance with the NEMP (HEPA 2020), with specific reference to Section 18.5 - *Considerations for Specific Environmental Media*
- basing the sampling upon a CSM developed using the information available at the implementation of the OMP. Updating the CSM as new data becomes available during the course of the implementation of the OMP, as required
- progressive review of the data and modification of sampling programs to optimise the value of data generated.

If the objectives of the OMP are not being met, the sampling design and approach will be reviewed and amended, as required.

The OMP (Defence, 2021a) provides guidance for preparing a SAQP that is required for each monitoring event, including scope of work, sampling methodologies, monitoring locations and PFAS assessment levels. The SAQP was developed in response to the principal study questions outlined in Step 2 and in line with the DQOs.

To maintain the integrity and reliability of data the following measures are to be adopted:

- field and analytical data are collected in accordance with the PFAS NEMP (HEPA, 2020) and the ASC NEPM (NEPC, 2013)
- field personnel should be trained and have sufficient experience to complete the fieldwork to an acceptable standard, as per the protocols outlined in the OMP / SAQP and following standards:
  - Department of Defence *Contamination Management Manual* (March 2018, Amended June, 2021)
  - Standards Australia (AS/NZS5667.11–1998) *Water Quality – Sampling, part 11: Guidance on sampling of groundwater*
- robust field and laboratory quality assurance/quality control protocols are adopted, including implementing suitable fieldwork procedures, and ensuring that sample handling, and transport to and processing by the analytical laboratories is appropriate
- use laboratories that are NATA accredited for PFAS analysis and ensure laboratory LORs are suitable to meet the relevant adopted assessment levels, where possible
- conducting sampling in accordance with AECOM's internal PFAS Sample Collection Guidance
- sampling conducted by suitably qualified and experienced field staff who have completed AECOM's internal PFAS 101 Training
- continually seeking to identify opportunities for refinement and optimisation of the OMP, including, but not limited to, identifying redundant locations that can be excluded from the monitoring program. This will be achieved through a review of the SAQP prior to each OMP sampling event across the three-year primary implementation period.

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
- 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 provided in **Table 2**.

Table 2 Acceptance Criteria for Data Quality Indicators for Sample Analysis

Data Quality Indicators	Acceptance Criteria
Water and Sediment Samples	
Field Program	Sampling to be completed by suitably qualified and experienced field teams employing appropriate sampling procedures.
Rinsate Samples	Rinsate samples are to be collected at a rate of one per day of sampling (where sampling equipment is reused) with concentrations of PFAS to be less than the laboratory LOR.
Field duplicates/Inter-lab duplicates	Field duplicates and inter-laboratory duplicates are to be collected and analysed at a rate of 10% (1 per 10 primary samples). The relative percentage difference (RPD) 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 between 10 and 20 times the LOR and the RPD is less than 50% • heterogeneous materials are encountered.
Laboratory duplicates	The RPD will be assessed as acceptable based on the magnitude of the result: • 0-20% for results more than 20 times the LOR • 0-50% for results between 10 and 20 times the LOR • No limit for results between 0 and 10 times the LOR
Matrix spikes	Recoveries between 70-130% of the theoretical recovery or as nominated in the laboratory's Quality Control report.
Method blanks	Less than the laboratory LOR.
Laboratory control samples	Recoveries between the laboratory-specified range for each particular analyte/analytical suite.

4.0 Sampling Location Methodology

4.1 OMP

The OMP (Defence, 2021a) 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 (Defence, 2021a).

4.2 Proposed Schedule

The OMP (Defence, 2021a) outlines the monitoring, as follows:

- Groundwater, surface water and sediment sampling from across the Management Area will be undertaken on a biannual (six-monthly) basis for an initial period of 3 years with selected locations sampled either biannually, annually (once per year) or biennially (every second year), as per the requirements of the OMP (Defence, 2021a)
- Groundwater monitoring will include sampling over a period of three years comprising:
  - biannual monitoring of four well locations (MW102, MW104, MW109, MW110) at the northern Cantonment boundary for the first year. If results are comparable to those reported at these locations in the DSI (AECOM, 2019) and DSI Addendum (AECOM, 2021a), the monitoring frequency may revert to an annual frequency.
  - annual monitoring of wells at:
    - three on-site locations (MW114, MW115 and MW118) at the northern Cantonment boundary; and
    - 12 off-site locations (MW056, MW121, MW124, MW126, MW128, MW129, MW132, MW139, MW187D, MW187S, MW188D, MW188S) near the northern Cantonment boundary.
  - biennial (every other year) monitoring of 11 well locations (MW048, MW049, MW050, MW052, MW008, MW011, MW167, MW059, MW063, MW071, MW073) at PFAS source areas including; the DNSDC Compound, Former Fire Station, Helicopter Landing Ground and Dochra Airfield.
- Surface water monitoring will include biannual monitoring events at the selected 21 locations, scheduled to capture the wetter portion of the year (spring-summer) and drier portion of the year (autumn-winter)
- Sediment monitoring will include biannual monitoring events at the selected 20 locations
- At the completion of the initial three-year implementation period, the available data should be reviewed and evaluated to determine if the frequency of monitoring should increase or decrease to provide a better understanding of PFAS concentration fluctuations and changes to risk profile.

The initial biennial monitoring event is scheduled to be completed in July 2022. The proposed schedule of fieldwork across the initial three-year period is presented in **Table 3** below. The locations to be monitored during the initial three-year implementation period are listed in **Section 0**, together with the relevant OMP event under which they are planned to be sampled.

Table 3 Proposed Fieldwork Schedule

Sampling Round No.	Year	Description of works	Proposed Schedule
1	1	Biennial (including biannual and annual) sampling of groundwater, surface water and sediment	July 2022
2	1	Biannual sampling of groundwater, surface water and sediment	January 2023
3	2	Annual (including biannual) sampling of groundwater, surface water and sediment	July 2023
4*	2	Biannual sampling of groundwater, surface water and sediment	January 2024
5	3	Biennial (including biannual and annual) sampling of groundwater, surface water and sediment	July 2024
6*	3	Biannual sampling of groundwater, surface water and sediment	January 2025

* the requirement to complete biannual groundwater monitoring at the Northern Cantonment Boundary during years two and three of the OMP will be re-assessed following the completion of the initial implementation period in year one.

4.3 Sample Locations

4.3.1 Groundwater Sampling Locations

The groundwater locations to be monitored during the initial three-year implementation period are provided in **Table 4** below and are presented on **Figure F2** in **Appendix A**.

Table 4 Groundwater Sample Locations

Area	Location ID	Historical Name	Easting	Northing	Top of Casing (TOC) Elevation (m AHD)	Screen Interval (mbgl)	OMP Event
On-site: Northern Cantonment Boundary	MW102*	GW02D	328357.02	6391396.84	46.82	12.5 - 15.5	Biannual, annual, biennial
	MW104*	GW02S	328357.84	6391395.38	46.72	10 - 13	Biannual annual, biennial
	MW109*	GW03D	328780.99	6391520.8	45.1	24.5 - 30	Biannual annual, biennial
	MW110*	GW03S	328783.65	6391520.88	45.4	11.5 - 14	Biannual annual, biennial
	MW114	GW04D	329111.47	6391472.18	45.9	23.5 - 29.5	Annual, biennial
	MW115	GW04S	329113.35	6391472.09	45.86	11 - 14	Annual, biennial
	MW118	GW05S	329361.85	6391140.79	52.72	unknown	Annual, biennial
On-site: DNSDC Compound	MW048	CNN0039_GW01/CNN0039_GW001	328689.336	6390760.26	69.11	4 - 7	Biennial
	MW049	CNN0039_GW02/CNN0039_GW002	328714.567	6390735.258	69.76	2.7 - 8.7	Biennial
	MW050	CNN0039_GW03	328696.53	6390962.71	64.4	12.5 - 16	Biennial
	MW052	CNN0039_GW05	328737.46	6390684.35	72.05	0.8 - 3.8	Biennial
On-site: Former Fire Station	MW008	CNN0018_GW08	328347.54	6390164.94	74.1	11 - 14	Biennial
	MW011	CNN0018_GW02/CNN0018_GW002	328364.794	6390053.977	74.13	8.5 - 11.5	Biennial
	MW167	CNN0230_GW01	328371.408	6390221.55	72.65	14.5 - 20.5	Biennial
On-site: Helicopter Landing Ground	MW059	HLG_GW03	327894.5	6389726.64	61.14	2 - 4	Biennial

Area	Location ID	Historical Name	Easting	Northing	Top of Casing (TOC) Elevation (m AHD)	Screen Interval (mbgl)	OMP Event
On-site: Dochra Airfield	MW063	NSW1164_MW001D/NSW1164_MW01D	332153.951	6386921.677	42.88	16 - 19	Biennial
	MW071	NSW1164_MW03D/NSW1164_MW003D	331897.4	6386665.65	47.87	23.5 - 29.5	Biennial
	MW073	NSW1164_MW03S	331897.22	6386665.82	47.91	7 - 10	Biennial
Off-site: North of Site	**MW121**	GW06/GW06S	328989.26	6392517.07	39.82	9.5 - 12.5	Annual, biennial
	MW126	GW08S	328381.64	6391612.96	42.78	10.5 - 13.5	Annual, biennial
	MW132	RESI_GW011	329638.882	6393668.308	unknown	unknown	Annual, biennial
	MW187D	MW09D	329563.18	6392244.65	40.23	18.7 - 24.7	Annual, biennial
	MW187S	MW09S	329561.72	6392241.52	40.4	7 - 10	Annual, biennial
	MW188D	MW10D	329045.14	6391822.39	41.25	24 - 30	Annual, biennial
	MW188S	MW10S	329040.46	6391823.13	41.12	8 - 11	Annual, biennial
Off-site: North East of Site	**MW056**	GW12, MW12S	331479.8	6391318.41	34.71	5.3 - 8.3	Annual, biennial
	MW124	GW07/GW07S	330106.13	6391974.53	38.68	9.4 - 13.8	Annual, biennial
	MW129	GW10S	331369.75	6392682.45	37.95	9 - 12	Annual, biennial
	MW139	RESI_GW013/RESI_GW13	330240.865	6392827.531	unknown	unknown	Annual, biennial
Off-site: North West of Site	**MW128**	GW09S	327641.43	6391446.15	44.08	9.2 - 12.2	Annual, biennial

Notes: Location / Well details sourced from Defence Esdat database (coordinates from AECOM Esdat database for private locations).
Bold denotes a residential/private property sampling location

*the requirement to complete biannual monitoring at the Northern Cantonment Boundary during years two and three of the OMP will be re-assessed following the completion of the initial implementation period in year one.

4.3.2 Surface Water Sampling Locations

The surface water locations to be monitored during the initial three-year implementation period are provided in **Table 5** below and are presented on **Figure F3** in **Appendix A**.

Table 5 Surface Water Sampling Locations

Area	Location ID	Historical Name	Easting	Northing	OMP Event
On-site: Northern Cantonment Boundary (Sub-catchment A)	SW002	SW002	328729.259	6390973.807	Biannual, annual, biennial
	SW003	SW003	328859.222	6390001.096	Biannual, annual, biennial
	SW026	SMA13_SW	328164.578	6390625.598	Biannual, annual, biennial
	SW032	SW032	328530.667	6390352.491	Biannual, annual, biennial
	SW034	SMA8_SW	328312.374	6391404.917	Biannual, annual, biennial
On-site: Northern Cantonment Boundary	SW115	-	328672.762	6391497.564	Biannual, annual, biennial
On-site: Central Cantonment (Sub-catchment B)	SW028	SMA7_SW	327647.549	6389841.745	Biannual, annual, biennial
	SW555	-	329034.221	6388589.839	Biannual, annual, biennial
On-site: Southern Cantonment (Sub-catchment C)	SW040	SW040	327490.162	6388869.22	Biannual, annual, biennial
	SW116	-	329813.515	6389737.446	Biannual, annual, biennial
	SW114*	-	329385.819	6389104.052	Biannual, annual, biennial
On-site: Dochra Airfield	SW004	SW004	332770.588	6387095.299	Biannual, annual, biennial
	SW005	SW005	331911.32	6387184.041	Biannual, annual, biennial
Off-site: North of Site (Doughboy Hollow Creek Catchment)	**OTH006**	OTH006	328776.9	6392588.58	Biannual, annual, biennial
	SW036	RESI_SW036	328283.548	6391592.424	Biannual, annual, biennial
	SW064	RESI_SW041	330082.089	6392148.842	Biannual, annual, biennial
	SW065	RESI_SW042	329593.76	6392925.915	Biannual, annual, biennial
	SW553	SW553	329062.999	6392521.595	Biannual, annual, biennial
	SW554	SW554	329134.3	6392887.5	Biannual, annual, biennial
Off-site: East of Site (Doughboy	**SW039**	RESI_SW039	331790.936	6390941.993	Biannual, annual, biennial

Area	Location ID	Historical Name	Easting	Northing	OMP Event
Hollow Creek Catchment)					
Off-site: West of Site (Doughboy Hollow Creek)	**SW035**	RESI_SW035	327551.145	6391459.49	Biannual, annual, biennial

Notes: Location details sourced from Defence Esdat database (coordinates from AECOM Esdat database for private locations).
Bold denotes a residential/private property sampling location

4.3.3 Sediment Sampling Locations

The sediment locations to be monitored during the initial three-year implementation period are provided in **Table 6** below and are presented on **Figure F3** in **Appendix A**.

Table 6 Sediment Sampling Locations

Area	Location ID	Historical Name	Easting	Northing	OMP Event
On-site: Northern Cantonment (Sub-catchment A)	SD002	SD002	328729.259	6390973.807	Biannual, annual, biennial
	SD003	SD003	328863.483	6390010.018	Biannual, annual, biennial
	SD032	SD032	328530.667	6390352.491	Biannual, annual, biennial
	SD053	SMA13_SD	328164.578	6390625.598	Biannual, annual, biennial
	SD065	SMA8_SD	328320.652	6391418.74	Biannual, annual, biennial
On-site: Northern Cantonment Boundary	SD115	-	328672.762	6391497.564	Biannual, annual, biennial
On-site: Central Cantonment (Sub-catchment B)	SD055	SMA7_SD	327647.549	6389841.745	Biannual, annual, biennial
	SD555	-	329034.221	6388589.839	Biannual, annual, biennial
On-site: Southern Cantonment (Sub-catchment C)	SD040	SD040	327490.162	6388869.22	Biannual, annual, biennial
	SD116	SD116	329813.515	6389737.446	Biannual, annual, biennial
	SD114	-	329385.819	6389104.052	Biannual, annual, biennial
On-site: Dochra Airfield	SD004	SD004	332768.77	6387094.72	Biannual, annual, biennial
	SD005	SD005	331936.67	6387252.51	Biannual, annual, biennial
Off-site: North of Site	**SD046**	RESI_SD041	330082.089	6392148.842	Biannual, annual, biennial
	SD047	RESI_SD042	329593.76	6392925.915	Biannual, annual, biennial

Area	Location ID	Historical Name	Easting	Northing	OMP Event
	SD080	RESI_SD013	328285.862	6391596.373	Biannual, annual, biennial
	SD539	SD539	329062.999	6392521.595	Biannual, annual, biennial
	SD540	SD540	329134.3	6392887.5	Biannual, annual, biennial
Off-site: East of Site	**SD039**	RESI_SD039	331790.936	6390941.993	Biannual, annual, biennial
Off-site: West of Site	**SD052**	RESI_SD035	327551.145	6391459.49	Biannual, annual, biennial

Notes: Location details sourced from Defence Esdat database (coordinates from AECOM Esdat database for private locations).
Bold denotes a residential/private property sampling location

4.4 Sample Collection and Handling

4.4.1 Sampling Methodology

The sampling methodology is presented in **Table 7**.

Table 7 Sampling Methodology

Item	Details
Groundwater gauging	The depth to groundwater will be measured in each monitoring well prior to collection of groundwater samples in accordance with Australian guidance and industry standards. A comprehensive gauging round of all locations being sampled during an event will be conducted prior to groundwater sampling to enable groundwater contours to be developed. The depth to groundwater will also be measured at the time of sampling at each location.
Groundwater Sample Collection Methodology	**Groundwater Monitoring Wells** Groundwater samples will be collected from monitoring wells using no-purge methodology with PFAS-free HydraSleeves™ which will be installed within the screened interval of the wells a minimum of 24 hours prior to sampling for the initial sampling round. HydraSleeves™ are to be installed within the well screen interval, a minimum of 0.5 m from the base of the well. Refer to **Appendix B** for HydraSleeve™ target installation depths. In the event that a HydraSleeve™ fails to deploy or has been removed inadvertently (i.e. by non-OMP project), the sample will be collected using a dedicated PFAS-free disposable bailer. Once sampling is completed, new HydraSleeves™ will be deployed at the screened interval depth in preparation for the next scheduled sampling round. Hydrasleeve™ sampling will be completed in accordance with the manufacturer's guidance. **Residential/Private Bores** Bore water samples will be collected by placing the laboratory provided sample bottle beneath the tap outlet and the tap slowly opened to collect the "first flush" of water or by low flow groundwater sampling methodology using a peristaltic pump, micro purge pump or disposable bailer. Bore construction details will be obtained for the private bores, where available, from the stakeholder. Additionally, permission will be requested from the stakeholder to access the bore to survey bore top of casing to enable accurate measurement of bore depth and standing water level. It is likely that bore connections will need to be removed to measure bore and groundwater depth. If a private bore is not accessible to gauge, it will be noted in the report.
Surface water Sample Collection Methodology	Surface water samples will be collected in accordance with Australian guidance and industry standards. Samples will be collected immediately below the water surface (approximately 10 cm below the surface water level, where depth permits) to minimise collection of sediment, surface film or floating materials in the samples. At each location, a new, laboratory supplied container should be lowered into the water with the cap immediately applied once the container is full. Where sampling points cannot be accessed safely, surface water samples will be collected with use of a PFAS-free stainless steel sampling pole. For completeness, a description of each sampling location will be recorded (including physical setting, flow observations, presence of sheen of foam etc).

Item	Details
Effluent Waste Water Sample Collection Methodology	Sample OTH006 will be collected from the in-flow effluent waste water pipe beneath the STP pump house. The sample will be collected using a dedicated disposable bailer lowered through an access hatch in the base of the pump house. The sample will be collected directly into a new, laboratory supplied container with the cap immediately applied once the container is full. A description of the sampling location will be recorded (including physical setting, flow observations, presence of sheen of foam etc).
Sediment Sample Collection Methodology	Sediment samples representative of potentially deposited sediments to be collected from within the water body, if possible. Where embankment stability and surface water depth permits, sediment samples will be collected using a PFAS-free stainless steel hand trowel to a maximum depth of 0.3 metres below ground level (mbgl). Where access to sediment is restricted by bank instability or the presence of surface water, samples will be collected using a Dormer Piston Sediment Sampler. A new laboratory supplied container will be used at each location for collection of samples. For completeness, a description of each sampling location will be recorded.
QA/QC Samples to be Collected	Field QA/QC samples are to include intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. blind and split duplicates), as well as rinsate blank samples. AECOM will collect extra sample volume to enable the laboratories to complete their internal QA/QC analysis. AECOM personnel will attempt to reduce potential heterogeneity in the sample media matrix by dividing the sample collected between primary and intra-laboratory jars or bottles during sampling.
Field Parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality will be recorded for all groundwater and surface water samples, including: • physical indicators such as the presence (and approximate proportion) of suspended solids, colour • the presence/absence and nature of odours and the presence/absence of slicks or sheens on water. Groundwater field parameters are to be collected ex-situ using excess water within the HydraSleeve™ (or bailer) following sample collection. Surface water field parameters are to be collected ex-situ using a dedicated cup (not used for sampling).
Sample Analysis	All primary samples will be submitted for PFAS extended suite using the standard levels of detection.

4.4.2 Decontamination of sampling equipment

To avoid cross-contamination between samples and sample locations, all reusable sampling equipment, such as interface probe and trowel, will be de-contaminated between locations. The proposed method of decontamination is summarised below:

- preliminary wash and scrub with tap water, after each sampling location

- wash using Liquinox®
- rinsed with tap water
- rinsed with deionised water (supplied by the laboratory).

Clean, disposable nitrile gloves will be worn and replaced between each sample.

4.4.3 Sample Handling and Transport to Laboratory

All samples will be placed on ice in eskies immediately after sampling, and kept, if possible, at approximately 4°C during transit to the laboratory.

Samples will be transported directly to the laboratory for analytical testing under standard CoC procedures. Primary and associated duplicate QA/QC samples will be analysed by Australian Laboratory Services (ALS) in Sydney. The inter-laboratory duplicate samples will be analysed by Envirolab Services (Envirolab) in Sydney.

4.5 Calibration

The calibration of the water quality meter will be tested each day via a “bump test” prior to the commencement of field activities with relevant solutions, including pH, EC 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 No. 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 reports for each sampling round.

4.6 Logistics

The laboratory sample containers will be shipped from the laboratory to the AECOM office in Newcastle prior to the commencement of fieldwork.

All primary samples will be transported to the laboratory by field staff or by an ALS supplied courier, at the completion of fieldwork. All inter-laboratory duplicate samples will be couriered directly to the secondary laboratory under a separate COC 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 Envirolab (NATA Accreditation Number 2901), respectively.

4.7.2 Analytical Schedule

All media sampled will be analysed for the extended PFAS suite in accordance with the Defence (2018) *Standard PFAS Analytical Suite* Guidance Document (**Appendix C**).

The current laboratory limits of reporting (LOR) for the primary laboratory are described in **Table 8** below.

Table 8 Laboratory Limits of Reporting

Sample Media	Parameter	Technique/Method Reference	LOR
Water	Extended PFAS Suite (Standard)	LCMS	0.01 – 0.1 µg/L
Sediment	Extended PFAS Suite (Standard)	LCMS	0.0002 – 0.001 mg/kg

LCMS = Liquid chromatography mass spectrometry

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 naming convention:

PPPP_XX000_ZZZ_YYMMDD

[property ID][type of sample][THREE DIGIT sample number]_[top of sample depth]_[yearmonthday]

e.g. 0356_MW001_220201

Location types and codes are prescribed by the Defence Contamination Management Manual, Annex L Data Management (2018, Amended 2021) and the Site's investigation history.

Location types relevant to this SAQP include:

- MW = monitoring well
- OTH = other (e.g., tanks/pits)
- SW = surface water
- SD = sediment

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

- Blind duplicate (intra-laboratory duplicate): PPPP_QC1XX_YYMMDD
- Split duplicate (inter-laboratory duplicate): PPPP_QC2XX_YYMMDD
- Rinsate: PPPP_QC3XX_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 field and laboratory data collected by AECOM will be uploaded, stored and managed in Defence's Esdat database in accordance with Section 6 of Annex L to the Defence Contamination Management Manual. AECOM will refer to historical investigation data to ensure consistent location codes are used to enable analysis of data trends.

AECOM will upload the data from each monitoring event into Esdat prior to submitting the relevant 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 relevant guidance documents were in circulation in Australia including:

- Heads of EPA (HEPA) Australia and New Zealand, 2020. PFAS National Environmental Management Plan (NEMP) Version 2.0. January 2020 (HEPA, 2020)
- Department of Health (DoH), 2019. Health Based Guidance Values for PFAS. September 2019 (DoH, 2019)
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC, 2019)

The screening criteria adopted to assess the data generated as part of this SAQP are presented in **Table 9** and **Table 10** below, for human and ecological receptors, respectively. Note that the HEPA NEMP 2.0 (2020) does not provide screening criteria for PFAS in sediments.

Table 9 PFAS Adopted Screening Criteria – Human Receptors

Media	Pathway	Compound	Criteria	Comment/Reference
Water – Groundwater	Drinking water	PFOS + PFHxS	0.07 µg/L	The values presented in the PFAS NEMP 2.0, 2020 are from DoH 2019 which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the TDI for PFOS and PFOA from FSANZ, 2017 and the methodology described in Chapter 6.3.3 of the NHMRC's Australian Drinking Water Guidelines (ADWG), 2011 (updated in January 2022) to determine drinking water values. For PFHxS, DoH 2019 noted that '*FSANZ concluded that there was not enough toxicological and epidemiological information to justify establishing a tolerable daily intake. However, as a precaution, and for the purposes of site investigations, the PFOS tolerable daily intake should apply to PFHxS. In practice, this means that the level of PFHxS exposure should be added to the level of PFOS exposure; and this combined level be compared to the tolerable daily intake for PFOS*'. Results from all groundwater locations will be compared to these criteria.
		PFOA	0.56 µg/L	
Water – Surface Water	Recreational use	PFOS + PFHxS	2 µg/L	In August 2019, NHMRC released guidance on the assessment of PFAS in surface water. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events/year) to calculate an annual ingestion rate of 30 L per year. These values were adopted by the HEPA NEMP 2.0 (2020). Results from all surface water locations will be compared to these criteria.
		PFOA	10 µg/L	

Table 10 PFAS Adopted Screening Criteria – Ecological Receptors

Media	Pathway	Compound	Criteria	Comment/Reference
Water – Groundwater and Surface Water	Freshwater	PFOS	0.00023 µg/L	The values are from the PFAS NEMP, 2020 which endorsed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality. The 99% species protection level (for freshwater and interim marine) has been applied for high value conservation systems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. It is proposed that the laboratory LOR is adopted for the purposes of preliminary screening of analytical water results, rather than sole use of the criteria value. All groundwater and surface water results will be compared to these criteria.
		PFOA	19 µg/L	

4.11 Waste Management

Due to the proposed “no purge” sampling methodology adopted for the majority of the sampling locations, it is not anticipated that significant volumes of liquid waste would be generated that would require on-site management and disposal. Any small amount (<500 ml) of surplus groundwater generated during the sampling event will either be returned to the individual well or spread on a hardstand surface and left to evaporate.

All consumables (i.e. HydraSleeves^{TM}, general rubbish, etc.) will be bagged and placed in on-site general waste bins for disposal.

4.12 Field Quality Assurance/Quality Control Sampling

4.12.1 Intra-laboratory and Inter-laboratory Duplicate Samples

Intra-laboratory (blind) duplicate samples and inter-laboratory (split) duplicate samples are to be collected and analysed at a minimum frequency of 1 in 10 primary samples, in accordance with the quality control and quality assurance requirements outlined in OMP (Defence, 2021a) and HEPA (2020).

4.12.2 Rinsate Samples

Rinsate blank samples are to be collected and analysed at a minimum frequency of 1 per day of fieldwork where sampling equipment is decontaminated and re-used between sampling locations.

Rinsate blanks are to be collected by pouring laboratory supplied deionised water over decontaminated sampling equipment that will be re-used (e.g. interface probe, trowel).

4.13 Fieldwork Documentation

4.13.1 Field Notes

Field notes will be 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 samples –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 at regular intervals. Condition of monitoring wells and gauging details will also be recorded.

- surface water samples – the observed characteristics of the sample (e.g. colour, turbidity, odour, sheen) and field water quality parameters (pH, EC, DO, ORP, temperature) will be recorded. Additionally, a description of each surface water sampling location will be recorded, including:
  - surface water type (i.e. river, stream, drain)
  - approximate width
  - presence or absence of flow.
- sediment – the observed characteristics of the sample (USCS classification of sediment and any contamination observations such as odours and/or stains).
- the quality control (e.g. duplicate and inter-laboratory duplicate) sample details be recorded.

AECOM's tablet-based Environmental Data Collection and Analysis ('EDCA') tool will be utilised by field staff to capture consistent field data based on project specific requirements, minimise potential data transcription errors, allow on-the-spot identification of potentially erroneous data in comparison to historical data and facilitate efficient data transfer to multiple data systems including Esdat.

4.13.2 Sample Labels

Sample containers will be labelled, as a minimum, with the following information:

- AECOM project number
- Name of sampler
- Sample ID
- Date of sample collection

An indelible felt pen will be used for labelling, to ensure that the lettering is not erased during transit to the laboratory. Sample containers that are sent to the primary laboratory, ALS, will also be scanned into the laboratory's custom-built mobile app (by scanning the barcode applied to each laboratory-supplied container) for streamlined labelling and COC creation and to ensure compliant sample IDs are used in the field.

4.13.3 COC 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 form will be signed by both the sample collector and the receiving laboratory, and will include the following information:

- job number
- date and time of sample collection
- sample IDs
- type of containers
- name of sampler
- laboratory to be used
- analyses required
- any comments
- 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 and sample receipt notification (SRN) to confirm analyses to be performed and the due date for the analytical results.

4.14 Reporting

4.14.1 Sampling Event Factual Report

AECOM will prepare and submit a Sampling Event Factual Report to Defence following the completion of each sampling event. The Sampling Event Factual Report will include:

- details of the scope completed
- a description of the sampling methodologies used
- identification of any components of the scope that could not be completed
- a summary of field observations (e.g. any visual or olfactory observations that may indicate impacts to surface water or groundwater) and water quality parameter measurements
- evaluation of the applicability of adopted assessment levels
- a presentation of the analysis results in a table that includes comparisons with PFAS guidelines
- a presentation of groundwater levels for the event on a figure with inferred contours and inferred groundwater flow direction
- review of the suitability of the data for assessment purposes (QA/QC evaluation)
- inclusion of the following information as attachments:
    - Field data including field water quality parameter and gauging measurements
    - Chain of custody forms
    - Laboratory analytical certificates
    - Equipment calibration certificates.

The Sampling Event Factual Report will be provided to Defence no later than four weeks after completion of the field component. AECOM will inform Defence in the case of delays in laboratory results.

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. These reports will include:

- evidence of compliance with the requirements of the SAQP and meeting stated objectives of the OMP (Defence, 2021a)
- details of the scope completed, sampling methodologies used, and identification of any components of the scope that could not be completed
- 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
- relevant figures depicting sampling locations and site-specific hydrogeological features
- laboratory results and analysis including comparison with the adopted screening criteria
- assessment and commentary on appropriate QA/QC procedures
- 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 (Defence, 2021a) including whether a review of the Conceptual Site Model and is required or whether the risk profile has changed overall, or for any specific location at the

Site, and a recommendation as to whether this should trigger an OMP and/or PMAP review, or other action.

- Inclusion of the following information as attachments:
  - Field data including field water quality parameter and gauging measurements
  - Chain of custody forms
  - Laboratory analytical certificates
  - Equipment calibration certificates

4.15 Deviations from OMP

While the scope of works and methodology described in this SAQP are generally consistent with that presented in the OMP (Defence, 2021a), a number of points of deviation are noted (refer to **Table 11** below).

Table 11 Deviations from OMP

No.	Description	Rationale
1	Monthly Sampling	The OMP (Defence, 2021a) lists two surface water locations as proposed for monthly sampling for a minimum of 12 months. AECOM has sought clarification on the sampling frequency. It was confirmed by Defence via email on 3 March 2022 that monthly sampling is not required as part of the OMP.
2	Groundwater Sampling Methodology	The OMP (Defence, 2021a) specifies that groundwater samples are to be collected using no-purge methodology with HydraSleeves™. In the event that a HydraSleeve™ fails to deploy or has been removed inadvertently (i.e. by non-OMP project), the sample will be collected using a dedicated disposable bailer.
3	Sediment Sampling Methodology	The OMP (Defence, 2021a) specifies that sediment samples are to be collected using a hand auger from the base of the drain where it is safe to do so. In order to ensure consistency and comparability across the Defence OMP Program, sediment samples are to be collected using a hand trowel, where safe to do so.
4	Human Health Surface Water Screening Criteria	The OMP (Defence, 2021a) specifies that results from surface water locations be screened against the human health screening criteria for drinking water of 0.07 µg/L for PFOS+PFHxS and 0.56 µg/L for PFOA. Based on a review of the CSM and water use information presented in the PMAP (Defence, 2021b), the screening of surface water results against the HEPA (2020) drinking water criteria is not applicable given that the source>receptor>pathway is considered to be incomplete. Therefore, surface water results will only be screened against recreational use human health screening criteria and ecological screening criteria.

No.	Description	Rationale
5	Human Health Groundwater Screening Criteria	The OMP (Defence, 2021a) specifies that results from groundwater locations be screened against the human health screening criteria for recreational use of water of 2 µg/L for PFOS+PFHxS and 10 µg/L for PFOS. Based on a review of the CSM and water use information presented in the PMAP (Defence, 2021b), the screening of groundwater results against the HEPA (2020) recreational use criteria is not applicable given that the source>receptor>pathway is considered to be incomplete. Therefore, groundwater results will be screened against drinking water human health screening criteria and ecological screening criteria only.
6	Rinsate frequency	The OMP (Defence, 2021a) states that rinsate samples will be collected at a rate of one sample per fieldwork day or at least one rinsate sampler per ten primary samples (whichever rate is lower) by pouring laboratory supplied deionised water over the decontaminated sampling equipment. To align with other OMPs in the NSW & JBT Region, rinsates are proposed to be collected at a rate of one per day of sampling where equipment is decontaminated and reused between sampling locations using laboratory supplied deionised water.
7	Major Cations and Anions Analysis	On 27 January 2021, Defence instructed AECOM to discontinue the analysis of samples for non-PFAS analytes unless it was specifically requested by Defence. As a result, AECOM will not analyse OMP groundwater and surface water samples collected from the Site for anions and major cations.
8	Removal of MW012	During the initial OMP sampling event in July 2022, AECOM noted that monitoring well MW012 appeared to have been destroyed during the demolition of the former fire station. Given that the remaining monitoring well network provides sufficient coverage of groundwater in this area, it was recommended that this location be removed from the OMP scope of works.
9	Renaming of co-located sediment and surface water samples	Co-located surface water and sediment location SW113 / SD113 was incorrectly named in the OMP (Defence, 2021a) as an existing entry for SD113 was identified in Defence ESdat. To mitigate the duplication of location codes in Defence ESdat, AECOM has renamed this location SW116 and SD116.

5.0 References

AECOM, 2019. *Detailed Site Investigation – Singleton Military Area – PFAS Investigation*. November 2019.

AECOM, 2021a. *Detailed Site Investigation Addendum – Singleton Military Area – PFAS Investigation*. March 2021.

AECOM, 2021b. *Human Health and Ecological Risk Assessment – Singleton Military Area – PFAS Investigation*. March 2021

ASC NEPM, 2013. *Schedule B1. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B1 Guideline on Investigation Levels For Soil and Groundwater*.

ASC NEPM, 2013. *Schedule B2. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B2 Guideline on Site Characterisation*.

ASC NEPM, 2013. *Schedule B4. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B4 Guideline on Site-Specific Health Risk Assessment Methodology*.

ASC NEPM, 2013. *Schedule B7. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B7 Guideline on Derivation of Health-Based Investigation Levels*.

Department of Defence, 2018. *Contamination Management Manual.* August 2018, Amended June 2021.

Department of Defence, 2021a. *PFAS Ongoing Monitoring Plan - Singleton Military Area.* December 2021.

Department of Defence, 2021b. *PFAS Management Area Plan - Singleton Military Area.* December 2021.

Department of Health (DoH), 2019. *Health Based Guidance Values for PFAS*. September 2019

enHealth, 2012a. *Environmental Health Risk Assessment: Guidelines for assessing human health risks from environmental hazards*.

enHealth, 2012b. *Australian Exposure Factor Guide. Department of Health and Ageing*.

FSANZ, 2017. *Supporting Document 1: Hazard assessment report – Perfluorooctane Sulfonate (PFOS), Perfluorooctanoic Acid (PFOA), Perfluorohexane Sulfonate (PFHxS)*.

Heads of EPAs Australia and New Zealand (HEPA) 2020. *PFAS National Environmental Management Plan Version 2.0*. January 2020.

National Health and Medical Research Council (NHMRC), 2011. *Australian Drinking Water Guidelines 6, 2011. Version 3.7 Updated January 2022.* January 2022.

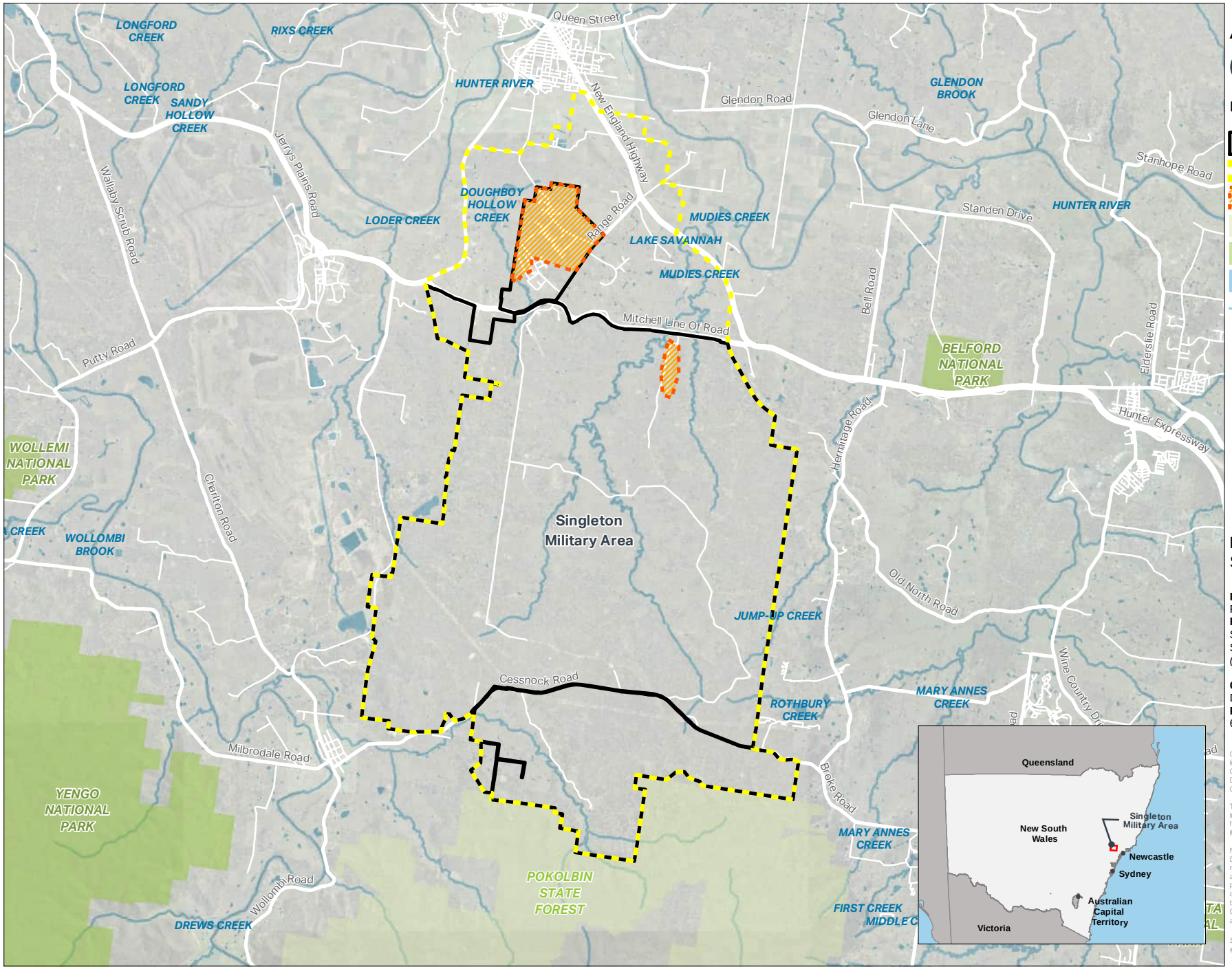
National Health and Medical Research Council (NHMRC), 2019. *Guidance on PFAS in Recreational Water.* August 2019.

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 1998. AS/NZ 5667:1998 *Water quality – sampling.*

Appendix A

Figures



AECOM

N

0 1.5 3 km

Legend

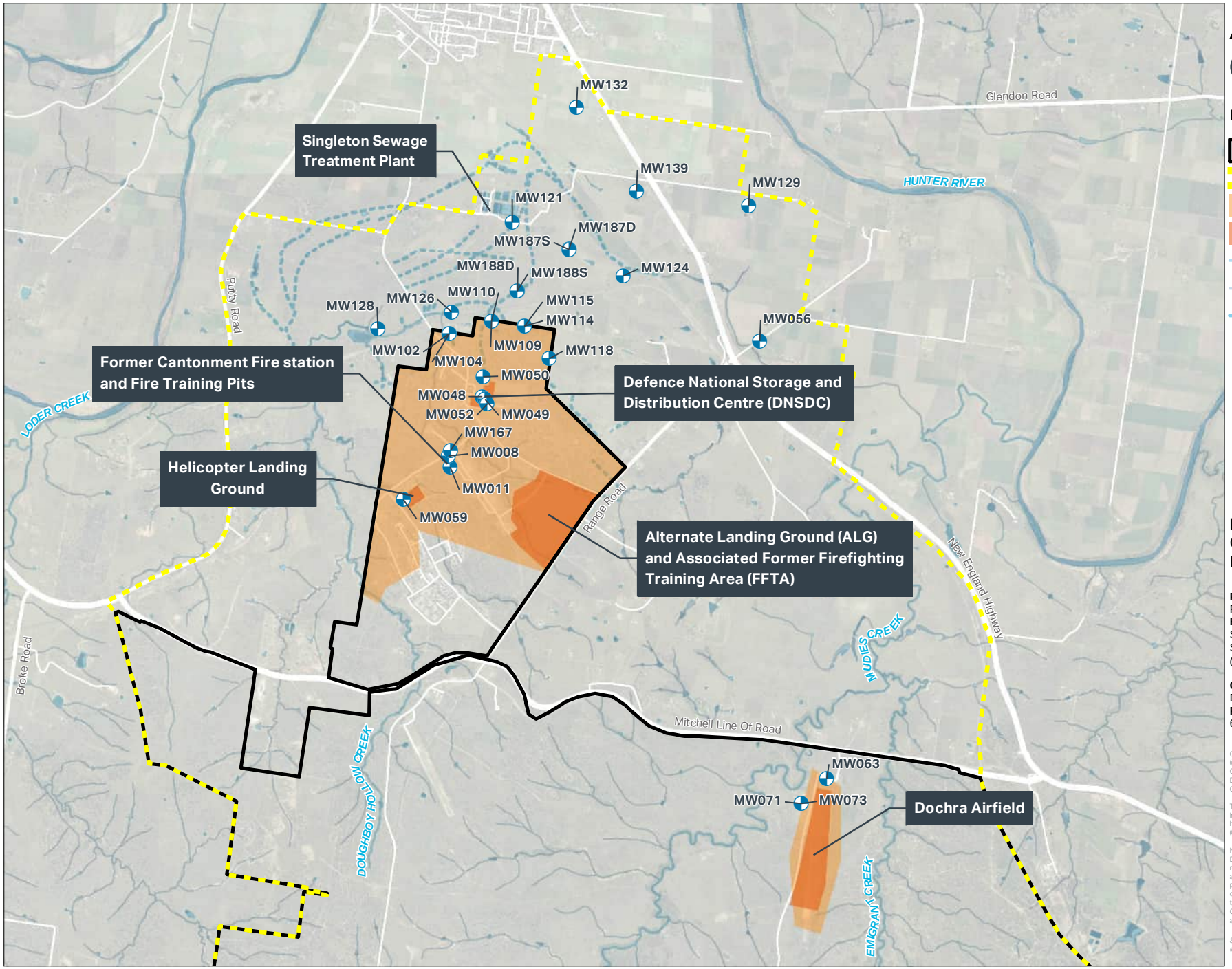
- Site Boundary
- Former Investigation Area
- On-site Management Area
- State Forest
- NPWS Reserve
- Waterbody
- Watercourse

FIGURE F1:
SITE LAYOUT

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Analysis and Quality Plan
Singleton Lone Pine Barracks
(Site ID 0356)

CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
© Department of Customer Service 2020



AECOM

N

0 0.5 1 km

Legend

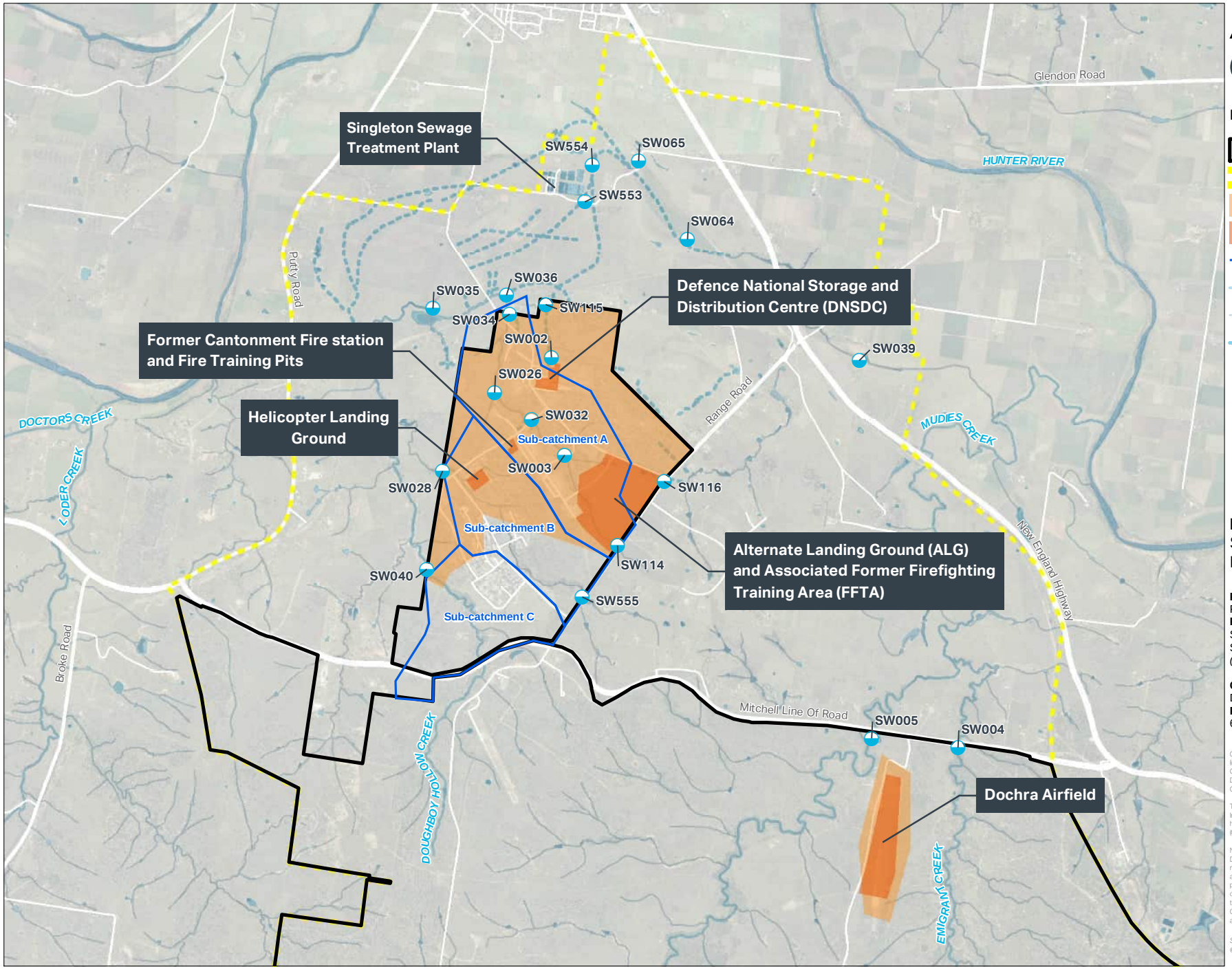
- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage line
- Undefined Drainage Lines
- Monitoring Well Sample Location

FIGURE F2:
GROUNDWATER SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Analysis and Quality Plan
Singleton Lone Pine Barracks
(Site ID 0356)

CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
© Department of Customer Service 2020



AECOM

N

0 0.5 1 km

Legend

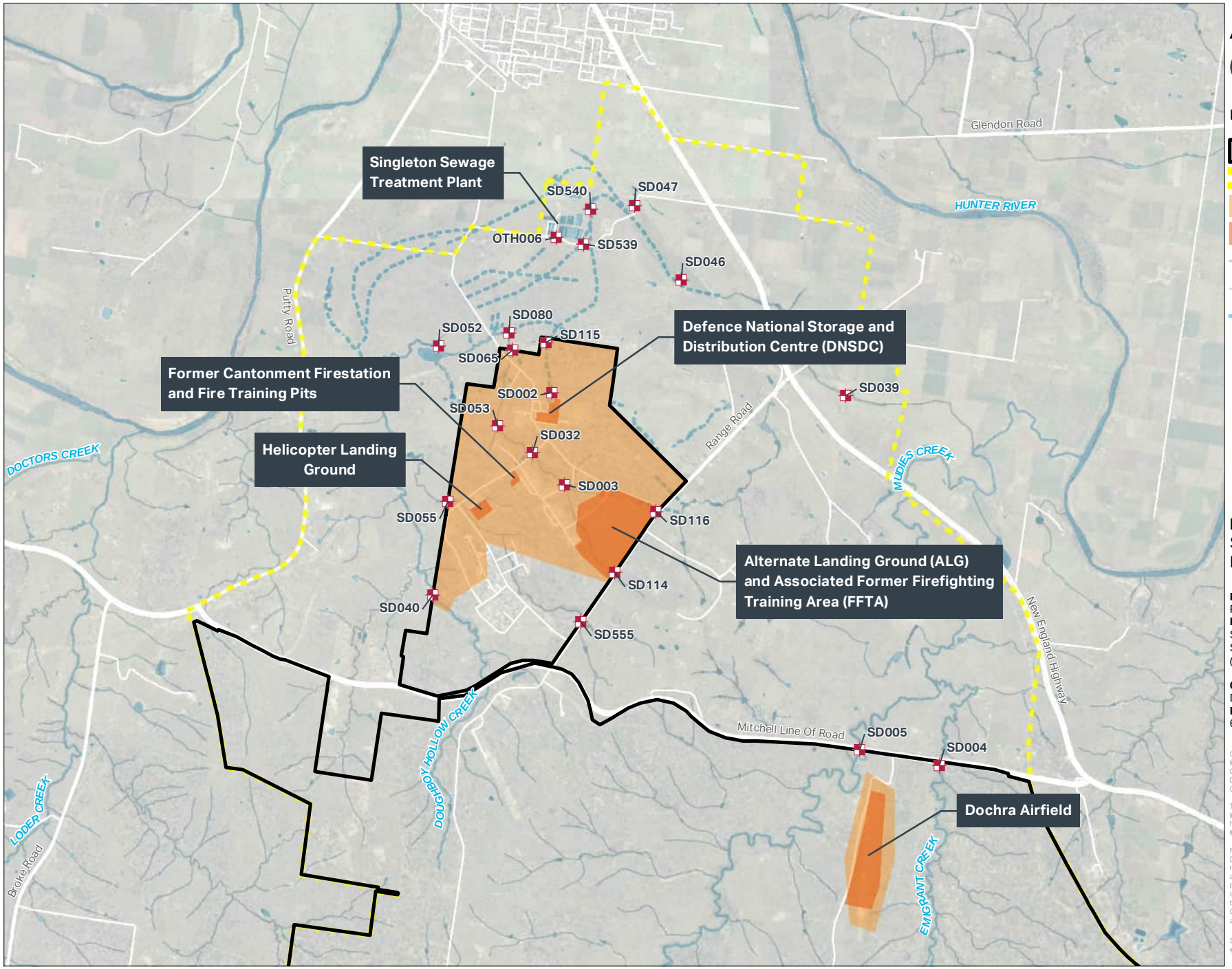
- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Catchment Boundaries
- Watercourse
- Drainage line
- Undefined Drainage Lines
- Surface Water Sample Location

FIGURE F3:
SURFACE WATER SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Analysis and Quality Plan
Singleton Lone Pine Barracks
(Site ID 0356)

CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
© Department of Customer Service 2020



AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage line
- Undefined Drainage Lines
- Sediment Sample Location

FIGURE F4:
SEDIMENT SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Analysis and Quality Plan
Singleton Lone Pine Barracks
(Site ID 0356)

CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
© Department of Customer Service 2020

Appendix B

Sample Locations

AECOM

Singleton OMP Sampling Locations

Client Name: Deparment of Defence
Project Name: PFAS OMP
Project No: 60612562

Area	Location ID	Historical Name	Easting	Northing	Top of Casing (TOC) Elevation (m AHD)	Screen Interval (mbgl)	Hydrasleeve Installation Depth (mbgl)	Matrix Type	OMP Event
On-site: Northern Cantonment Boundary	MW102	GW02D	328357.02	6391396.84	46.82	12.5 - 15.5	15	Groundwater	Biannual
On-site: Northern Cantonment Boundary	MW104	GW02S	328357.84	6391395.38	46.72	10 - 13	12.5	Groundwater	Biannual
On-site: Northern Cantonment Boundary	MW109	GW03D	328780.99	6391520.8	45.1	24.5 - 30	29.5	Groundwater	Biannual
On-site: Northern Cantonment Boundary	MW110	GW03S	328783.65	6391520.88	45.4	11.5 - 14	13.5	Groundwater	Biannual
On-site: Northern Cantonment Boundary	MW114	GW04D	329111.47	6391472.18	45.9	23.5 - 29.5	29	Groundwater	Annual
On-site: Northern Cantonment Boundary	MW115	GW04S	329113.35	6391472.09	45.86	11 - 14	13.5	Groundwater	Annual
On-site: Northern Cantonment Boundary	MW118	GW05S	329361.85	6391140.79	52.72	unknown	0.5 from base of well	Groundwater	Annual
On-site: DNSDC Compound	MW048	CNN0039_GW01/CNN0039_GW001	328689.336	6390760.26	69.11	4 - 7	6.5	Groundwater	Biennial
On-site: DNSDC Compound	MW049	CNN0039_GW02/CNN0039_GW002	328714.567	6390735.258	69.76	2.7 - 8.7	8.2	Groundwater	Biennial
On-site: DNSDC Compound	MW050	CNN0039_GW03	328696.53	6390962.71	64.4	12.5 - 16	15.5	Groundwater	Biennial
On-site: DNSDC Compound	MW052	CNN0039_GW05	328737.46	6390684.35	72.05	0.8 - 3.8	3.3	Groundwater	Biennial
On-site: Former Fire Station	MW008	CNN0018_GW08	328347.54	6390164.94	74.1	11 - 14	13.5	Groundwater	Biennial
On-site: Former Fire Station	MW011	CNN0018_GW02/CNN0018_GW002	328364.794	6390053.977	74.13	8.5 - 11.5	11	Groundwater	Biennial
On-site: Former Fire Station	MW167	CNN0230_GW01	328371.408	6390221.55	72.65	14.5 - 20.5	20	Groundwater	Biennial
On-site: Helicopter Landing Ground	MW059	HLG_GW03	327894.5	6389726.64	61.14	2 - 4	3.5	Groundwater	Biennial
On-site: Dochra Airfield	MW063	NSW1164_MW001D/NSW1164_MW01D	332153.951	6386921.677	42.88	16 - 19	18.5	Groundwater	Biennial
On-site: Dochra Airfield	MW071	NSW1164_MW03D/NSW1164_MW003D	331897.4	6386665.65	47.87	23.5 - 29.5	29	Groundwater	Biennial
On-site: Dochra Airfield	MW073	NSW1164_MW03S	331897.22	6386665.82	47.91	7 - 10	9.5	Groundwater	Biennial
Off-site: North of site	MW121	GW06/GW06S	328989.26	6392517.07	39.82	9.5 - 12.5	12	Groundwater	Annual
Off-site: North of site	MW126	GW08S	328381.64	6391612.96	42.78	10.5 - 13.5	13	Groundwater	Annual
Off-site: North of site	MW132	RESI_GW011	329638.882	6393668.308	unknown	unknown	0.5 from base of well	Groundwater	Annual
Off-site: North of site	MW187D	MW09D	329563.18	6392244.65	40.23	18.7 - 24.7	24.2	Groundwater	Annual
Off-site: North of site	MW187S	MW09S	329561.72	6392241.52	40.4	7 - 10	9.5	Groundwater	Annual
Off-site: North of site	MW188D	MW10D	329045.14	6391822.39	41.25	24 - 30	29.5	Groundwater	Annual
Off-site: North of site	MW188S	MW10S	329040.46	6391823.13	41.12	8 - 11	10.5	Groundwater	Annual
Off-site: North East of site	MW056	GW12, MW12S	331479.8	6391318.41	34.71	5.3 - 8.3	7.8	Groundwater	Annual
Off-site: North East of site	MW124	GW07/GW07S	330106.13	6391974.53	38.68	9.4 - 13.8	13.3	Groundwater	Annual
Off-site: North East of site	MW129	GW10S	331369.75	6392682.45	37.95	9 - 12	11.5	Groundwater	Annual
Off-site: North East of site	MW139	RESI_GW013/RESI_GW13	330240.865	6392827.531	unknown	unknown	0.5 from base of well	Groundwater	Annual
Off-site: North West of site	MW128	GW09S	327641.43	6391446.15	44.08	9.2 - 12.2	11.7	Groundwater	Annual
On-site: Northern Cantonment Boundary (Sub-catchment A)	SW002	SW002	328729.259	6390973.807	n/a	n/a	n/a	Surface Water	Biannual
On-site: Northern Cantonment Boundary (Sub-catchment A)	SW003	SW003	328859.222	6390001.096	n/a	n/a	n/a	Surface Water	Biannual
On-site: Northern Cantonment Boundary (Sub-catchment A)	SW026	SMA13_SW	328164.578	6390625.598	n/a	n/a	n/a	Surface Water	Biannual
On-site: Northern Cantonment Boundary (Sub-catchment A)	SW032	SW032	328530.667	6390352.491	n/a	n/a	n/a	Surface Water	Biannual
On-site: Northern Cantonment Boundary (Sub-catchment A)	SW034	SMA8_SW	328312.374	6391404.917	n/a	n/a	n/a	Surface Water	Biannual
On-site: Northern Cantonment Boundary	SW115	-	328672.762	6391497.564	n/a	n/a	n/a	Surface Water	Biannual
On-site: Central Cantonment (Sub-catchment B)	SW028	SMA7_SW	327647.549	6389841.745	n/a	n/a	n/a	Surface Water	Biannual
On-site: Central Cantonment (Sub-catchment B)	SW555	-	329034.221	6388589.839	n/a	n/a	n/a	Surface Water	Biannual
On-site: Southern Cantonment (Sub-catchment C)	SW040	SW040	327490.162	6388869.22	n/a	n/a	n/a	Surface Water	Biannual
On-site: Southern Cantonment (Sub-catchment C)	SW116	-	329813.515	6389737.446	n/a	n/a	n/a	Surface Water	Biannual
On-site: Southern Cantonment (Sub-catchment C)	SW114	-	329385.819	6389104.052	n/a	n/a	n/a	Surface Water	Biannual
On-site: Dochra Airfield	SW004	SW004	332770.588	6387095.299	n/a	n/a	n/a	Surface Water	Biannual
On-site: Dochra Airfield	SW005	SW005	331911.32	6387184.041	n/a	n/a	n/a	Surface Water	Biannual
Off-site: North of site (Doughboy Hollow Creek Catchment)	OTH006	OTH006	328776.9	6392588.58	n/a	n/a	n/a	Other	Biannual
Off-site: North of site (Doughboy Hollow Creek Catchment)	SW036	RESI_SW036	328283.548	6391592.424	n/a	n/a	n/a	Surface Water	Biannual
Off-site: North of site (Doughboy Hollow Creek Catchment)	SW064	RESI_SW041	330082.089	6392148.842	n/a	n/a	n/a	Surface Water	Biannual
Off-site: North of site (Doughboy Hollow Creek Catchment)	SW065	RESI_SW042	329593.76	6392925.915	n/a	n/a	n/a	Surface Water	Biannual
Off-site: North of site (Doughboy Hollow Creek Catchment)	SW553	SW553	329062.999	6392521.595	n/a	n/a	n/a	Surface Water	Biannual
Off-site: North of site (Doughboy Hollow Creek Catchment)	SW554	SW554	329134.3	6392887.5	n/a	n/a	n/a	Surface Water	Biannual
Off-site: East of site (Doughboy Hollow Creek Catchment)	SW039	RESI_SW039	331790.936	6390941.993	n/a	n/a	n/a	Surface Water	Biannual
Off-site: West of site (Doughboy Hollow Creek)	SW035	RESI_SW035	327551.145	6391459.49	n/a	n/a	n/a	Surface Water	Biannual
On-site: Northern Cantonment (Sub-catchment A)	SD002	SD002	328729.259	6390973.807	n/a	n/a	n/a	Sediment	Biannual
On-site: Northern Cantonment (Sub-catchment A)	SD003	SD003	328863.483	6390010.018	n/a	n/a	n/a	Sediment	Biannual
On-site: Northern Cantonment (Sub-catchment A)	SD032	SD032	328530.667	6390352.491	n/a	n/a	n/a	Sediment	Biannual
On-site: Northern Cantonment (Sub-catchment A)	SD053	SMA13_SD	328164.578	6390625.598	n/a	n/a	n/a	Sediment	Biannual
On-site: Northern Cantonment (Sub-catchment A)	SD065	SMA8_SD	328320.652	6391418.74	n/a	n/a	n/a	Sediment	Biannual
On-site: Northern Cantonment Boundary	SD115	-	328672.762	6391497.564	n/a	n/a	n/a	Sediment	Biannual
On-site: Central Cantonment (Sub-catchment B)	SD055	SMA7_SD	327647.549	6389841.745	n/a	n/a	n/a	Sediment	Biannual
On-site: Central Cantonment (Sub-catchment B)	SD555	-	329034.221	6388589.839	n/a	n/a	n/a	Sediment	Biannual
On-site: Southern Cantonment (Sub-catchment C)	SD040	SD040	327490.162	6388869.22	n/a	n/a	n/a	Sediment	Biannual
On-site: Southern Cantonment (Sub-catchment C)	SD116	SD113	329813.515	6389737.446	n/a	n/a	n/a	Sediment	Biannual
On-site: Southern Cantonment (Sub-catchment C)	SD114	-	329385.819	6389104.052	n/a	n/a	n/a	Sediment	Biannual
On-site: Dochra Airfield	SD004	SD004	332768.77	6387094.72	n/a	n/a	n/a	Sediment	Biannual
On-site: Dochra Airfield	SD005	SD005	331936.67	6387252.51	n/a	n/a	n/a	Sediment	Biannual
Off-site: North of site	SD046	RESI_SD041	330082.089	6392148.842	n/a	n/a	n/a	Sediment	Biannual
Off-site: North of site	SD047	RESI_SD042	329593.76	6392925.915	n/a	n/a	n/a	Sediment	Biannual
Off-site: North of site	SD080	RESI_SD013	328285.862	6391596.373	n/a	n/a	n/a	Sediment	Biannual
Off-site: North of site	SD539	SD539	329062.999	6392521.595	n/a	n/a	n/a	Sediment	Biannual
Off-site: North of site	SD540	SD540	329134.3	6392887.5	n/a	n/a	n/a	Sediment	Biannual
Off-site: East of site	SD039	RESI_SD039	331790.936	6390941.993	n/a	n/a	n/a	Sediment	Biannual
Off-site: West of site	SD052	RESI_SD035	327551.145	6391459.49	n/a	n/a	n/a	Sediment	Biannual

Appendix C

Standard PFAS Analytical Suite Guidance

Australian Government
Defence

Department of Defence

PFAS INVESTIGATION AND MANAGEMENT

GUIDANCE DOCUMENT E
STANDARD PFAS ANALYTICAL SUITE

Document Version History

Document Reference	Revision	Date
AF29889468	1	10 July 2017
AF32594670	2	21 March 2018
AF32594670	3	6 April 2018
BS24034025	4	1 October 2021
BS24034025	5	29 June 2022

Analytical laboratories analyse a range of PFAS which includes a small subset of all possible PFAS. These analytical suites vary between laboratories and over time as new chemical standards become available. The minimum suite required for Defence PFAS investigations and management is listed in Table 1.

Table 1 Minimum PFAS analytical suite for Defence PFAS investigations and management

Group	Acronym	Chemical Compound	CAS No.
Perfluoroalkane Sulfonic Acids	PFBS	Perfluorobutane sulfonic acid	375-73-5
	PFPeS	Perfluoropentane sulfonic acid	2706-91-4
	PFHxS	Perfluorohexane sulfonic acid	355-46-4
	PFHpS	Perfluoroheptane sulfonic acid	375-92-8
	PFOS	Perfluorooctane sulfonic acid	1763-23-1
	PFDS	Perfluorodecane sulfonic acid	335-77-3
Perfluoroalkane Carboxylic Acids	PFBA	Perfluorobutanoic acid	375-22-4
	PFPeA	Perfluoropentanoic acid	2706-90-3
	PFHxA	Perfluorohexanoic acid	307-24-4
	PFHpA	Perfluoroheptanoic acid	375-85-9
	PFOA	Perfluorooctanoic acid	335-67-1
	PFNA	Perfluorononanoic acid	375-95-1
	PFDA	Perfluorodecanoic acid	335-76-2
	PFUnDA	Perfluoroundecanoic acid	2058-94-8
	PFDoDA	Perfluorododecanoic acid	307-55-1
	PFTrDA	Perfluorotridecanoic acid	72629-94-8
	PFTeDA	Perfluorotetradecanoic acid	376-06-7
Perfluoroalkyl Sulfonamides	FOSA	Perfluorooctane sulfonamide	754-91-6
	MeFOSA	N-Methyl perfluorooctane sulfonamide	31506-32-8
	EtFOSA	N-Ethyl perfluorooctane sulfonamide	4151-50-2
	MeFOSE	N-methyl perfluorooctane sulfonamidoethanol	24448-09-7
	EtFOSE	N-Ethyl perfluorooctane sulfonamidoethanol	1691-99-2
	MeFOSAA	N-methyl perfluorooctane sulfonamidoacetic acid	2355-31-9
	EtFOSAA	N-ethyl perfluorooctane sulfonamidoacetic acid	2991-50-6
(n:2) Fluorotelomer Sulfonic Acids	4:2 FTS	4:2 Fluorotelomer sulfonic acid	757124-72-4
	6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2
	8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4
	10:2 FTS	10:2 Fluorotelomer sulfonic acid	120226-60-0

The minimum PFAS analytical suite is based on consideration of analytical capability and the dominant PFAS that are likely to be present in environmental media due to legacy contamination from AFFF used by Defence. In specific instances, for example analysis of AFFF concentrates, it may be necessary to use other methods such as the TOP and/or TOF assays. In these cases, the analytical methods need to be established by data quality objectives (DQOs) for the project.

The laboratory is required to use NATA accredited methods for PFAS quantification based on guidance in the *PFAS National Environmental Management Plan* (NEMP, 2020).

END OF TEXT

Appendix E

OMP Factual Reports

Prepared for
Department of Defence
ABN: 68706814312

AECOM

Sampling Event Factual Report, July 2022

PFAS OMP - Singleton Lone Pine Barracks (Site ID 0356)

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Singleton Lone Pine Barracks
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Sampling Event Factual Report, July 2022

PFAS OMP - Singleton Lone Pine Barracks (Site ID 0356)

Client: Department of Defence

ABN: 68706814312

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List of Abbreviations

Abbreviations	Term
ADWG	Australian Drinking Water Guidelines
AECOM	AECOM Australia Pty Ltd
AHD	Australian Height Datum
ASC NEPM	Assessment of Site Contamination National Environment Protection
CSM	Conceptual Site Model
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DNSDC	Defence National Storage and Distribution Centre
DO	Dissolved Oxygen
DoH	Department of Health
DQI	Data Quality Indicator
DQO	Data Quality Objective
DSI	Detailed Site Investigation
EC	Electrical conductivity
FFTG	Former Fire Training Ground
HEPA	Heads of Environment Protection Authority
LOR	Limit of Reporting
MW	Monitoring Well
NEMP	National Environmental Management Plan
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NSW	New South Wales
OMP	Ongoing Monitoring Plan
ORP	Oxidation Reduction Potential
PFAS	Per- and poly-fluoroalkyl substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PFHxS	Perfluorohexanesulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control
RPD	Relative Percentage Difference
SAQP	Sample and Analysis Quality Plan
STP	Sewage Treatment Plant
SW	Surface Water

Abbreviations	Term
SWL	Standing Water Level

List of Units

Units	Term
g	Grams
km	Kilometre
L	Litres
m	Metre
mbgl	Metres below ground level
mbtoc	Metres below top of casing
mg/kg	Milligrams per kilogram
µg/L	Micrograms per Litre

1.0 Introduction

1.1 General

AECOM Australia Pty Ltd (AECOM) has been engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan (OMP) at the Singleton Military Area (SMA, hereafter referred to as the "site") Management Area (also referred to as the Former Investigation Area), which comprises:

- Singleton Lone Pine Barracks (on-site);
- Dochra Airfield (on-site);
- Singleton Sewage Treatment Plant (STP) (off-site); and
- neighbouring properties to the north, north west and north east (off-site).

The location of the Site and broader SMA Management Area are shown in **Figure F1** in **Appendix A**.

The OMP (Defence, 2021a) for the Site outlines the requirement to complete routine groundwater, surface water and sediment sampling at selected locations on a six monthly basis.

Following each sampling event, a sampling event factual report is prepared. Annual interpretive 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 biennial sampling event completed in July 2022 specifically highlighting first-time detections and/or new exceedances of human health and/or ecological screening criteria for Perfluorooctanesulfonic acid (PFOS) + Perfluorohexanesulfonic acid (PFHxS) and/or Perfluorooctanoic acid (PFOA).

This reported has been prepared in accordance with the Defence *PFAS OMP Factual Report Guidance,* Version 0.2 dated May 2021 (Defence, 2021).

1.2 Objectives

The objectives were to:

- implement the OMP (Defence, 2021a) prepared as part of the Detailed Environmental Investigations; and
- collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration, transport and transformation of PFAS within the SMA Management Area.

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 PFAS Management Area Plan (PMAP) (Defence, 2021b).

The objective of this phase of the project is to implement the scope of works for the July 2022 sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2022).

2.0 Scope of Work

2.1 Summary of Scope

The biennial sampling event was completed in general accordance with the SAQP (AECOM, 2022). In summary, the scope of works completed included:

- obtaining permission (where required) to conduct works at the Site, off-site publicly accessible areas and privately owned properties
- gauging of groundwater levels in 27 of 31 monitoring wells prior to collection of samples (refer to **Table 1** below, and **Figure F2** in **Appendix A** for specific locations)
- collection of groundwater samples from 25 of 31 existing monitoring wells using either HydraSleeves™, low flow sampling methodology, first flush grab samples from taps or dedicated, disposable bailers (refer to **Table 1** below, and **Figure F2** in **Appendix A** for specific locations). It is noted that samples from six monitoring locations could not be collected during this sampling event (refer to **Table 8** for more details)
- collection of 21 surface water samples (refer to **Table 2** below, and **Figure F3** in **Appendix A** for specific locations)
- collection of 20 sediment samples (refer to **Table 3** below, and **Figure F4** in **Appendix A** for specific locations)
- collection of field inter- and intra-laboratory duplicate samples at a rate of 1 in 10 primary samples and collecting one rinsate sample per fieldwork day where sampling equipment is re-used between locations
- analysis of samples for the following:
  - all samples for the PFAS suite at the standard limit of reporting (LOR)
- data management of the OMP field and laboratory data in Defence ESdat database
- preparation of this Sampling Event Factual Report.

2.2 Planned Monitoring Locations

The monitoring locations outlined within the SAQP (AECOM, 2022) for the planned biennial groundwater, surface water and sediment sampling events are outlined in **Table 1**, **Table 2** and

Table 3 below.

Table 1 Groundwater Sampling Locations

Area	Description	Sampling Locations	Number of wells/ bores	Total
On-Site	Northern Cantonment Boundary	MW102, MW104*, MW109, MW110, MW114, MW115, MW118	7	19 Locations
	Defence National Storage and Distribution Centre (DNSDC) Compound	MW048, MW049*, MW050, MW052	4	
	Former Fire Station	MW008, MW011, MW012*, MW167	4	
	Helicopter Landing Ground	MW059	1	
	Dochra Airfield	MW063, MW071, MW073	3	

Area	Description	Sampling Locations	Number of wells/ bores	Total
Off-Site	North of Site	MW121, MW126, MW132, MW187D, MW187S, MW188D, MW188S	7	12 Locations
	Northeast of Site	MW056*, MW124, MW129*, MW139*	4	
	Northwest of Site	MW128	1	

Note: *Location not sampled. Refer to **Table 4** for further details

Table 2 Surface Water Sampling Locations

Area	Description	Sampling Locations	Number of Locations	Total
On-Site	Northern Cantonment Boundary (Sub-catchment A)	SW002, SW003, SW026, SW032, SW034	5	13 Locations
	Northern Cantonment Boundary	SW115	1	
	Central Cantonment (Sub-catchment B)	SW028, SW555	2	
	Southern Cantonment (Sub-catchment C)	SW040, SW114, SW116	3	
	Dochra Airfield	SW004, SW005	2	
Off-Site	North of Site (Doughboy Hollow Creek Catchment)	OTH006, SW036, SW064, SW065, SW553, SW554	6	8 Locations
	East of Site (Doughboy Hollow Creek Catchment)	SW039	1	
	West of Site (Doughboy Hollow Creek Catchment)	SW035	1	

Table 3 Sediment Sampling Locations

Area	Description	Sampling Locations	Number of Locations	Total
On-Site	Northern Cantonment (Sub-Catchment A)	SD002, SD003, SD032, SD053, SD065	5	13 Locations
	Northern Cantonment Boundary	SD115	1	

Area	Description	Sampling Locations	Number of Locations	Total
	Central Cantonment (Sub-catchment B)	SD055, SD555	2	
	Southern Cantonment (Sub-catchment C)	SD040, SD114, SD116	3	
	Dochra Airfield	SD004, SD005	2	
Off-Site	North of Site	SD046, SD047, SD080, SD539, SD540	5	7 Locations
	East of Site	SD039	1	
	West of Site	SD052	1	

3.0 Deviations from the SAQP

The July 2022 sampling event was completed in general accordance with the SAQP (AECOM, 2022) with the exception of the deviations outlined in **Table 4** below.

Table 4 Deviations from SAQP (AECOM, 2022)

SAQP Deviation	Comment / Justification	Impact on Data Set
31 groundwater locations are identified to be sampled as part of the biennial sampling event.	Monitoring well MW012 was not able to be located and likely to have been destroyed during the demolition of the former Cantonment Fire Station, and therefore not sampled.	AECOM does not consider the lack of sampling from this location to constitute a significant data gap as the existing monitoring well network (MW008, MW011 and MW167) provides sufficient coverage of this area.
	Monitoring well MW049 was gauged to be dry and was therefore not sampled. Monitoring well MW104 had an insufficient volume of water present to collect a sample.	The lack of water available at these locations was not unexpected given these monitoring wells were installed to target the shallow/perched aquifer. Therefore, AECOM does not consider the lack of sufficient water for sampling at these locations to impact upon the objectives of the OMP.
	The gatic cover of monitoring well MW056 was unable to be opened as one of the bolts had been threaded, and therefore not sampled.	The lack of sampling at this location presents a potential data gap in monitoring the extent of PFAS in groundwater off-site to the east of the Lone Pine Barracks. AECOM will attempt to remove and replace the threaded bolt ahead of the next scheduled OMP event.
	Monitoring wells MW129 and MW139 (located on private properties) were not accessed for sampling as the landowner denied access.	The lack of sampling data at these locations presents a potential data gap in monitoring the extent of PFAS in groundwater off-site to the north east, particularly given the first-time detection of PFOS at MW124 (located upgradient of MW129 and MW139). AECOM will attempt to engage with the private property owners ahead of the next scheduled OMP event to arrange access.
Sample OTH006 will be collected using a long handled, PFAS-free stainless steel sampling pole.	Sample OTH006 was collected using a dedicated, disposable bailer as it was determined by the sampling team to be a safer methodology which did not require decontamination.	The change in methodology does not impact upon the reliability of the data and AECOM proposes to adopt this method in the next revision of the SAQP given there are benefits from a safety, decontamination and hygiene perspective.

SAQP Deviation	Comment / Justification	Impact on Data Set
Sample locations SW115 and SD115.	These co-located surface water and sediment samples were collected approximately 10 meters (m) upstream from the proposed location due to the presence of a fence along the northern boundary of the Base.	These locations were identified as proposed new locations in the SAQP and given this was the first time this location has been sampled, there is no impact on comparability to the existing dataset.
MW188S and MW188D will be collected using low flow sampling methodology (micropurge using a bladder pump).	The proposed sampling methodology (micropurge) was not appropriate given that there was an insufficient head of water present in the well for the pump to operate. As a result, samples MW188S and MW188D were collected using dedicated, disposable bailers.	Given that the PFAS concentrations reported in MW188S were within the historical range for this location, AECOM considers that the change in sampling methodology did not impact the reliability of the data. Sample MW188D reported a first-time detection of PFOS at the laboratory LOR (0.02 ug/L), which was confirmed by the laboratory through reanalysis. It is unknown whether this first-time detection is attributed to the change in sampling methodology, however AECOM will continue to monitor concentrations in this location over time to establish whether a trend is present.
At locations where low flow sampling methodology has been adopted, samples are to be collected following parameters stabilisation.	During the purging of groundwater well MW126, the low volume and slow recharge of water in the well impacted the operation of equipment, resulting in the sample being collected prior to the stabilisation of parameters.	Sample MW126 reported a first-time detection of PFOS at the laboratory LOR (0.02 ug/L), which was confirmed by the laboratory through reanalysis. It is unknown whether this first-time detection is attributed to the change in sampling methodology, however AECOM will continue to monitor concentrations in this location over time to establish whether a trend is present.
Amendment to location ID for SW113 and SD113.	Co-located surface water and sediment location SW113 / SD113 was incorrectly named in the OMP (Defence, 2021a) as an existing entry for SD113 was identified in Defence ESdat. To mitigate the duplication of location codes in Defence ESdat, AECOM has renamed this location SW116 and SD116.	No impacts to the data set as this was the first time this location had been sampled under the OMP.

4.0 Methodology

4.1 Sampling Methodology

The methodology adopted for the July 2022 biennial sampling event was in general accordance with the SAQP (AECOM, 2022) and summarised in **Table 5** below:

Table 5 Sampling Methodology

Item	Details
Groundwater gauging	On 19 July 2022, a targeted gauging round was completed at accessible monitoring wells. The depth to groundwater (in metres below top of casing [mbtoc]) was measured in each monitoring well during this targeted gauging event using an interface probe. The depth to groundwater (mbtoc) was also measured in each accessible monitoring well immediately prior to collection of groundwater samples using an interface probe.
Field parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality were recorded for all groundwater and surface water samples with the exception of locations where wells were destroyed, unable to be accessed or unable to be sampled (refer to **Table 4**). Field parameters were collected using a calibrated water quality meter (WQM), with equipment supplier and field calibration records provided in **Appendix C**.
Sampling methodology	**Groundwater** Groundwater samples were collected from the majority of monitoring wells using no-purge methodology (i.e., HydraSleeves™), which were installed within the screened interval of the wells greater than 24hrs prior to the sampling round. Installation depths were based on a review of the well construction logs. Once sampling was completed, new HydraSleeves™ were deployed in the majority of monitoring wells at the screened interval depth specified in the SAQP (AECOM. 2022) in preparation for the next sampling round. Groundwater samples at MW188S and MW188D were collected using dedicated disposable bailers as HydraSleeves™ were either not present or there was insufficient water present within the well to deploy the HydraSleeves™. **Residential / Private bores** The majority of residential/bore water samples were collected by low flow groundwater sampling methodology using a micro purge bladder pump or dedicated, disposable bailers where there was insufficient volume of water within the well to operate the pump. Once sampling was completed, new HydraSleeves™ were deployed in the majority of monitoring wells at the screened interval depth specified in the SAQP (AECOM, 2022) in preparation for the next sampling round. Sample MW132 was collected by placing the laboratory provided sample bottle beneath the tap outlet and the tap slowly opened to collect the “first flush” of water. **Surface Water** Surface water samples were collected by lowering a laboratory supplied container below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a new, laboratory supplied container was lowered into the water with the cap immediately applied once the container

Item	Details
	was full. A sampling pole was not required to collect the samples during this event given that all locations were safely accessible. **Sediment** Sediment samples were collected using a trowel from the base of the drain. At each location, a new laboratory supplied container was used to collect the sample. The trowel was decontaminated between sampling locations using a PFAS-free detergent (Liquinox®) followed by a double rinse with laboratory supplied de-ionised, PFAS free water. **Other** Sample OTH006 was collected from the in-flow effluent wastewater pipe beneath the STP pump house by lowering a disposable bailer through a floor access hatch into the pipe. The sample was then decanted into a new laboratory supplied container.
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. blind and split duplicates) and rinsate samples. Refer to **Appendix D** for assessment of QA/QC sample data.
Sample analysis	Samples were submitted to the primary and secondary laboratories for analysis detailed in **Section 2.0**. ALS Environmental (ALS) Sydney, NSW was used as the primary laboratory. The Envirolab of Sydney, NSW was used as the secondary laboratory. ALS and Envirolab methods for analyses were certified by the National Association of Testing Authorities (NATA). Laboratory certificates are presented in **Appendix E**.

4.2 Adopted Screening Criteria

Adopted screening criteria reference national guidance in the form of the PFAS National Environmental Management Plan, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset includes the following:

- PFAS National Environmental Management Plan 2.0 (NEMP), (HEPA 2020) (https://www.environment.gov.au/protection/publications/pfas-nemp-2)
- Department of Health (DoH), 2017. Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017 (FSANZ 2017).
- 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).

The adopted screening criteria are presented in **Table 6** below.

Table 6 Summary of Adopted Screening Criteria

Pathway	Compound	Criteria	Comment/Reference
Human Health Receptors			
Drinking water - groundwater	PFOS + PFHxS	0.07 µg/L	The values presented in the PFAS NEMP, 2020 are from DoH 2017, which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the TDI for PFOS and PFOA from FSANZ, 2017 and the methodology described in Chapter 6.3.3 of the National Health and Medical Research Council's (NHMRC) Australian Drinking Water Guidelines (ADWG), 2011 (updated in January 2022) to determine drinking water values. For PFHxS, DoH 2017 noted that '*FSANZ concluded that there was not enough toxicological and epidemiological information to justify establishing a tolerable daily intake. However, as a precaution, and for the purposes of site investigations, the PFOS tolerable daily intake should apply to PFHxS. In practice, this means that the level of PFHxS exposure should be added to the level of PFOS exposure; and this combined level be compared to the tolerable daily intake for PFOS*'. *Results from all groundwater locations were compared to these criteria.*
	PFOA	0.56 µg/L	
Recreational use – surface water	PFOS + PFHxS	2 µg/L	In August 2019, NHMRC released guidance on the assessment of PFAS in surface water. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events/year) to calculate an annual ingestion rate of 30 L per year. The adopted Recreational Use screening criteria adopted from PFAS NEMP (2020) are from NHMRC. *Results from all surface water locations were compared to these criteria.*
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater (99% species protection values)	PFOS	0.00023 µg/L	The values are from the PFAS NEMP, 2020 which endorsed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality – draft default guideline values. AECOM understands that these guidelines are currently being reviewed and will consider the appropriateness of considering any future revision. The 99% level of protection has been applied for slightly to moderately disturbed ecosystems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. For the purposes of preliminary screening of analytical water results, the laboratory detect threshold will be adopted rather than sole use of the criteria value. *All groundwater and surface water results will be compared to these criteria.*
	PFOA	19 µg/L	

4.3 Data Quality Objectives and Data Validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2022).

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

Data validation 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 have been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) - Annex L (Defence, 2021) requirements.

5.0 Field Observations and Results

5.1 General Observations

The weather conditions and general observations (including activities that may impact the monitoring program) recorded during the July 2022 sampling event are summarised in **Table 7** below.

Table 7 General Observations

Items	Observations
Weather Conditions	The weather in general was observed to be mostly fine to overcast with cool temperatures. A maximum daily temperature of 19.0°C was recorded on Thursday 21 July 2022. 2.6 mm of rainfall was recorded between 19 and 22 July 2022 at Singleton Defence AWS (station 061430) (Bureau of Meteorology, 2022). The weather conditions observed during the sampling event are unlikely to impact upon the quality or the reliability of the data collected.
Estate Management Works, Training Activities and/or Construction Works	During the sampling event, the following notable estate works were observed in the vicinity of the sampling locations: • the demolition of the former cantonment fire station and fire training pits had been completed prior to the sampling event. All above ground buildings, infrastructure and concrete hardstand appeared to have been demolished and removed from the area, with about six small (<5 m^3) stockpiles visible within the footprint of the former Fire Station. Monitoring well MW012 (formerly located within the footprint of the Fire Station) could not be located and likely to have been destroyed during the demolition works. No training activities were being conducted that prevented sampling from being conducted.

5.2 Groundwater Observations and Results

5.2.1 Groundwater Observations and Field Measurements

Groundwater observations and field measurements recorded during the sampling event completed between 19 and 22 July 2022 are presented in **Table 8** below.

Table 8 Groundwater Observations and Field Measurements

Item	Observations
Monitoring Well Network Condition	Monitoring well MW012 was observed to have been destroyed. The gatic for monitoring well MW056 had a threaded bolt and was unable to be opened.
Contamination Observations	No visible indications of contamination were observed during the sampling. Organic odours (including a sulphurous like odour) were noted during the sampling at MW050, MW109 and MW118.

Item	Observations
Depth to Groundwater and flow direction	The depth to groundwater ranged from 1.529 (MW048) and 17.59 (MW118) mbtoc across the SMA Management Area. Groundwater elevations in the aquifer were between 29.107 (MW188D) and 70.37 (MW052) metres Australian Height Datum (m AHD). Groundwater gauging data is presented in **Table T1** in **Appendix B**. Inferred groundwater contours and groundwater flow directions are shown on **Figure F5** in **Appendix A** based on data collected during the targeted gauging round on 19 July 2022. The inferred local groundwater flow direction was towards the north northeast, which was generally consistent with the Detailed Site Investigation (DSI) (AECOM, 2019).
Geochemical Parameters	Groundwater geochemical parameters were measured during groundwater sample collection. The stabilised readings are presented in **Table T1** in **Appendix B**, and are summarised below: • DO ranged from 0.25 mg/L (MW187D) to 7.2 mg/L (MW128) indicating poorly to over oxygenated conditions • EC ranged from 205.1 µS/cm (MW052) to 24,385 µS/cm (MW167) indicating brackish conditions • pH ranged from 5.83 (MW048) to 11.21 (MW188D) indicating fresh to alkaline conditions • corrected redox ranged from -352.6 mV (MW071) to -4.2 mV (MW126) indicating strongly to moderately reducing conditions.

5.2.2 PFAS Groundwater Analytical Results

The PFAS groundwater analytical results from this sampling event are presented in **Table T2** in **Appendix B**.

In summary, PFAS compounds were reported at concentrations above the laboratory LOR in nine of the 25 primary groundwater samples analysed. Concentrations of PFOS+PFHxS and/or PFOA exceeded the adopted human health criteria in two of the primary groundwater samples analysed. Concentrations of PFOS and/or PFOA exceeded the adopted ecological screening criteria in six of the primary groundwater samples analysed.

Deviations from the historical dataset are provided in **Table 9** below and graphically on **Figure F6** in **Appendix A**.

Table 9 Deviations from Historical Groundwater Dataset

Deviation Type	Location ID	PFOS+PFHxS concentration (µg/L)		PFOS concentration (µg/L)		PFOA concentration (µg/L)	
		Jul 2022	Historical maximum	Jul 2022	Historical maximum	Jul 2022	Historical maximum
First-time detections of PFOS+PFHxS, PFOS and/or PFOA in groundwater	MW124	0.07	<0.01	No first-time detections of PFOS.		No first-time detections of PFOA.	
	MW126	0.03	<0.05	No first-time detections of PFOS.		No first-time detections of PFOA.	
	MW188D	0.02	<0.01	0.02	<0.01	No first-time detections of PFOA.	
New exceedance of the NEMP (HEPA, 2020) drinking water guidelines	No new exceedances of the NEMP (HEPA, 2020) drinking water guidelines were detected. It is noted that there are no applicable human health screening criteria for PFOS						
New exceedance of the NEMP (HEPA, 2020) Freshwater 99% guidelines in groundwater	MW188D	No applicable criteria		0.02	<0.01	No new exceedances of the NEMP (HEPA, 2020) freshwater 99% guidelines were detected.	

Legend

Bold	Bold text indicates existing detection or exceedance of adopted screening criteria
Blue Shading	Blue shading indicates sampling location with first-time detection of PFOS+PFHxS and/or PFOA
Yellow Shading	Yellow shading indicates sampling location with new exceedance of NEMP Human Health Screening criteria and/or Ecological Screening criteria

5.3 Surface Water Observations and Results

5.3.1 Surface Water Observations and Field Measurements

Surface water observations and field measurements recorded during the sampling event are presented in **Table 10** below.

Table 10 Surface Water Observations and Field Measurements

Compound	Criteria
Fieldwork Dates	The surface water sampling was completed between 19 and 21 July 2022.
Access and Sample Collection	All surface water sampling locations were accessible and able to be sampled.
Contamination Observations	No obvious visible signs of contamination were observed. A slight organic odour was reported at locations SW035, SW039 and SW065.

Compound	Criteria
Geochemical Parameters	Surface water geochemical parameters were measured during surface water sample collection. The readings are presented in **Table T3** in **Appendix B**, and are summarised below: • DO ranged from 3.93 mg/L (SW005) to 9.84 mg/L (SW114) indicating moderately oxygenated to well oxygenated conditions • EC ranged from 98.1 µS/cm (SW032) to 2,404 µS/cm (SW555) indicating fresh to quite brackish conditions • pH ranged from 5.93 (SW005) to 7.62 (SW028) indicating freshwater conditions • corrected redox ranged from -285.8 mV (SW005) to 338.0 mV (SW036) indicating strongly reducing to potentially reducing conditions.

5.3.2 PFAS Surface Water Analytical Results

The PFAS surface water analytical results from this sampling event are presented in **Table T4** in **Appendix B**.

In summary, PFAS compounds were reported at concentrations above the laboratory LOR in 16 of the 21 primary surface water samples analysed. Concentrations of PFOS+PFHxS and/or PFOA did not exceed the adopted human health screening criteria in the primary surface water samples analysed. Concentrations of PFOS and/or PFOA exceeded the adopted ecological screening criteria in 14 of the 21 primary surface water samples analysed.

Deviations from the historical dataset are provided in **Table 11** below and graphically on **Figure F7** in **Appendix A**.

Table 11 Deviations from Historical Surface Water Dataset

Deviation Type	Location ID	PFOS+PFHxS concentration (µg/L)		PFOS concentration (µg/L)		PFOA concentration (µg/L)	
		Jul 2022	Historical maximum	Jul 2022	Historical maximum	Jul 2022	Historical maximum
First-time detections of PFOS+PFHxS, PFOS and/or PFOA in surface water	OTH006	No first-time detections of PFOS+PFHxS.		No first-time detections of PFOS.		0.01	<0.01
	SW032	No first-time detections of PFOS+PFHxS.		No first-time detections of PFOS.		0.03	<0.01
	SW114	0.01	Not previously sampled	0.01	Not previously sampled	No first-time detections of PFOA.	
	SW115	0.82	Not previously sampled	0.49	Not previously sampled	0.01	Not previously sampled
	SW554	0.09	<0.01	0.05	<0.01	No first-time detections of PFOA.	
New exceedance of the NEMP (HEPA, 2020)	No new exceedances of the NEMP (HEPA, 2020) Recreational water guidelines were detected in the surface water samples analysed. It is noted that there are no applicable human health screening criteria for PFOS .						

Deviation Type	Location ID	PFOS+PFHxS concentration (µg/L)		PFOS concentration (µg/L)		PFOA concentration (µg/L)	
		Jul 2022	Historical maximum	Jul 2022	Historical maximum	Jul 2022	Historical maximum
Recreational water guidelines							
New exceedance of the NEMP (HEPA, 2020) Freshwater 99% guidelines in surface water	SW554	No applicable criteria		0.05	<0.01	No new exceedances of the NEMP (HEPA, 2020) freshwater 99% guidelines were detected.	
	SW114	No applicable criteria		0.01	Not previously sampled	No new exceedances of the NEMP (HEPA, 2020) freshwater 99% guidelines were detected.	
	SW115	No applicable criteria		0.49	Not previously sampled	No new exceedances of the NEMP (HEPA, 2020) freshwater 99% guidelines were detected.	

Legend	
Bold	Bold text indicates existing detection or exceedance of adopted screening criteria
Blue Shading	Blue shading indicates sampling location with first-time detection of PFOS+PFHxS and/or PFOA
Yellow Shading	Yellow shading indicates sampling location with new exceedance of NEMP Human Health Screening criteria and/or Ecological Screening criteria

5.4 Sediment Observations and Results

5.4.1 Sediment Observations

Sediment observations recorded during the sampling event are presented in **Table 12** below.

Table 12 Sediment Observations

Compound	Criteria
Fieldwork Dates	The sediment sampling was completed between 19 and 21 July 2022.
Access and Sample Collection	All sediment sample locations were accessible and able to be sampled.
Sediment observations	Sediments sampled during this monitoring event were variable comprising sand, silt, gravel and clay materials with minor inclusions of organic material (roots, grass, wood, moss and leaves) noted. No anthropogenic inclusions were noted. No staining was observed. Organic odour was noted at locations SD039 and SD052. Refer to **Table T5** in **Appendix B** for a summary of sediment classifications and observations.

5.4.2 PFAS Sediment Analytical Results

The PFAS sediment analytical results from this sampling event are presented in **Table T6** in **Appendix B**. In summary, PFAS compounds were detected at concentrations above the laboratory LORs in 19 of the 20 primary sediment samples analysed.

Deviations from the historical dataset are provided in **Table 13** below and graphically on **Figure F8** in **Appendix A**.

Table 13 Deviations from Historical Sediment Dataset

Deviation Type	Location ID	PFOS+PFHxS concentration (µg/L)		PFOS concentration (µg/L)		PFOA concentration (µg/L)	
		Jul 2022	Historical maximum	Jul 2022	Historical maximum	Jul 2022	Historical maximum
First-time detections of PFOS+PFHxS, PFOS and/or PFOA in sediment	SD002	No first-time detections of PFOS+PFHxS.		No first-time detections of PFOS.		0.0002	<0.0002
	SD040	0.0004	<0.0002	0.0004	<0.0002	No first-time detections of PFOA.	
	SD116	0.0007	Not previously sampled	0.0007	Not previously sampled	No first-time detections of PFOA.	
	SD114	0.0029	Not previously sampled	0.0029	Not previously sampled	No first-time detections of PFOA.	
	SD115	0.048	Not previously sampled	0.0457	Not previously sampled	0.0002	Not previously sampled
	SD540	No first-time detections of PFOS+PFHxS.		No first-time detections of PFOS.		0.0002	<0.0002
	SD047	No first-time detections of PFOS+PFHxS.		No first-time detections of PFOS.		0.0002*	<0.0002
Legend							
* Denotes field duplicate result							
Blue Shading	Blue shading indicates sampling location with first time detection of PFOS+PFHxS, PFOS and/or PFOA						

5.5 Historical Sampling Data

Historical groundwater, surface water and sediment sampling data are presented in **Tables T7, T8** and **T9** (respectively) in **Appendix B**.

6.0 Summary and Next Sampling Events

6.1 Summary of Monitoring Event

The biennial monitoring event was completed at the SMA Management Area between 19 and 22 July 2022. The program included:

- groundwater gauging at 27 of the 31 monitoring wells and bores. It is noted that four planned gauging locations could not be gauged, and two locations were gauged to be dry.
- groundwater sampling at 25 of the 31 monitoring wells and bores. It is noted that six planned sampling locations could not be sampled or were gauged to be dry
- surface water sampling at 21 of the 21 planned locations.
- sediment sampling at 20 of the 20 planned locations.

Table 14 below summarises the findings of the July 2022 sampling event and the recommended actions.

Table 14 Summary of Sampling Event

Item	Comment	Recommended Actions
Access to and sampling of locations.	The following were accessed and able to be sampled: • 25 out of 31 monitoring wells and bores • 21 out of 21 surface water locations • 20 out of 20 sediment locations.	AECOM will liaise with the private property owners to attempt to arrange access to locations MW129 and MW139 during the next scheduled annual OMP sampling event AECOM will re-gauge and attempt to sample MW049 and MW104 if sufficient water is present during the next scheduled OMP sampling event.
Monitoring well network condition.	Monitoring well MW012 was noted to have been destroyed. Monitoring well MW056 was unable to be accessed due to damage.	It is recommended that MW012 be removed from the OMP scope of works given that the remaining monitoring well network provides sufficient coverage in this area. Prior to the next annual sampling event, AECOM will attempt to repair the monitoring well gatic at MW056 to enable access for sampling.
Analytical Results.	PFAS were detected at concentrations above the laboratory LOR in nine of the 25 groundwater samples, 15 of 21 surface water samples and 19 of 20 sediment samples analysed.	No actions recommended.
New exceedance of NEMP ecological screening criteria.	Concentrations of PFOS exceeded the NEMP ecological screening criteria for the first time in monitoring well MW188D and surface water locations SW114, SW115 and SW554.	These locations will be sampled again during the next sampling event.

Item	Comment	Recommended Actions
First time detection of PFOS+PFHxS, PFOS and/or PFOA.	PFOS+PFHxS, PFOS and/or PFOA was detected for the first time in groundwater monitoring wells MW124, MW126 and MW188D, surface water locations SW032, SW114, SW115 and SW554, sewage influent location OTH006 and sediment locations SD002, SD040, SD047, SD116, SD114, SD115 and SD540.	These locations will be sampled again during the next sampling event.

6.2 Upcoming Sampling Events

The next sampling event is scheduled for January 2023.

6.3 Upcoming Annual Interpretive Report

The first annual interpretive report for the OMP monitoring period between July 2022 and June 2023 is scheduled to be delivered in Q3 2023.

7.0 References

AECOM, 2019. *Detailed Site Investigation – Singleton Military Area – PFAS Investigation*. November 2019.

AECOM, 2021. *Detailed Site Investigation Addendum – Singleton Military Area – PFAS Investigation*. March 2021.

AECOM, 2022. *Sampling Analysis and Quality Plan, Singleton Military Area (Lone Pine Barracks)*. Rev 0, 14 July 2022

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

ASC NEPM, 2013. *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedules B2, B4 and B7*.

Department of Defence, 2018. *Contamination Management Manual.* August 2018, Amended June 2021.

Department of Defence, 2021a. *PFAS Ongoing Monitoring Plan - Singleton Military Area.* December 2021.

Department of Defence, 2021b. *PFAS Management Area Plan - Singleton Military Area.* December 2021.

Department of Defence, 2021c. *PFAS OMP Factual Report Guidance,* Version 0.2 dated May 2021.

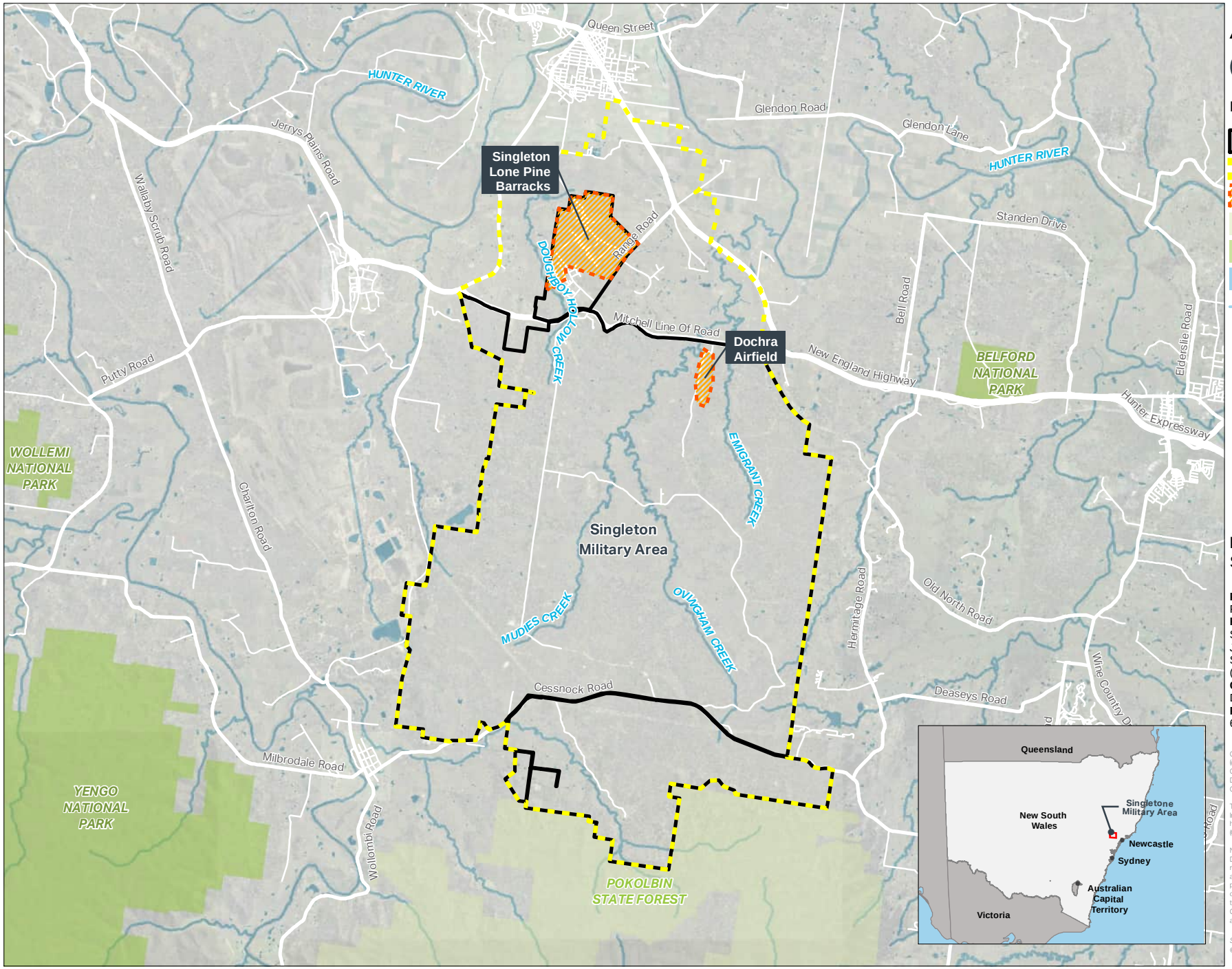
Heads of EPAs Australia and New Zealand (HEPA) 2020. *PFAS National Environmental Management Plan*. Version 2.0, January 2020.

National Health and Medical Research Council (NHMRC), 2011. *Australian Drinking Water Guidelines 6, 2011. Version 3.7 Updated January 2022.* January 2022.

National Health and Medical Research Council (NHMRC), 2019. *Guidance on PFAS in Recreational Water.* August 2019Standards Australia 1998. AS/NZ 5667:1998 *Water quality – sampling.*

Appendix A

Figures



AECOM

N

0 1.5 3 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- State Forest
- NPWS Reserve
- Waterbody
- Watercourse

FIGURE F1:
SITE LAYOUT

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
July 2022
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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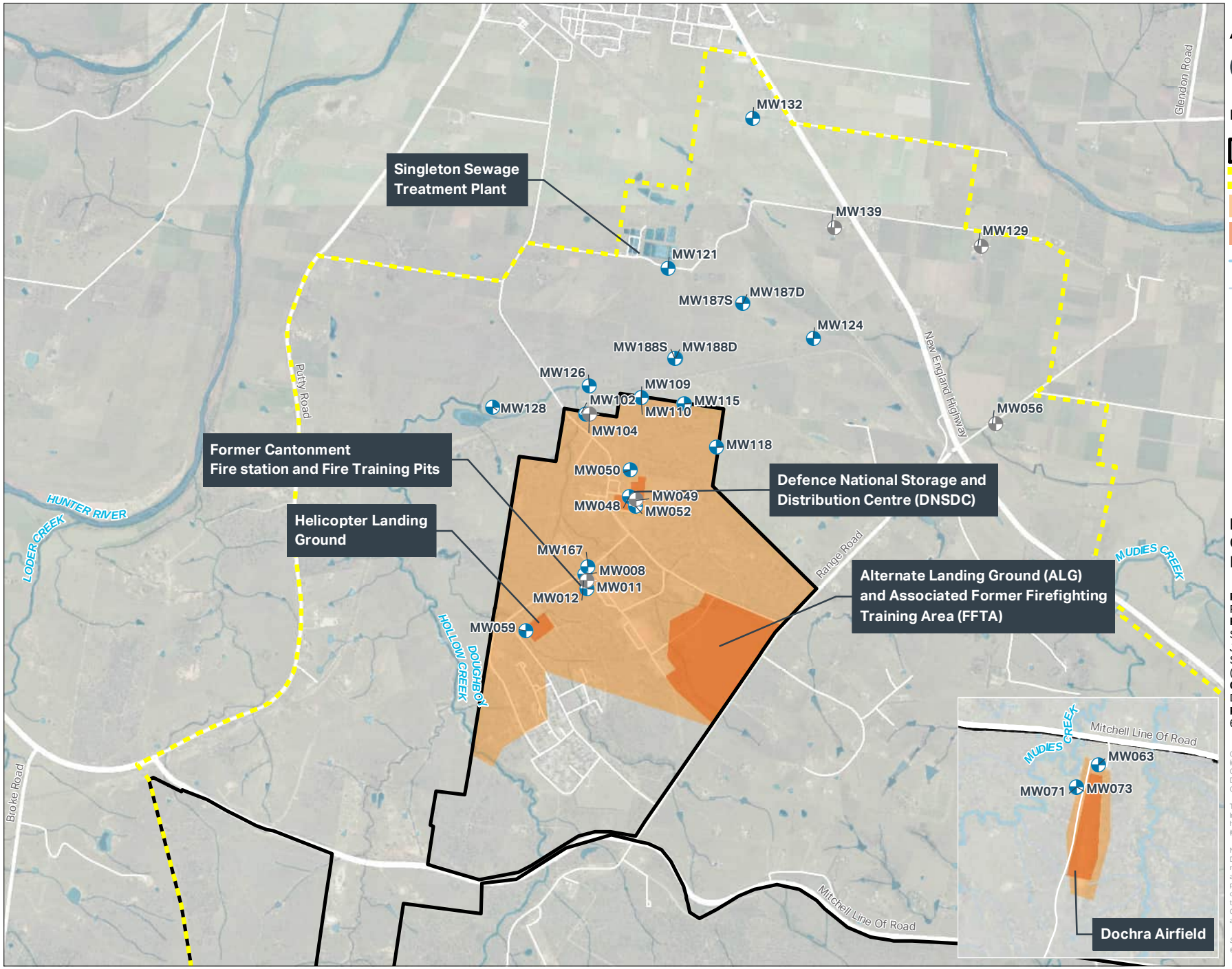

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation
- On-site Management
- PFAS Source Areas
- Watercourse
- Drainage line
- Groundwater Location (sampled)
- Groundwater Location (not sampled)

FIGURE F2:
GROUNDWATER SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
July 2022
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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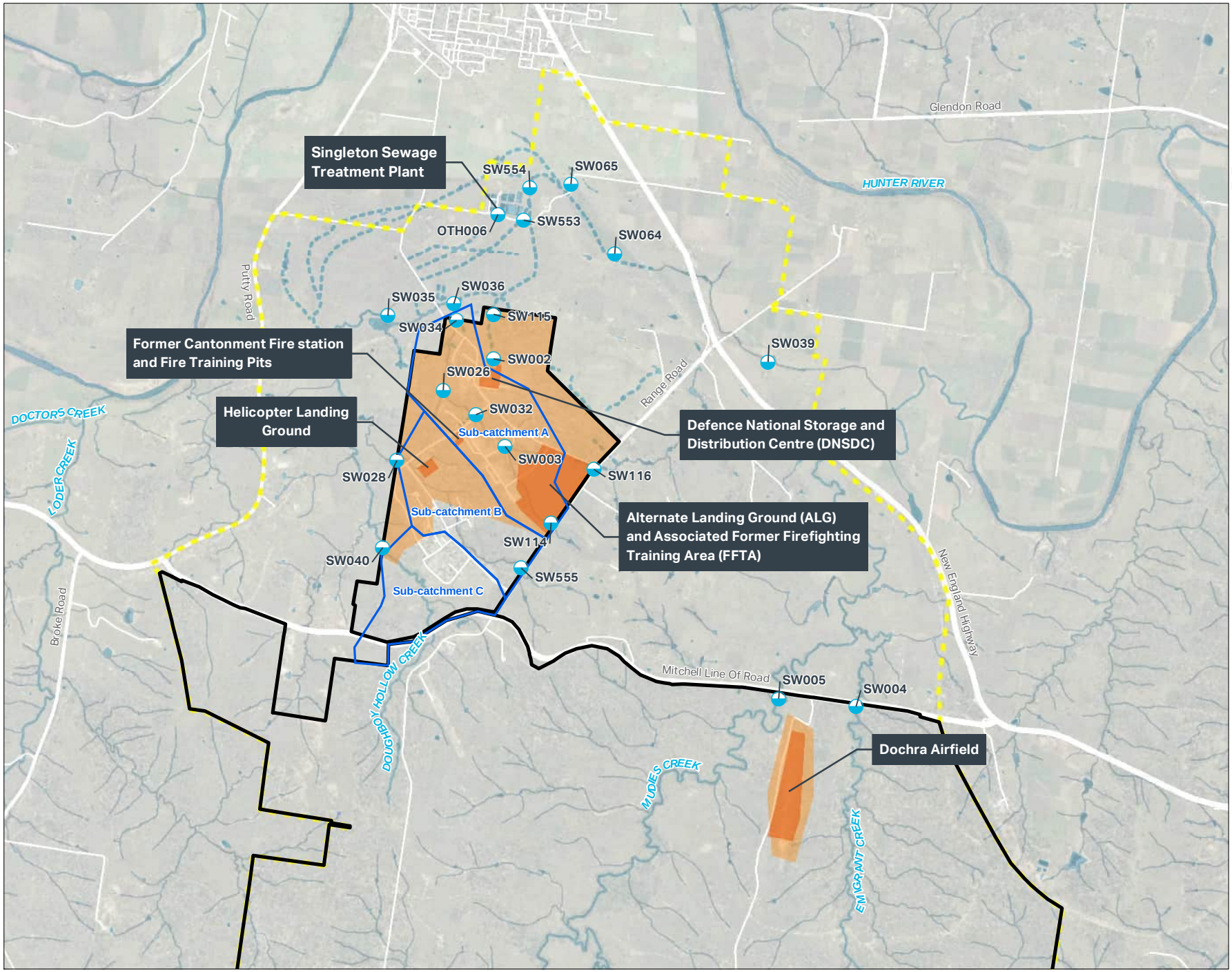

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Catchment Boundaries
- Watercourse
- Drainage line
- Undefined Drainage Lines
- Surface Water Location (sampled)

FIGURE F3:
SURFACE WATER SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
July 2022
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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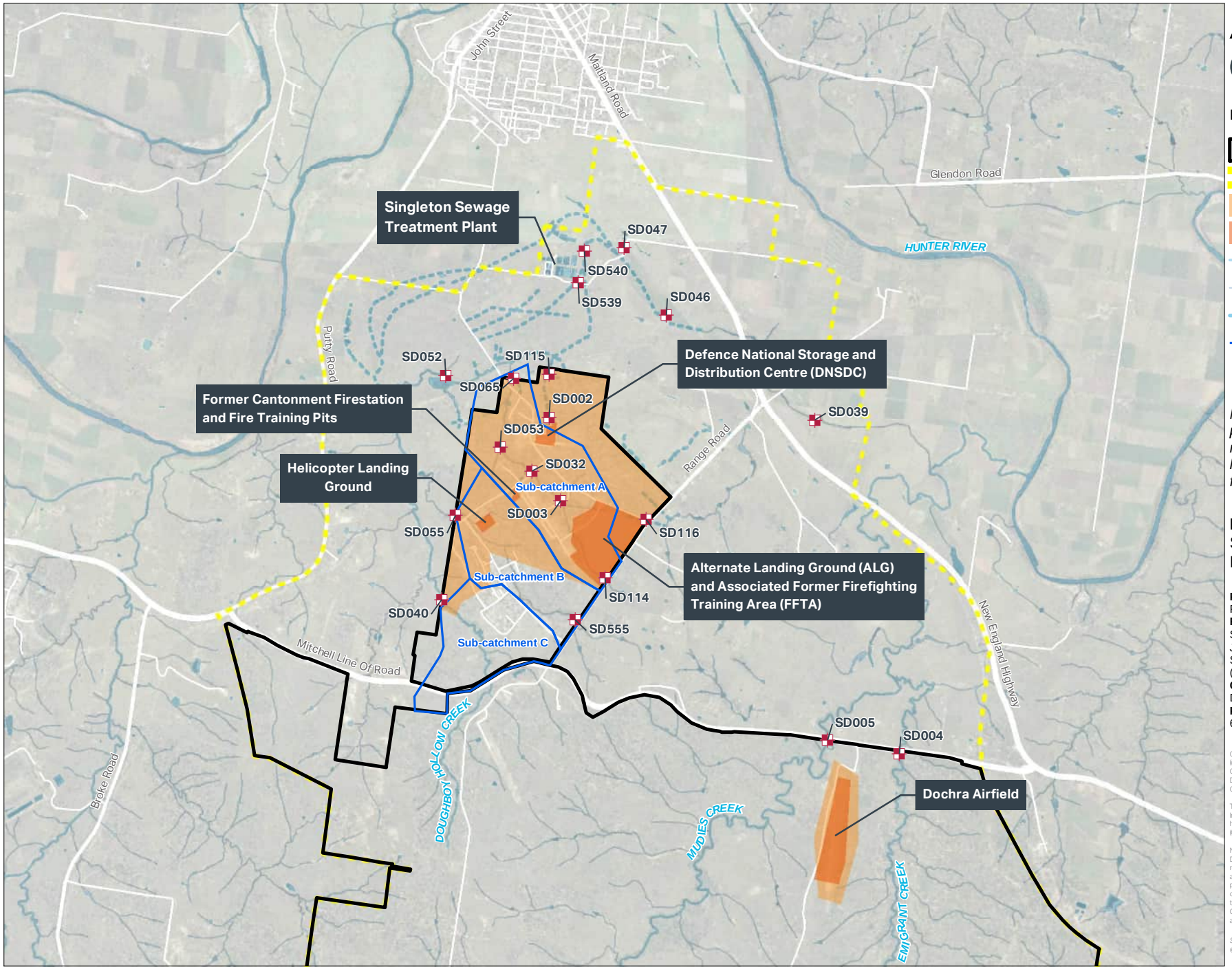

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage line
- Undefined Drainage Lines
- Catchment Boundaries
- Sediment Location (sampled)

Not all available data are presented herein. For privacy reasons, selected sample points have been removed under advice from the private property owners

FIGURE F4:
SEDIMENT SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
July 2022
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

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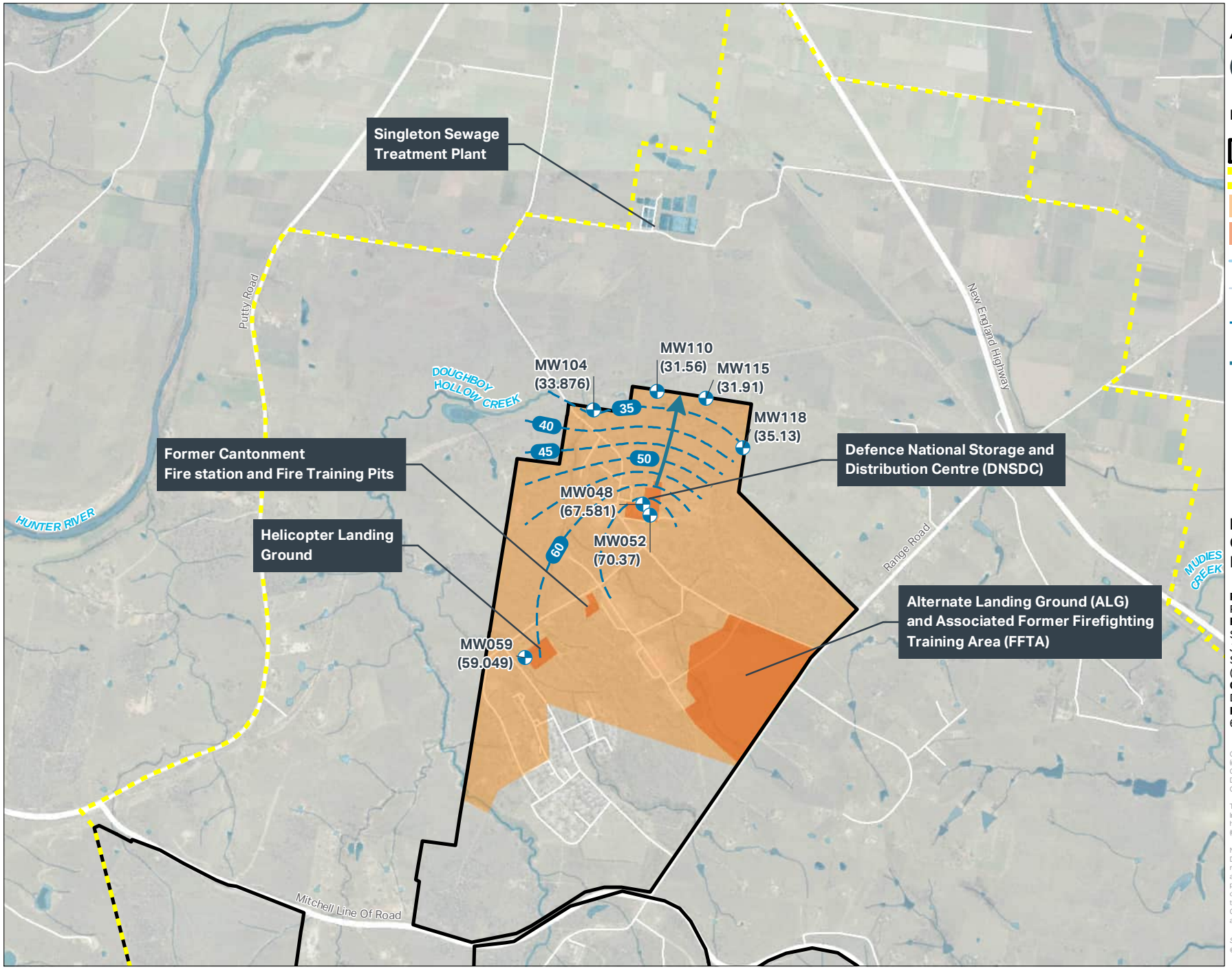

AECOM

N

0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage line
- Groundwater Contours (mAHD)
- Inferred Groundwater Flow Direction
- Groundwater Location (gauged)

FIGURE F5:
GROUNDWATER ELEVATION PLAN

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
July 2022
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

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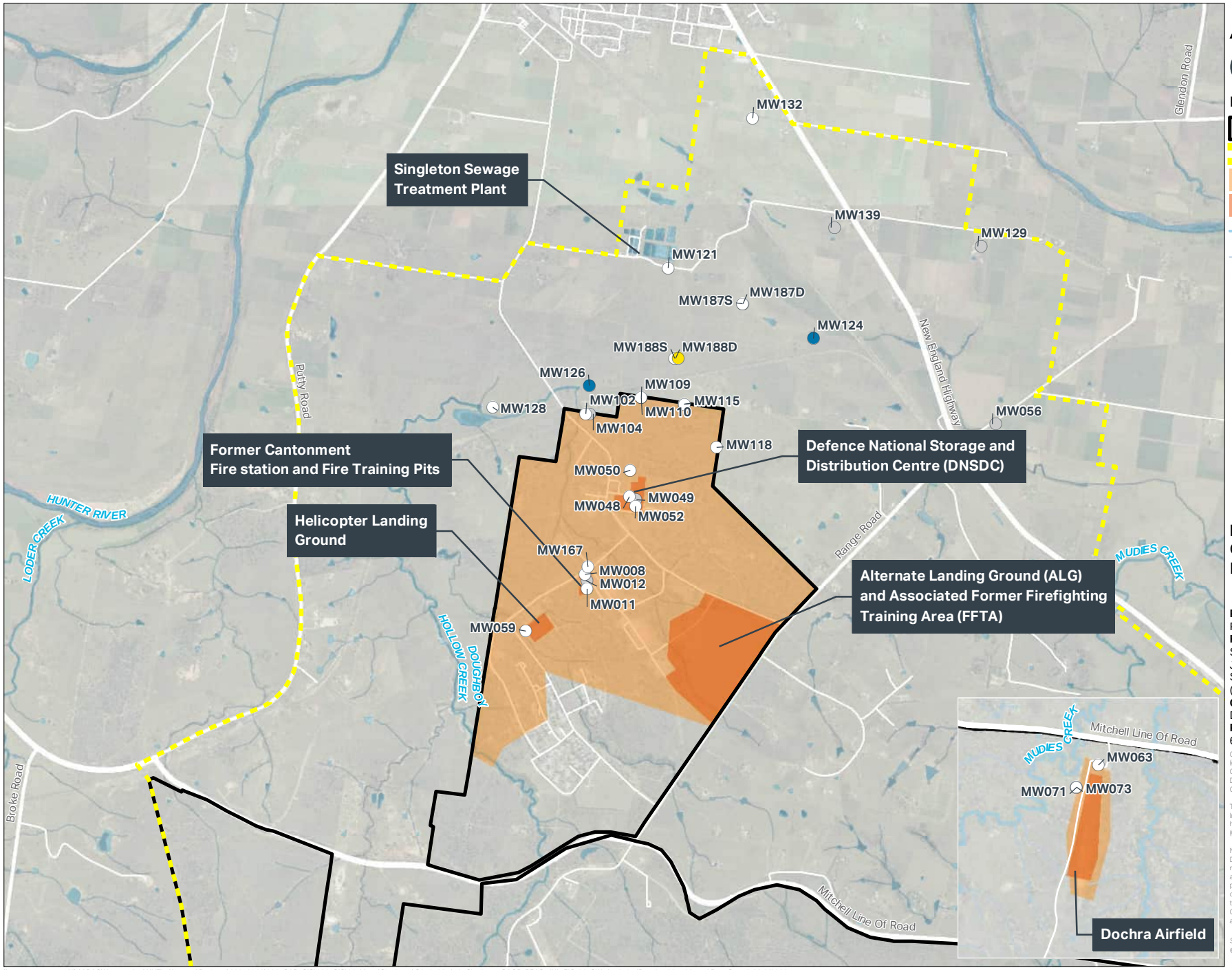

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage line
- First-time detection of PFOS+PFHxS, PFOS and/or PFOA
- New exceedance of ecological screening criteria for PFOS and/or PFOA
- Sampled, no first-time detection or exceedance
- Location not accessed and/or sampled

FIGURE F6:
GROUNDWATER ANALYTICAL RESULTS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
July 2022
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

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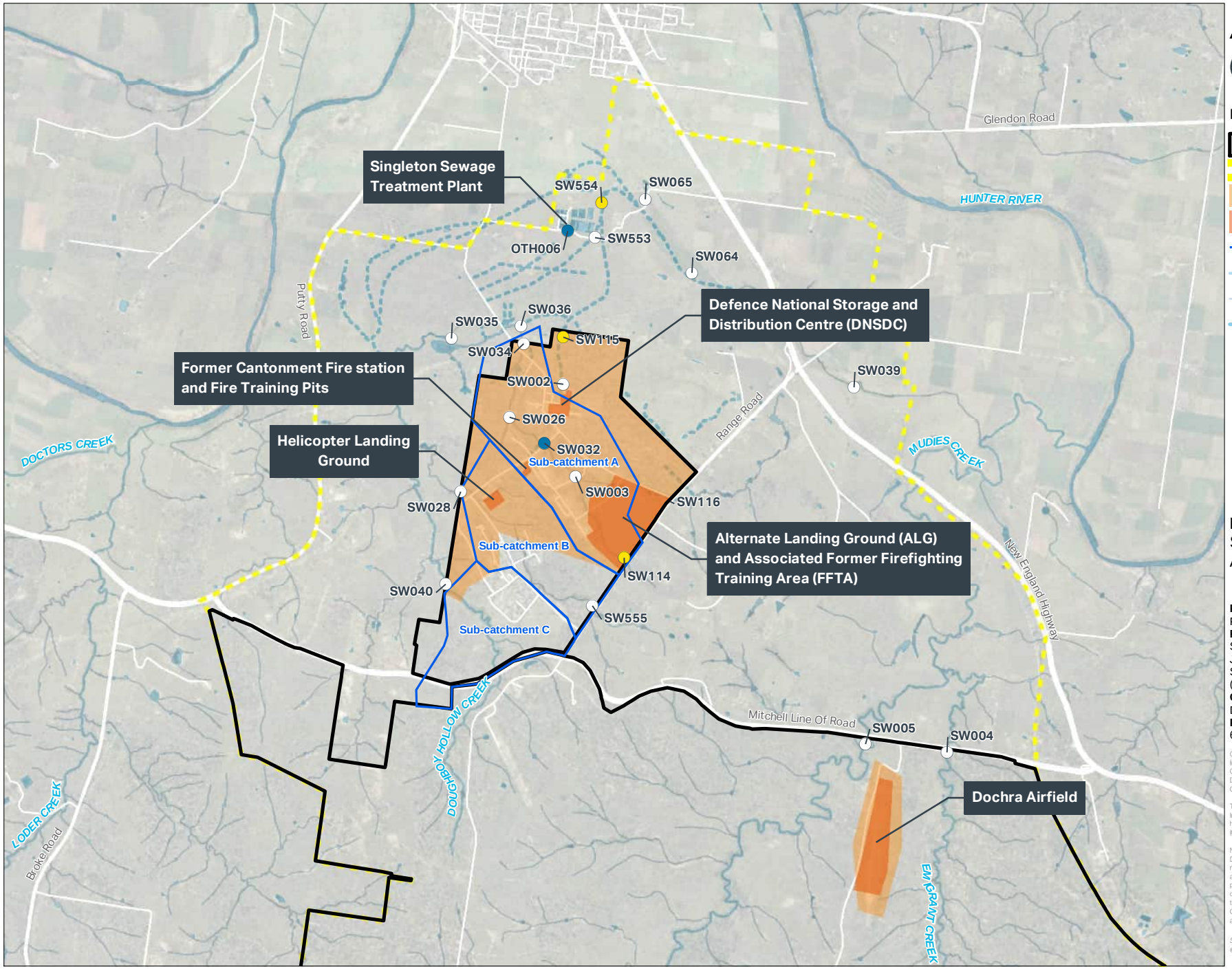

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Catchment Boundaries
- Watercourse
- Drainage line
- Undefined Drainage Lines
- First-time detection of PFOS+PFHxS, PFOS and/or PFOA
- New exceedance of ecological screening criteria for PFOS and/or PFOA
- Sampled, no first time detection or exceedance

FIGURE F7:
SURFACE WATER ANALYTICAL RESULTS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
July 2022
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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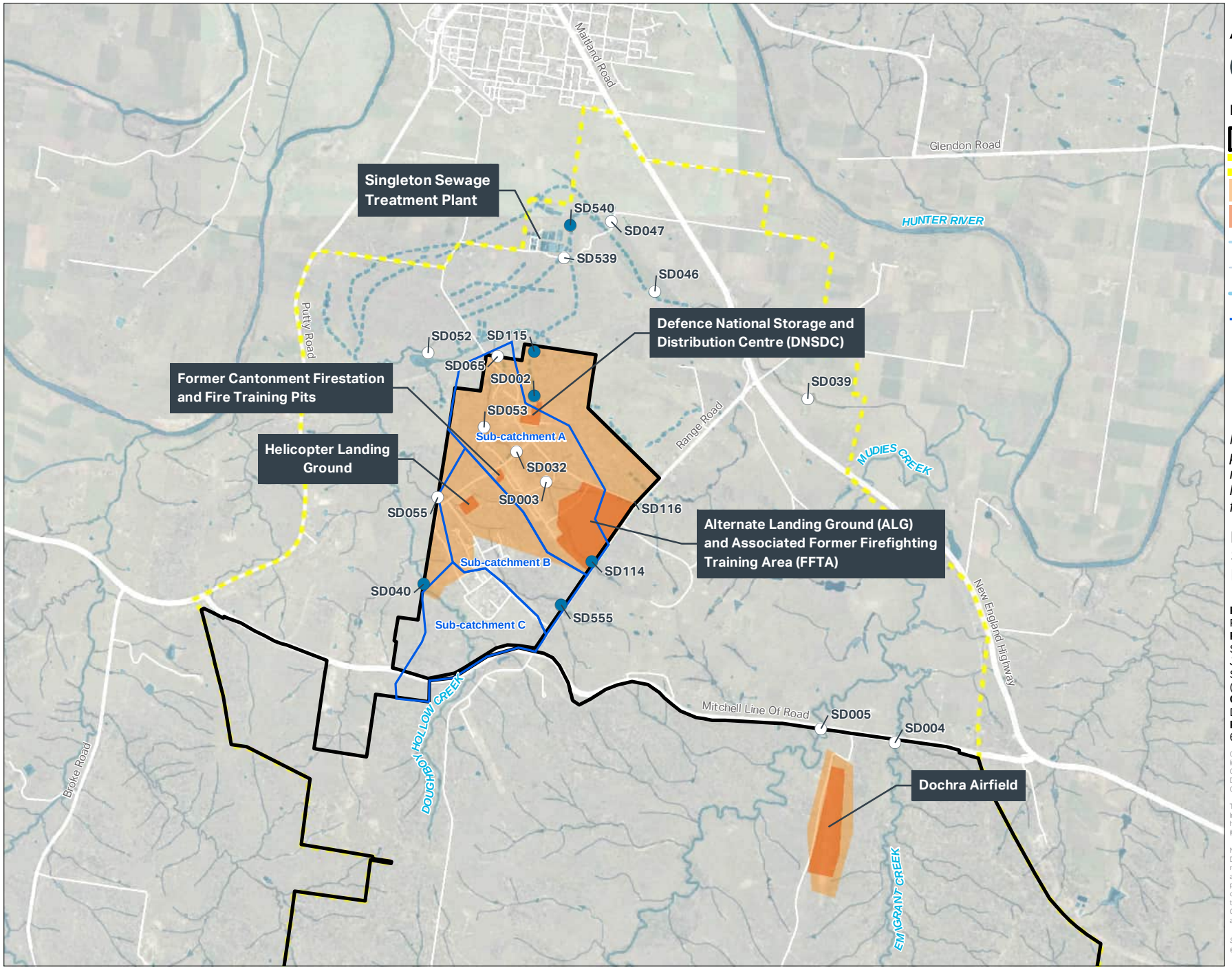

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage line
- Undefined Drainage Lines
- Catchment Boundaries
- First-time detection of PFOS+PFHxS, PFOS and/or PFOA
- Sampled, no first time detection or exceedance

Not all available data are presented herein. For privacy reasons, selected sample points have been removed under advice from the private property owners

FIGURE F8:
SEDIMENT ANALYTICAL RESULTS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
July 2022
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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Appendix B

Tables

Table T1 - Groundwater Gauging and Geochemical Parameters

AECOM

												Field					
												DO (Field)	Redox Er (Field)	Redox Eh (Corrected)	Temp (Field)	EC (field)	pH (Field)
												mg/L	mV	mV	oC	µS/cm	pH Units
Location Code	Alternate Name	Gauged and/or Sampled Date	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Gauging Comment	Sample Comments							
MW008	CNN0018_GW08	21/07/2022	74.1	11.00	14	10.009	64.091	13.95	Good condition	Light yellow, no turbidity, no odour, no sheen		0.64	-356.2	-150	17.1	23,974	7.04
MW008	CNN0018_GW08	19/07/2022	74.1	11.00	14	10.042	64.058	16.1	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW011	CNN0018_GW02/CNN0018_GW002	21/07/2022	74.13	8.50	11.5	10.269	63.861	11.698	Good condition	Light brown, low turbidity, no odour, no sheen		0.87	-325.7	-120	18.3	20,177	6.3
MW011	CNN0018_GW02/CNN0018_GW002	19/07/2022	74.13	8.50	11.5	10.253	63.877	13.8	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW012	CNN0018_GW03/CNN0018_GW003	N/A	73.25	5.80	12	N/A	N/A	N/A	N/A	Well was destroyed – within construction area		-	-	-	-	-	-
MW048	CNN0039_GW01/CNN0039_GW001	21/07/2022	69.11	4.00	7	1.582	67.528	6.8	Good condition	Light yellow, low turbidity, organic odour, no sheen		1.48	-315.9	-110	17.8	1355	5.83
MW048	CNN0039_GW01/CNN0039_GW001	19/07/2022	69.11	4.00	7	1.529	67.581	6.77	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW049	CNN0039_GW02/CNN0039_GW002	19/07/2022	69.76	2.70	8.7	0	69.76	7.82	Good condition, water in gatic above top of casing removed prior to removal of plug	Clear, no turbidity, no odour, no sheen		-	-	-	-	-	-
MW050	CNN0039_GW03	21/07/2022	64.4	12.50	16	9.583	54.817	17.25	N/A	Clear, no turbidity, rotten egg smell (sulphurous), no sheen		2.39	-372	-166	18.8	12,254	6.61
MW050	CNN0039_GW03	19/07/2022	64.4	12.50	16	9.587	54.813	17.1	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW052	CNN0039_GW05	21/07/2022	72.05	0.80	3.8	1.693	70.357	4.9	Good condition	Orange, medium turbidity, no odour, no sheen		3.85	-299	-93.2	15.7	205.1	6.59
MW052	CNN0039_GW05	19/07/2022	72.05	0.80	3.8	1.68	70.37	4.9	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW059	HLG_GW03	21/07/2022	61.14	2.00	4	2.09	59.05	4.75	Good condition	Light grey, low turbidity, organic odour, no sheen		4.34	-272	-66.2	14.6	16,977	6.98
MW059	HLG_GW03	19/07/2022	61.14	2.00	4	2.091	59.049	4.78	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW063	NSW1164_MW001D/NSW1164_MW01[	19/07/2022	42.88	16.00	19	5.664	37.216	20.14	Good condition	Clear, no turbidity, no odour, no sheen		2.13	-471.9	-266	19.4	15,656	8.03
MW063	NSW1164_MW001D/NSW1164_MW01[	19/07/2022	42.88	16.00	19	6.043	36.837	20.14	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW071	NSW1164_MW003D	19/07/2022	47.87	23.50	29.5	8.244	39.626	31.04	Good condition	Black / grey, medium turbidity, organic odour, no sheen		2.1	-558.4	-353	19	13,755	7.43
MW073	NSW1164_MW03S	19/07/2022	47.91	7.00	10	10.757	37.153	11.54	N/A	Yellow / brown, medium turbidity, no odour, no sheen		2.5	-496.8	-291	19.7	21,450	6.74
MW102	GW02D	21/07/2022	46.82	12.50	15.5	12.195	34.625	16.85	Good condition	Clear, no turbidity, no odour, no sheen		1.16	-401.1	-195	19.7	18,542	6.6
MW102	GW02D	19/07/2022	46.82	12.50	15.5	12.958	33.862	16.85	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW104	GW02S	19/07/2022	46.72	10.00	13	12.844	33.876	12.97	Good condition	Clear, no turbidity, no odour, no sheen		-	-	-	-	-	-
MW109	GW03D	21/07/2022	45.1	24.50	30	13.023	32.077	30.04	Good condition	Black / grey, turbid, distinct rotten egg smell (sulphurous), no sheen		0.94	-410.2	-204	20.8	16,310	6.88
MW109	GW03D	19/07/2022	45.1	24.50	30	13.005	32.095	30.34	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW110	GW03S	21/07/2022	45.4	11.50	14	13.895	31.505	14.8	Good condition	Light brown, low turbidity, no odour, no sheen		1.66	-376.1	-170	20	17,804	6.9
MW110	GW03S	19/07/2022	45.4	11.50	14	13.84	31.56	14.8	N/A	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW114	GW04D	21/07/2022	45.9	23.50	29.5	13.877	32.023	31.34	Good condition	Light brown, low turbidity, no odour, no sheen		*	-335.2	-129	20.6	5476	7.16
MW114	GW04D	19/07/2022	45.9	23.50	29.5	13.835	32.065	31.34	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW115	GW04S	21/07/2022	45.86	11.00	14	13.995	31.865	15.09	Good condition	Yellow / brown, low turbidity, no odour, no sheen		1.96	-297.6	-91.8	20.3	6390	6.77
MW115	GW04S	19/07/2022	45.86	11.00	14	13.95	31.91	14.91	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW118	GW05S	21/07/2022	52.72	-	-	17.604	35.116	31.04	-	Light grey, low turbidity, rotten egg smell (sulphurous), no sheen		6.46	-245.5	-39.7	21.9	15,052	6.94
MW118	GW05S	19/07/2022	52.72	0.00	0	17.59	35.13	26.1	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW121	GW06/GW06S	22/07/2022	39.82	9.50	12.5	8.473	31.347	12.3	Good condition	Yellow / brown, no turbidity, no odour, sheen		1.08	-404.4	-199	18.7	255.4	7.11
MW124	GW07/GW07S	20/07/2022	38.68	9.40	13.8	8.575	30.105	13.85	Good condition, water in gatic above top of casing removed prior to removal of plug, sediment on probe	Clear, no turbidity, no odour, no sheen		2.53	-339.9	-134	19.9	5696	7.03
MW126	GW08S	22/07/2022	42.78	10.50	13.5	10.633	32.147	12.16	Good condition	Light yellow, low turbidity, no odour, no sheen		6.9	-210	-4.2	19.9	6756	6.02
MW128	GW09S	22/07/2022	44.08	9.20	12.2	11.218	32.862	13.78	Good condition	Light brown, turbid, no odour, no sheen		7.2	-243.8	-38	19	4813	7.22
MW129	GW10S	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Access not given by resident		-	-	-	-	-	-
MW132	RESI_GW011	19/07/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Clear, low turbidity, no odour, no sheen		5.5	-396.2	-190	13.1	3537	6.55
MW139	RESI_GW013/RESI_GW13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Access not given by resident		-	-	-	-	-	-
MW167	CNN0230_GW01	19/07/2022	72.65	14.50	20.5	10.798	61.852	20.5	Good condition	Targeted gauging round for groundwater elevation plan. No sample collected		-	-	-	-	-	-
MW167	CNN0230_GW01	21/07/2022	72.65	14.50	20.5	10.819	61.831	20.5	Good condition	Light yellow / brown, low turbidity, organic odour, no sheen		0.71	-318.1	-112	19.2	24,385	6.71
MW187D	MW09D	20/07/2022	40.23	18.70	24.7	9.533	30.697	25.94	Good condition	Clear, no turbidity, no odour, no sheen		0.25	-443.2	-237	19	11,568	6.7
MW187S	MW09S	20/07/2022	40.4	7.00	10	9.855	30.545	10.9	N/A	Clear, no turbidity, no odour, no sheen		3.28	-326.5	-121	19.9	15,940	6.58
MW188D	MW10D	22/07/2022	41.25	24.00	30	12.143	29.107	31	Good condition	Grey, medium turbidity, no odour, no sheen, grab sample collected as insufficient head of water present in well to purge using bladder pump		5.89	-252.5	-46.7	19.6	7623	11.21
MW188S	MW10S	22/07/2022	41.12	8.00	11	9.985	31.135	12.04	Good condition	Grey, low turbidity, no odour, no sheen		3.44	-259.7	-53.9	19.5	14,234	*

Notes:
mV milliVolts
mg/L milligrams per Litre
µS/cm micro Siemens per centremetre
Corrected field Redox measurement (Eh [mV]) = Er [mV] + 205.8
* - Parameter not recorded due to equipment malfunction
N/A Not available

Table T2 - Groundwater Analytical Results

AECOM

											PFAS Full Suite																										
											Sum of PFHxS and PFOS	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluorohexane sulfonic acid (PFHxS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorodecane sulfonic acid (PFDS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoropentane sulfonic acid (PFPeS)	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 (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	Sum of PFAS	Sum of PFAS (WA DER List)
											µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR											0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.05	0.05	0.02	0.05	0.02	0.01	0.01
PFAS NEMP 2020 Drinking Water											**0.07**		**0.56**																										
PFAS NEMP 2020 Freshwater 99%												*0.00023*	*19*																										
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report**																																		
MW008	0356_MW008_220721	21/07/2022	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW011	0356_MW011_220721	21/07/2022	Normal	ES2226191	0.04	*0.02*	<0.01	0.02	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.07	0.04
MW048	0356_MW048_220721	21/07/2022	Normal	ES2226191	**2.28**	*0.02*	0.05	2.26	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	0.04	0.27	<0.02	0.04	<0.05	<0.02	<0.02	0.15	<0.02	<0.02	0.31	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	3.14	2.83
MW048	0356_QC203_220721	21/07/2022	Interlab_D	301227	**2.7**	*0.02*	0.06	2.6	<0.02	<0.01	<0.01	<0.02	0.04	<0.02	<0.05	0.05	0.23	<0.01	0.05	<0.5	<0.1	<0.02	0.21	<0.02	0.02	0.31	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.1	3.6	-
MW048	0356_QC103_220721	21/07/2022	Field_D	ES2226191	**2.26**	*0.02*	0.05	2.24	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	0.04	0.24	<0.02	0.06	<0.05	<0.02	<0.02	0.19	<0.02	<0.02	0.31	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	3.15	2.84
MW050	0356_MW050_220721	21/07/2022	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW052	0356_MW052_220721	21/07/2022	Normal	ES2226191	**0.66**	*0.38*	0.02	0.28	<0.05	<0.05	<0.05	<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	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.79	0.77
MW059	0356_MW059_220721	21/07/2022	Normal	ES2226191	0.04	*<0.01*	<0.01	0.04	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.04	0.04
MW063	0356_MW063_220719	19/07/2022	Normal	ES2226191	0.05	*0.05*	<0.01	<0.01	<0.05	<0.05	0.24	<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	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.34	0.34
MW071	0356_MW071_220719	19/07/2022	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW073	0356_MW073_220719	19/07/2022	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW102	0356_MW102_220721	21/07/2022	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW109	0356_MW109_220721	21/07/2022	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW110	0356_MW110_220721	21/07/2022	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW114	0356_MW114_220721	21/07/2022	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW115	0356_MW115_220721	21/07/2022	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW118	0356_MW118_220721	21/07/2022	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW121	0356_MW121_220722	22/07/2022	Normal	ES2226474	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW121	0356_QC106_220722	22/07/2022	Field_D	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW121	0356_QC206_220722	22/07/2022	Interlab_D	301227	<0.01	*<0.01*	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.02	<0.5	<0.1	<0.02	<0.01	<0.02	<0.01	<0.01	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.1	<0.01	-
MW124	0356_MW124_220720	20/07/2022	Normal	ES2226474	0.07	*<0.01*	<0.01	0.07	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.07	0.07
MW126	0356_MW126_220722	22/07/2022	Normal	ES2226120	0.03	*<0.01*	<0.01	0.03	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.03	0.03
MW128	0356_MW128_220722	22/07/2022	Normal	ES2226120	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW132	0356_MW132_220719	19/07/2022	Normal	ES2226118	0.06	*0.03*	<0.01	0.03	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.06	0.06
MW167	0356_MW167_220721	21/07/2022	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW187D	0356_MW187D_220720	20/07/2022	Normal	ES2226474	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW187S	0356_MW187S_220720	20/07/2022	Normal	ES2226474	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW187S	0356_QC102_220720	20/07/2022	Field_D	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
MW187S	0356_QC202_220720	20/07/2022	Interlab_D	301227	<0.01	*<0.01*	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.02	<0.5	<0.1	<0.02	<0.01	<0.02	<0.01	<0.01	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.1	<0.01	-
MW188D	0356_MW188D_220722	22/07/2022	Normal	ES2226474	0.02	*0.02*	<0.01	<0.01	<0.05	<0.05	0.32	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.34	0.34
MW188S	0356_MW188S_220722	22/07/2022	Normal	ES2226474	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01

Notes:
LOR: Limit of Reporting
µg/L - micrograms per litre
Field_D - Intra-laboratory duplicate sample
Interlab_D - Inter-laboratory duplicate sample
Denotes first time detection above LOR
Denotes new exceedence of ecological screening criteria
Bold Denotes exceedence of adoped human health screening criteria
Italics Denotes exceedence of adopted ecological screening criteria

Table T3 - Surface Water Field Parameters and Observations

AECOM

				Field					
				DO (Field)	Redox Potential Er	Redox Potential Eh (Corrected)	Temp (Field)	EC (field)	pH (Field)
				mg/L	mV	mV	oC	µS/cm	pH_Units
Location Code	**Alternative Name**	**Sampled_Date**	**Location Comments**	**Sample Comment**					
SW002	SW002	21/07/2022	Creek. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.3 m. No water flow observed.	Brown, low turbidity, no odour, no sheen	4.39	-326.6	-120.8	12	330.4	7.37
SW003	SW003	21/07/2022	Creek. Waterbody width (approx.): 1.0 m. Waterbody depth (approx.): 0.3 m. Water flow observed.	Pale yellow, medium turbidity, no odour, no sheen	6.71	-348.7	-142.9	13.7	150.3	6.46
SW004	SW004	19/07/2022	Creek. Waterbody width (approx.): 10.0 m. Waterbody depth (approx.): 0.2 m. Water flow observed.	Brown, low turbidity, no odour, no sheen	7.1	-353.6	-147.8	14.4	149.7	6.47
SW005	SW005	19/07/2022	Creek. Waterbody width (approx.): 10.0 m. Waterbody depth (approx.): 0.5 m. No water flow observed.	Pale yellow, low turbidity, no odour, no sheen	3.93	-491.6	-285.8	13.9	491.1	5.93
SW026	SMA13_SW	21/07/2022	Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.3 m. Water flow observed.	Pale yellow, low turbidity, no odour, no sheen	8.84	-371.9	-166.1	13.7	119.6	6.54
SW028	SMA7_SW	21/07/2022	Creek. Waterbody width (approx.): 0.5 m. Waterbody depth (approx.): 0.1 m. No water flow observed.	Brown, low turbidity, no odour, no sheen	8.31	-239	-33.2	11.4	1090	7.62
SW032	SW032	21/07/2022	Creek near culvert. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.4 m.	Brown, medium turbidity, no odour	8.67	-376.5	-170.7	13.4	98.1	6.41
SW034	SMA8_SW	21/07/2022	Creek. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.3 m. Water flow observed.	Pale yellow, low turbidity, no odour, no sheen	6.85	-319.2	-113.4	14.4	227.9	7.43
SW035	RESI_SW035	19/07/2022	Pond. Waterbody width (approx.): 20.0-40.0 m. Waterbody depth (approx.): 0.5 m. No water flow observed.	Yellow, low turbidity, organic odour, bio sheen appearance	6.7	-429.9	-224.1	12.4	563	6.75
SW036	RESI_SW036	19/07/2022	Pond. Waterbody width (approx.): 10.0-20.0 m. Waterbody depth (approx.): 0.5 m. Water flow observed.	Brown, low turbidity, no odour, no sheen	6.53	132.2	338	13.7	130	6.81
SW039	RESI_SW039	20/07/2022	Dam. Waterbody width (approx.): >10.0 m. Waterbody depth (approx.): 1.0 m. Water flow observed.	Brown, low turbidity, slight organic odour, no sheen	5.47	-281.4	-75.6	10.5	262.4	6.78
SW040	SW040	21/07/2022	Creek. Waterbody width (approx.): 0.5 m. Waterbody depth (approx.): 0.2 m. Water flow observed.	Yellow, low turbidity, no odour, no sheen	8.91	-337.6	-131.8	13	1893	6.77
SW064	RESI_SW041	20/07/2022	Dam. Waterbody width (approx.): 20.0 m. Waterbody depth (approx.): >0.5 m. No water flow observed.	Yellow, medium turbidity, no odour, no sheen	8.29	-302.1	-96.3	17.6	426	7.22
SW065	RESI_SW042	20/07/2022	Culvert. Waterbody width (approx.): 20.0 m. Waterbody depth (approx.): 0.5 m.	Pale yellow, No turbidity, organic odour	5.58	-296.3	-90.5	13.9	377.1	6.85
SW114		21/07/2022	Creek. Waterbody width (approx.): 0.5 m. Waterbody depth (approx.): 0.1 m. No water flow observed.	Pale yellow, low turbidity, no odour, no sheen	9.84	-353.5	-147.7	16.1	115	6.6
SW115		21/07/2022	Creek. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.1 m. Water flow observed.	dark reddish brown, turbid turbidity, no odour	8.53	-346.2	-140.4	16.1	190.3	6.97
SW116		21/07/2022	Creek. Waterbody width (approx.): 1.5 m. Waterbody depth (approx.): 0.1 m. No water flow observed.	Pale yellow, medium turbidity, no odour, no sheen	8.25	-401.7	-195.9	16.4	438.9	6.1
SW553		20/07/2022	Creek. Waterbody width (approx.): 5.0 m. Waterbody depth (approx.): 0.5 m. No water flow observed.	Yellow, low turbidity, no odour, no sheen	5.87	-281.9	-76.1	17.8	161.5	6.44
SW554		20/07/2022	Creek. Waterbody width (approx.): 10.0 m. Waterbody depth (approx.): 0.8 m. Water flow observed.	Pale yellow, low turbidity, weak organic odour	6.94	-292.8	-87	15.5	216.7	6.34
SW555		21/07/2022	Creek. Waterbody width (approx.): 0.8 m. Waterbody depth (approx.): 0.2 m. No water flow observed.	Yellow, low turbidity, no odour, no sheen	8.28	-330.4	-124.6	16.1	2404	6.81

Notes:
mV milliVolts
mg/L milligrams per Litre
µS/cm micro Siemens per centimetre
Corrected field Redox measurement (Eh [mV]) = Er [mV] + 205.8

Table T4 - Surface Water Analytical Results

AECOM

						PFAS Full Suite																																						
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorohexane sulfonic acid (PFHxS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorodecane sulfonic acid (PFDS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoropentane sulfonic acid (PFPeS)	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 (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorooctane sulfonamide (FOSA)	Sum of PFAS	Sum of PFAS (WA DER List)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.05	0.05	0.02	0.05	0.02	0.05	0.02	0.01	0.01	
PFAS NEMP 2020 Freshwater 99%						*19*	*0.00023*																																			
PFAS NEMP 2020 Recreational Water						**10**		**2**																																			
Location Code	**Field ID**	**Sampled Date Time**	**SampleCode**	**Sample Type**	**Lab Report Number**																																						
OTH006	0356_OTH006_220720	20/07/2022	ES2226474023	Normal	ES2226474	0.01	*0.12*	0.23	0.11	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.27	0.27
SW002	0356_QC104_220721	21/07/2022	ES2226191064	Field_D	ES2226191	0.01	*0.34*	0.55	0.21	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.6	0.6
SW002	0356_QC204_220721	21/07/2022	301227-5	Interlab_D	301227	0.01	*0.42*	0.66	0.24	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	0.04	<0.01	<0.02	<0.5	<0.1	<0.02	0.02	<0.02	0.01	0.02	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.1	0.76	-
SW002	0356_SW002_220721	21/07/2022	ES2226191041	Normal	ES2226191	0.01	*0.33*	0.57	0.24	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.05	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.65	0.65
SW003	0356_SW003_220721	21/07/2022	ES2226191042	Normal	ES2226191	<0.01	*0.01*	0.03	0.02	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.03	0.03
SW004	0356_SW004_220719	19/07/2022	ES2226191043	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
SW005	0356_SW005_220719	19/07/2022	ES2226191044	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.03	0.03
SW026	0356_SW026_220721	21/07/2022	ES2226191045	Normal	ES2226191	0.02	*0.76*	1.2	0.44	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	0.07	<0.02	<0.02	<0.05	<0.02	<0.02	0.06	<0.02	<0.02	0.03	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	1.38	1.35
SW028	0356_SW028_220721	21/07/2022	ES2226191046	Normal	ES2226191	<0.01	*<0.01*	0.02	0.02	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.02	0.02
SW032	0356_SW032_220721	21/07/2022	ES2226191047	Normal	ES2226191	0.03	*0.86*	1.57	0.71	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	0.11	<0.02	<0.02	<0.05	<0.02	<0.02	0.04	<0.02	<0.02	0.06	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	1.81	1.75
SW034	0356_SW034_220721	21/07/2022	ES2226191048	Normal	ES2226191	0.01	*0.35*	0.59	0.24	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.64	0.64
SW035	0356_SW035_220719	19/07/2022	ES2226120003	Normal	ES2226120	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
SW036	0356_SW036_220719	19/07/2022	ES2226120004	Normal	ES2226120	<0.01	*0.23*	0.38	0.15	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.41	0.41
SW039	0356_SW039_220720	20/07/2022	ES2226119002	Normal	ES2226119	<0.01	*0.01*	0.02	0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.02	0.02
SW040	0356_SW040_220721	21/07/2022	ES2226191049	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
SW064	0356_SW064_220720	20/07/2022	ES2226474050	Normal	ES2226474	<0.01	*0.02*	0.04	0.02	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.04	0.04
SW065	0356_QC101_220720	20/07/2022	ES2226191060	Field_D	ES2226191	<0.01	*0.02*	0.03	0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.03	0.03
SW065	0356_QC201_220720	20/07/2022	301227-2	Interlab_D	301227	<0.01	*0.02*	0.05	0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.02	<0.5	<0.1	<0.02	<0.01	<0.02	<0.01	<0.01	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.1	0.05	-
SW065	0356_SW065_220720	20/07/2022	ES2226474051	Normal	ES2226474	<0.01	*0.01*	0.02	0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.02	0.02
SW114	0356_SW114_220721	21/07/2022	ES2226191053	Normal	ES2226191	<0.01	*0.01*	0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.03	0.01
SW115	0356_SW115_220721	21/07/2022	ES2226191054	Normal	ES2226191	0.01	*0.49*	0.82	0.33	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.86	0.86
SW116	0356_SW116_220721	21/07/2022	ES2226191052	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01
SW553	0356_SW553_220720	20/07/2022	ES2226474055	Normal	ES2226474	<0.01	*0.08*	0.15	0.07	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.15	0.15
SW554	0356_SW554_220720	20/07/2022	ES2226474056	Normal	ES2226474	<0.01	*0.05*	0.09	0.04	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.09	0.09
SW555	0356_SW555_220721	21/07/2022	ES2226191057	Normal	ES2226191	<0.01	*<0.01*	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.01	<0.01

Notes:
LOR: Limit of Reporting
µg/L - micrograms per litre
Interlab_D - Interlaboratory duplicate
Field_D - Intralaboratory duplicate
Denotes first time detection above LOR
Denotes new exceedence of ecological screening criteria

Table T5 - Sediment Observations

Location Code	Alt. Name	Sampled Date	Sample Depth	SampleComments
SD002	SD002	21/07/2022	0 - 0.1	Dark brown, sandy silt, fine grained, rootlets present, earthy odour
SD003	SD003	21/07/2022	0 - 0.1	Brown, gravelly sand, coarse to fine grain, roots
SD004	SD004	19/07/2022	0 - 0.1	Brown, gravelly sand, fine to course grained
SD005	SD005	19/07/2022	0 - 0.1	Brown, silty clay, high plasticity, rootlets
SD032	SD032	21/07/2022	0 - 0.1	Dark brown, sandy silt, moderate plasticity, rootlets present, fine to coarse grain
SD039	RESI_SD039	20/07/2022	0 - 0.1	Dark brown, silt with sand and rootlets, fine grain, organic odour
SD040	SD040	21/07/2022	0 - 0.1	Brown, sandy silt, high plasticity, trace rootlets, fine grain
SD046	RESI_SD041	20/07/2022	0 - 0.1	Brown, gravelly clay, moderate plasticity, organic matter, roots
SD047	RESI_SD042	20/07/2022	0 - 0.1	Brown, sandy silt, fine grained gravels and organic matter
SD052	RESI_SD035	19/07/2022	0 - 0.1	Brown, silty clay, organic matter, organic odour.
SD053	SMA13_SD	21/07/2022	0 - 0.1	Dark brown, sandy silt, moderate plasticity, rootlets, fine to coarse grain
SD055	SMA7_SD	21/07/2022	0 - 0.1	Dark brown, silty clay, high plasticity, fine grain, rootlets, organic matter present
SD065	SMA8_SD	21/07/2022	0 - 0.1	Various brown colours, with yellows and reds, sand, rootlets present, no odour
SD080	RESI_SD013	19/07/2022	0 - 0.1	Brown, silty sand, fine grained with gravel, rootlets organic odour
SD114	-	21/07/2022	0 - 0.1	Dark brown, silty clay, high plasticity, fine grain, moist, rootlets
SD115	-	21/07/2022	0 - 0.1	Brown, sandy silt, fine grained, organic matter, grass
SD116	-	21/07/2022	0 - 0.1	Brown, sandy silt high plasticity, rootlets present, moist, fine grain
SD539	-	20/07/2022	0 - 0.1	Light brown, silty sand, gravels, grass
SD540	-	20/07/2022	0 - 0.1	Brown, clayey sand, fine to coarse grained, with gravels, grass
SD555	-	21/07/2022	0 - 0.1	Dark brown, sandy silt, moderate plasticity, fine to coarse grained, rootlets

Table T6 - Sediment Analytical Results

AECOM

					PFAS Full Suite																																		
					Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorohexane sulfonic acid (PFHxS)	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)	Sum of PFAS	Sum of PFHxS and PFOS	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFAS (WA DER List)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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					0.0002	0.0002	0.0002	0.0002	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	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Location Code	**Field ID**	**Sampled Date**	**Sample Type**	**Lab Report #**																																			
SD002	0356_QC105_220721	21/07/2022	Field_D	ES2226191	0.0002	0.0345	0.0362	0.0017	<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	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	0.0003	0.0372	0.0362	0.0345	0.0002	0.0017	0.0364
SD002	0356_QC205_220721	21/07/2022	Interlab_D	301227	<0.0001	0.037	0.039	0.0017	<0.0002	<0.0001	<0.0001	<0.0002	<0.001	<0.0002	<0.005	<0.001	<0.0002	<0.001	<0.0001	0.0002	0.0003	<0.0005	<0.0005	0.0002	<0.0001	0.0002	<0.0001	<0.001	<0.0001	0.0002	<0.005	<0.0005	<0.0005	0.04	0.039	0.037	<0.0001	0.0017	-
SD002	0356_SD002_220721	21/07/2022	Normal	ES2226191	0.0002	0.0428	0.0446	0.0018	<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	0.0448	0.0446	0.0428	0.0002	0.0018	0.0448
SD003	0356_SD003_220721	21/07/2022	Normal	ES2226191	<0.0002	0.0026	0.0026	<0.0002	<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	0.0026	0.0026	0.0026	<0.0002	<0.0002	0.0026
SD004	0356_SD004_220719	19/07/2022	Normal	ES2226191	<0.0002	<0.0002	<0.0002	<0.0002	<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	<0.0002
SD005	0356_SD005_220719	19/07/2022	Normal	ES2226191	<0.0002	0.0018	0.0018	<0.0002	<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	0.0018	0.0018	0.0018	<0.0002	<0.0002	0.0018
SD032	0356_SD032_220721	21/07/2022	Normal	ES2226191	<0.0002	0.0044	0.0051	0.0007	<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	0.0051	0.0051	0.0044	<0.0002	0.0007	0.0051
SD039	0356_SD039_220720	20/07/2022	Normal	ES2226119	<0.0002	0.0038	0.0038	<0.0002	<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	0.0038	0.0038	0.0038	<0.0002	<0.0002	0.0038
SD040	0356_SD040_220721	21/07/2022	Normal	ES2226191	<0.0002	0.0004	0.0004	<0.0002	<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	0.0004	0.0004	0.0004	<0.0002	<0.0002	0.0004
SD046	0356_SD046_220720	20/07/2022	Normal	ES2226474	<0.0002	0.0034	0.0036	0.0002	<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	0.0036	0.0036	0.0034	<0.0002	0.0002	0.0036
SD047	0356_QC100_220720	20/07/2022	Field_D	ES2226191	0.0002	0.0081	0.0083	0.0002	<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	0.0085	0.0083	0.0081	0.0002	0.0002	0.0085
SD047	0356_QC200_220720	20/07/2022	Interlab_D	301227	0.0002	0.0094	0.0096	0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.001	<0.0002	<0.005	<0.001	<0.0002	<0.001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0002	<0.005	<0.0005	<0.0005	0.0099	0.0096	0.0094	0.0002	0.0002	-
SD047	0356_SD047_220720	20/07/2022	Normal	ES2226474	<0.0002	0.0075	0.0075	<0.0002	<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	0.0075	0.0075	0.0075	<0.0002	<0.0002	0.0075
SD052	0356_SD052_220719	19/07/2022	Normal	ES2226120	<0.0002	0.0009	0.0009	<0.0002	<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	0.0019	0.0009	0.0009	<0.0002	<0.0002	0.0019
SD053	0356_SD053_220721	21/07/2022	Normal	ES2226191	<0.0002	0.0043	0.0045	0.0002	<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	0.0045	0.0045	0.0043	<0.0002	0.0002	0.0045
SD055	0356_SD055_220721	21/07/2022	Normal	ES2226191	<0.0002	0.0026	0.0029	0.0003	<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	0.0029	0.0029	0.0026	<0.0002	0.0003	0.0029
SD065	0356_SD065_220721	21/07/2022	Normal	ES2226191	<0.0002	0.0007	0.0007	<0.0002	<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	0.0007	0.0007	0.0007	<0.0002	<0.0002	0.0007
SD080	0356_SD080_220719	19/07/2022	Normal	ES2226120	<0.0002	0.001	0.001	<0.0002	<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	0.001	0.001	0.001	<0.0002	<0.0002	0.001
SD114	0356_SD114_220721	21/07/2022	Normal	ES2226191	<0.0002	0.0029	0.0029	<0.0002	<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	0.0029	0.0029	0.0029	<0.0002	<0.0002	0.0029
SD115	0356_SD115_220721	21/07/2022	Normal	ES2226191	0.0002	0.0457	0.048	0.0023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.001	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0496	0.048	0.0457	0.0002	0.0023	0.0486
SD116	0356_SD116_220721	21/07/2022	Normal	ES2226191	<0.0002	0.0007	0.0007	<0.0002	<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	0.0007	0.0007	0.0007	<0.0002	<0.0002	0.0007
SD539	0356_SD539_220720	20/07/2022	Normal	ES2226474	<0.0002	0.0016	0.0016	<0.0002	<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	0.0016	0.0016	0.0016	<0.0002	<0.0002	0.0016
SD540	0356_SD540_220720	20/07/2022	Normal	ES2226474	0.0002	0.012	0.0123	0.0003	<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	0.0125	0.0123	0.012	0.0002	0.0003	0.0125
SD555	0356_SD555_220721	21/07/2022	Normal	ES2226191	<0.0002	0.0003	0.0003	<0.0002	<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	0.0003	0.0003	0.0003	<0.0002	<0.0002	0.0003

Notes:
LOR: Limit of Reporting
mg/kg - milligrams per kilogram
Interlab_D - Interlaboratory duplicate
Field_D - Intralaboratory duplicate
Denotes first time detection above LOR

Table T7 - Historical Groundwater Analytical Results

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	PFAS				PFAS - Perfluoroalkyl Sulfonic				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides							
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.002	0.005	0.002
PFAS NEMP 2020 Drinking Water	0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%	*19*	*0.00023*																												

Location Code	Field ID	Date	Lab Report #																													
MW008	0356_CNN0018_GW08_190515	15/05/2019	ES1914836	<0.01	*0.02*	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02
MW008	0356_MW008_220721	21/07/2022	ES2226191	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW011	CNN0018_GW02_181005	5/10/2018	ES1832291	<0.05	*0.12*	0.30	-	<0.05	0.08	<0.05	<0.05	<0.2	<0.05	0.48	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	-
MW011	0356_CNN0018_GW02_190228	28/02/2019	ES1906391	0.004	*0.029*	0.054	0.083	0.019	0.008	0.002	<0.002	<0.01	0.008	0.035	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.014	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	0.176
MW011	0356_CNN0018_GW02_190515	15/05/2019	ES1914836	<0.01	*0.03*	0.06	0.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.12
MW011	0356_QC145_GW_190515	15/05/2019	ES1914836	<0.01	*0.03*	0.06	0.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.12
MW011	0356_QC245_GW_190515	15/05/2019	ES1914836	<0.01	*0.03*	0.06	0.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.12
MW011	0356_MW011_220721	21/07/2022	ES2226191	<0.01	*0.02*	0.02	0.04	<0.02	<0.02	<0.02	0.03	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.07
MW048	0356_CNN0039_GW01_181003	3/10/2018	ES1832056	0.03	*0.03*	2.17	-	0.17	0.24	<0.02	<0.02	<0.1	0.04	0.21	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	-
MW048	0356_CNN0039_GW01_190227	27/02/2019	ES1906166	0.042	*0.030*	2.68	2.71	0.293	0.461	0.017	<0.002	<0.01	0.067	0.299	0.051	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.016	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	3.96
MW048	0356_CNN0039_GW01_190510	10/05/2019	ES1914221	0.03	*0.02*	2.26	2.28	0.16	0.24	<0.02	<0.02	<0.1	<0.02	0.15	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	2.88
MW048	0356_QC203_220721	21/07/2022	301227	0.06	*0.02*	2.6	2.7	0.21	0.31	0.02	<0.02	0.04	0.05	0.23	0.05	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	3.6
MW048	0356_MW048_220721	21/07/2022	ES2226191	0.05	*0.02*	2.26	2.28	0.15	0.31	<0.02	<0.02	<0.1	0.04	0.27	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	3.14
MW048	0356_QC103_220721	21/07/2022	ES2226191	0.05	*0.02*	2.24	2.26	0.19	0.31	<0.02	<0.02	<0.1	0.06	0.24	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	3.15
MW050	0356_CNN0039_GW03_190507	7/05/2019	ES1913966	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW050	0356_MW050_220721	21/07/2022	ES2226191	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW052	0356_CNN0039_GW05_190510	10/05/2019	ES1914221	0.03	*0.42*	0.53	0.95	0.03	0.03	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.09
MW052	0356_MW052_220721	21/07/2022	ES2226191	0.02	*0.38*	0.28	0.66	<0.02	0.02	<0.02	<0.02	<0.1	0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.79
MW059	0356_HLG_GW03_190508	8/05/2019	ES1913967	<0.01	*0.04*	0.04	0.08	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.08
MW059	0356_MW059_220721	21/07/2022	ES2226191	<0.01	<0.01	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04
MW063	0356_NSW1164_MW01D_190207	7/02/2019	ES1903889	<0.05	*0.07*	<0.05	0.07	0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	0.23	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	0.35
MW063	0356_NSW1164_MW01D_190509	9/05/2019	ES1914221	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW063	0356_MW063_220719	19/07/2022	ES2226191	<0.01	*0.05*	<0.01	0.05	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.24	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.34
MW071	0356_NSW1164_MW03D_190206	6/02/2019	ES1903889	<0.05	*0.08*	<0.05	0.08	0.07	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	0.15
MW071	0356_NSW1164_MW03D_190509	9/05/2019	ES1914221	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW071	0356_MW071_220719	19/07/2022	ES2226191	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW073	0356_NSW1164_MW03S_190206	6/02/2019	ES1903889	<0.01	*0.01*	<0.02	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	1.48	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.52
MW073	0356_NSW1164_MW03S_190509	9/05/2019	ES1914221	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW073	0356_MW073_220719	19/07/2022	ES2226191	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW084	0356_QC230_181019	19/10/2018	204852	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	1.1	<0.01	<0.01	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	1.1
MW084	0356_QC230_181019	19/10/2018	204852-A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	1.1	<0.01	<0.01	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	1.1
MW084	0356_RESI_GW005_181019	19/10/2018	ES1832121	<0.01	<0.01	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	1.06	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	-
MW102	0356_GW02D_190506	6/05/2019	ES1913967	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.11	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.11
MW102	0356_GW02D_190508	8/05/2019	ES1913967	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.10	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.10
MW102	0356-GW-02D-201020	20/10/2020	ES2036949	<0.01	*0.02*	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02
MW102	0356_MW102_220721	21/07/2022	ES2226191	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW109	0356_GW03D_190510	10/05/2019	ES1914221	<0.01	*0.28*	<0.02	0.28	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	1.48	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.76
MW109	0356_GW03D_190528	28/05/2019	ES1916262	<0.01	*0.16*	<0.02	0.16	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.23
MW109	0356_QC254_201020	19/10/2020	RN1292430	<0.01	<0.02	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	-
MW109	0356-GW03D-201020	20/10/2020	ES2036949	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW109	0356-QC154-201020	20/10/2020	ES2036949	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW109	0356_MW109_220721	21/07/2022	ES2226191	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW110	0356_GW03S_190507	7/05/2019	ES1913967	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.30	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.30
MW110	0356-GW03S-201020	20/10/2020	ES2036949	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW110	0356_MW110_220721	21/07/2022	ES2226191	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01

Table T7 - Historical Groundwater Analytical Results

AECOM

					PFAS				PFAS - Perfluoroalkyl Sulfonic				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides							
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.002	0.005	0.002
PFAS NEMP 2020 Drinking Water					0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%					*19*	*0.00023*																												
Location Code	Field ID	Date	Lab Report #																															
MW114	0356_GW04D_190506	6/05/2019	ES1913967		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW114	0356-GW04D-201020	20/10/2020	ES2036949		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW114	0356_MW114_220721	21/07/2022	ES2226191		<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW115	0356_GW04S_190506	6/05/2019	ES1913967		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW115	0356-GW04S-201020	20/10/2020	ES2036949		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW115	0356_MW115_220721	21/07/2022	ES2226191		<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW118	0356_GW05S_190506	6/05/2019	ES1913966		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.09	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.09
MW118	0356_MW118_220721	21/07/2022	ES2226191		<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW121	0356_GW06_190502	2/05/2019	ES1913385		0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.01
MW121	0356_GW06_190531	31/05/2019	ES1917196		0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.01
MW121	0356_GW06_201019	19/10/2020	ES2036629		0.02	*0.03*	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.05
MW121	0356_QC206_220722	22/07/2022	301227		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	<0.01
MW121	0356_QC106_220722	22/07/2022	ES2226191		<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW121	0356_MW121_220722	22/07/2022	ES2226474		<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW124	0356_GW07_190502	2/05/2019	ES1913385		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW124	0356_GW07_190531	31/05/2019	ES1917196		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW124	0356_GW07_201019	19/10/2020	ES2036629		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW124	0356_MW124_220720	20/07/2022	ES2226474		<0.01	<0.01	0.07	0.07	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.07
MW126	0356_GW08S_190503	3/05/2019	ES1913384		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.05
MW126	0356_MW126_220722	22/07/2022	ES2226120		<0.01	<0.01	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03
MW128	0356_GW09S_190503	3/05/2019	ES1913384		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW128	0356_GW09S_190530	30/05/2019	ES1917195		<0.01	*0.02*	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02
MW128	0356_MW128_220722	22/07/2022	ES2226120		<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW132	0356_RESI_GW011_181106	6/11/2018	ES1832961		<0.01	*0.02*	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	-
MW132	0356_RESI_GW011_190507	7/05/2019	ES1913968		<0.01	<0.01	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02
MW132	0356_MW132_220719	19/07/2022	ES2226118		<0.01	*0.03*	0.03	0.06	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.06
MW167	0356_CNN0230_GW01_181002	2/10/2018	ES1832056		<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	-
MW167	0356_CNN0230_GW01_190301	1/03/2019	ES1906391		<0.002	*0.012*	<0.002	0.012	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.348	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	0.360
MW167	0356_CNN0230_GW01_190515	15/05/2019	ES1914836		<0.01	*0.21*	0.02	0.23	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.51	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.74
MW167	0356_MW167_220721	21/07/2022	ES2226191		<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW187D	0356_MW09D_200903	3/09/2020	ES2031221		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW187D	0356_MW187D_220720	20/07/2022	ES2226474		<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW187S	0356_QC202_220720	20/07/2022	301227		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	<0.01
MW187S	0356_QC102_220720	20/07/2022	ES2226191		<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW187S	0356_MW187S_220720	20/07/2022	ES2226474		<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW188D	0356_QC251_200903	3/08/2020	RN1288903		<0.01	<0.02	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.2	<0.01	<0.05	<0.2	<0.01	<0.05	-
MW188D	QC251_200903	3/08/2020	RN1287633		<0.01	<0.02	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.2	<0.01	<0.05	<0.2	<0.01	<0.05	-
MW188D	0356_MW10D_200903	3/09/2020	ES2031221		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW188D	0356_MW188D_220722	22/07/2022	ES2226474		<0.01	0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.32	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.32
MW188S	0356_QC151_200903	3/09/2020	ES2031221		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW188S	0356_MW10S_200903	3/09/2020	ES2031221		<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
MW188S	0356_MW188S_220722	22/07/2022	ES2226474		<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01

Table T8 - Historical Surface Water Analytical Results

AECOM

						PFAS				PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer				PFAS - Perfluoroalkyl Sulfonamides							
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.002	0.002	0.002	0.002	0.002	0.002	0.002		0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.002	0.005	0.002
PFAS NEMP 2020 Recreational Water						10			2																											
PFAS NEMP 2020 Freshwater 99%						*19*	*0.00023*																													
Location Code	Alt. Name	Sample Code	Field ID	Date	Lab Report #																															
OTH006	OTH006	ES1910566001	0356_OTH006_190403	3/04/2019	ES1910566	<0.01	*0.02*	0.02	0.04	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04
OTH006	OTH006	ES2036629001	0356_OTH006_201019	19/10/2020	ES2036629	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
OTH006	OTH006	ES2036629004	0356_QC152_201019	19/10/2020	ES2036629	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
OTH006	OTH006	N20/024911	0356_QC252_201019	19/10/2020	RN1292419	<0.01	<0.02	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	-
OTH006	OTH006	ES2226474023	0356_OTH006_220720	20/07/2022	ES2226474	0.01	*0.12*	0.11	0.23	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.27
SW002	SW002	ES1832291002	0356_SW002_SW_181008	8/10/2018	ES1832291	0.01	*0.33*	0.34	-	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	-
SW002	SW002	ES1906391014	0356_SW002_190228	28/02/2019	ES1906391	0.007	*0.180*	0.210	0.390	0.013	0.011	0.005	-	<0.002	<0.01	0.009	0.026	0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	0.465
SW002	SW002	ES1912502006	0356_SW002_190424	24/04/2019	ES1912502	0.02	*0.31*	0.2	0.51	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.56
SW002	SW002	ES2013148017	0356_SW002_200416	16/04/2020	ES2013148	<0.01	*0.26*	0.24	0.50	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.54
SW002	SW002	301227-5	0356_QC204_220721	21/07/2022	301227	0.01	*0.42*	0.24	0.66	0.02	0.02	0.01	-	<0.02	<0.02	<0.02	0.04	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	0.76
SW002	SW002	ES2226191041	0356_SW002_220721	21/07/2022	ES2226191	0.01	*0.33*	0.24	0.57	0.03	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.65
SW002	SW002	ES2226191064	0356_QC104_220721	21/07/2022	ES2226191	0.01	*0.34*	0.21	0.55	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.60
SW003	SW003	ES1836301004	0356_SW003_181130	30/11/2018	ES1836301	<0.01	*0.01*	<0.02	0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.01
SW003	SW003	ES1912500009	0356_SW003_190417	17/04/2019	ES1912500	0.02	*0.24*	0.23	0.47	0.06	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.61
SW003	SW003	ES2226191042	0356_SW003_220721	21/07/2022	ES2226191	<0.01	*0.01*	0.02	0.03	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03
SW004	SW004	ES1836301001	0356_SW004_181130	30/11/2018	ES1836301	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
SW004	SW004	ES1912500011	0356_SW004_190418	18/04/2019	ES1912500	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
SW004	SW004	ES2013148007	0356_SW004_200418	18/04/2020	ES2013148	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	<0.002
SW004	SW004	ES2226191043	0356_SW004_220719	19/07/2022	ES2226191	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
SW005	SW005	ES1836301002	0356_SW005_181130	30/11/2018	ES1836301	<0.01	*0.02*	<0.02	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02
SW005	SW005	216434-2	0356_QC241_SW_190418	18/04/2019	216434	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.01	<0.01	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	<0.01
SW005	SW005	ES1912500015	0356_SW005_190418	18/04/2019	ES1912500	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
SW005	SW005	ES2013148005	0356_SW005_200418	18/04/2020	ES2013148	<0.002	*0.009*	0.004	0.013	<0.002	<0.002	<0.002	-	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	0.013
SW005	SW005	ES2226191044	0356_SW005_220719	19/07/2022	ES2226191	<0.01	<0.01	<0.01	<0.01	0.03	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03
SW026	SMA13_SW	ES1832291014	0356_SMA13_SW_181008	8/10/2018	ES1832291	<0.01	*0.23*	0.12	-	0.03	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	-
SW026	SMA13_SW	ES1912502008	0356_SMA13_SW_190424	24/04/2019	ES1912502	0.01	*0.24*	0.13	0.37	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.38
SW026	SMA13_SW	ES2013148020	0356_QC101_200416	16/04/2020	ES2013148	<0.01	*0.27*	0.12	0.39	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.39
SW026	SMA13_SW	ES2013148023	0356_SMA13_200416	16/04/2020	ES2013148	<0.01	*0.24*	0.11	0.35	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.35
SW026	SMA13_SW	ES2226191045	0356_SW026_220721	21/07/2022	ES2226191	0.02	*0.76*	0.44	1.20	0.06	0.03	<0.02	-	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.38
SW028	SMA7_SW	204852-5	0356_QC234_SW_181025	25/10/2018	204852	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.01	<0.01	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	<0.01
SW028	SMA7_SW	ES1832529001	0356_SWA7_SW_181025	25/10/2018	ES1832529	<0.01	<0.01	<0.02	-	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	-
SW028	SMA7_SW	ES1832529008	0356_QC134_SW_181025	25/10/2018	ES1832529	<0.01	<0.01	<0.02	-	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	-
SW028	SMA7_SW	ES1912500002	0356_SMA7_SW_190417	17/04/2019	ES1912500	<0.01	*0.03*	<0.02	0.03	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03
SW028	SMA7_SW	ES2226191046	0356_SW028_220721	21/07/2022	ES2226191	<0.01	<0.01	0.02	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02
SW032	SW032	ES1913790090	0356_SW032_190322	22/03/2019	ES1913790	<0.01	*0.07*	0.02	0.09	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.09
SW032	SW032	ES2226191047	0356_SW032_220721	21/07/2022	ES2226191	0.03	*0.86*	0.71	1.57	0.04	0.06	<0.02	-	<0.02	<0.1	<0.02	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.81
SW034	SMA8_SW	ES1836301003	0356_SMA8_SW_181130	30/11/2018	ES1836301	<0.01	*0.16*	0.09	0.25	0.03	<0.02	<0.02	-	<0.02	<0.1	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.32
SW034	SMA8_SW	ES1903952001	0356_SMA8_SW_190208	8/02/2019	ES1903952	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
SW034	SMA8_SW	ES1912502003	0356_SMA8_SW_190424	24/04/2019	ES1912502	<0.01	*0.21*	0.1	0.31	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.31
SW034	SMA8_SW	ES2014144001	0356_SMA8_200424	24/04/2020	ES2014144	0.01	*0.43*	0.44	0.87	0.03	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.96
SW034	SMA8_SW	ES2036628010	0356_SMA8_201019	19/10/2020	ES2036628	<0.01	*0.35*	0.36	0.71	0.03	0.02	<0.02	-	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.81
SW034	SMA8_SW	ES2226191048	0356_SW034_220721	21/07/2022	ES2226191	0.01	*0.35*	0.24	0.59	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.64
SW035	RESI_SW035	ES1911618001	0356_RESI_SW035_190411	11/04/2019	ES1911618	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
SW035	RESI_SW035	ES1911619006	0356_QC140_190411	11/04/2019	ES1911619	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
SW035	RESI_SW035	ES2226120003	0356_SW035_220719	19/07/2022	ES2226120	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01

Table T8 - Historical Surface Water Analytical Results

AECOM

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer				PFAS - Perfluoroalkyl Sulfonamides							
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002		0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.002	0.005	0.002
PFAS NEMP 2020 Recreational Water	10			2																										
PFAS NEMP 2020 Freshwater 99%	*19*	*0.00023*																												

Location Code	Alt. Name	Sample Code	Field ID	Date	Lab Report #																													
SW036	RESI_SW036	ES1911618003	0356_RESI_SW036_190411	11/04/2019	ES1911618	<0.01	*0.20*	0.09	0.29	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.29
SW036	RESI_SW036	ES2226120004	0356_SW036_220719	19/07/2022	ES2226120	<0.01	*0.23*	0.15	0.38	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.41
SW039	RESI_SW039	215778-1	0356_QC240_190412	12/04/2019	215778	0.02	*0.07*	<0.01	0.07	<0.01	<0.01	<0.01	-	<0.02	<0.02	0.02	0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.01	<0.01	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	0.12
SW039	RESI_SW039	ES1911621001	0356_RESI_SW039_190412	12/04/2019	ES1911621	0.02	*0.08*	<0.02	0.08	<0.02	<0.02	<0.02	-	<0.02	<0.1	0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.15
SW039	RESI_SW039	ES2013315001	0356-RESI-SW039-200420	20/04/2020	ES2013315	<0.01	*0.01*	<0.02	0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.01
SW039	RESI_SW039	ES2226119002	0356_SW039_220720	20/07/2022	ES2226119	<0.01	*0.01*	0.01	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02
SW040	SW040	ES1913967010	0356_SW040_190507	7/05/2019	ES1913967	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
SW040	SW040	ES2226191049	0356_SW040_220721	21/07/2022	ES2226191	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
SW064	RESI_SW041	ES1912500006	0356_QC141_190417	17/04/2019	ES1912500	0.01	*0.02*	<0.02	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03
SW064	RESI_SW041	ES1912501001	0356_RESI_SW041_190417	17/04/2019	ES1912501	0.02	*0.02*	<0.02	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04
SW064	RESI_SW041	241483-2	0356_QC204_200422	22/04/2020	241483	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	0.03	0.02	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.01	<0.01	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	0.05
SW064	RESI_SW041	ES2013744001	0356_RESI_SW041_200422	22/04/2020	ES2013744	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03
SW064	RESI_SW041	ES2226474050	0356_SW064_220720	20/07/2022	ES2226474	<0.01	*0.02*	0.02	0.04	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04
SW065	RESI_SW042	ES1912501003	0356_RESI_SW042_190417	17/04/2019	ES1912501	0.02	*0.03*	<0.02	0.03	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.05
SW065	RESI_SW042	301227-2	0356_QC201_220720	20/07/2022	301227	<0.01	*0.02*	0.02	0.05	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	0.05
SW065	RESI_SW042	ES2226191060	0356_QC101_220720	20/07/2022	ES2226191	<0.01	*0.02*	0.01	0.03	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03
SW065	RESI_SW042	ES2226474051	0356_SW065_220720	20/07/2022	ES2226474	<0.01	*0.01*	0.01	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02
SW114		ES2226191053	0356_SW114_220721	21/07/2022	ES2226191	<0.01	*0.01*	<0.01	0.01	<0.02	<0.02	0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03
SW115		ES2226191054	0356_SW115_220721	21/07/2022	ES2226191	0.01	*0.49*	0.33	0.82	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.86
SW116		ES2226191052	0356_SW116_220721	21/07/2022	ES2226191	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
SW553		ES2036629005	0356_SW553_201019	19/10/2020	ES2036629	0.01	*0.25*	0.28	0.53	0.03	0.03	<0.02	-	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.65
SW553		ES2226474055	0356_SW553_220720	20/07/2022	ES2226474	<0.01	*0.08*	0.07	0.15	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.15
SW554		ES2036629007	0356_SW554_201019	19/10/2020	ES2036629	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01
SW554		ES2226474056	0356_SW554_220720	20/07/2022	ES2226474	<0.01	*0.05*	0.04	0.09	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.09
SW555		ES2226191057	0356_SW555_220721	21/07/2022	ES2226191	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01

Table T9 - Historical Sediment Analytical Results

AECOM

					PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides							
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0005	0.0001	0.0001	0.0001	0.0001	0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005	0.0001
Location Code	Alt. Name	Field ID	Date	Lab Report #																													
SD002	SD002	0356_SD002_181008	8/10/2018	ES1832293	<0.0002	0.0024	0.0004	-	<0.0002	<0.0002	<0.0002	0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	-
SD002	SD002	0356_SD002_190228	28/02/2019	ES1906391	<0.0002	0.0010	<0.0002	0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0010
SD002	SD002	0356_SD002_190424	24/04/2019	ES1912502	<0.0002	0.0029	<0.0002	0.0029	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0029
SD002	SD002	0356_SD002_200416	16/04/2020	ES2013148	<0.0002	0.0010	<0.0002	0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0010
SD002	SD002	0356_QC205_220721	21/07/2022	301227	<0.0001	0.037	0.0017	0.039	<0.0001	<0.0001	0.0002	0.0003	0.0002	0.0002	0.0002	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0001	<0.0001	<0.0002	<0.0002	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005	0.04
SD002	SD002	0356_SD002_220721	21/07/2022	ES2226191	0.0002	0.0428	0.0018	0.0446	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0448
SD002	SD002	0356_QC105_220721	21/07/2022	ES2226191	0.0002	0.0345	0.0017	0.0362	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0372
SD003	SD003	0356_SD003_181005	5/10/2018	ES1832293	<0.0002	0.0009	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	-
SD003	SD003	0356_SD003_190228	28/02/2019	ES1906391	<0.0002	0.0013	<0.0002	0.0013	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0013
SD003	SD003	0356_SD003_190417	17/04/2019	ES1912500	<0.0002	0.0334	0.0035	0.0369	0.0002	<0.0002	<0.0002	0.0004	<0.001	0.0003	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0386
SD003	SD003	0356_SD003_220721	21/07/2022	ES2226191	<0.0002	0.0026	<0.0002	0.0026	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0026
SD004	-	0356_SD004_181012	12/10/2018	ES1832293	<0.0002	0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	-
SD004	-	0356_NSW1164_SD004_19011	17/01/2019	ES1902070	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002
SD004	-	0356_SD004_190305	5/03/2019	ES1906973	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002
SD004	-	0356_SD004_190418	18/04/2019	ES1912500	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002
SD004	-	0356_SD004_200418	18/04/2020	ES2013148	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002
SD004	-	0356_SD004_220719	19/07/2022	ES2226191	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002
SD005	-	0356_SD005_181012	12/10/2018	ES1832293	<0.0002	0.0004	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	-
SD005	-	0356_SD_QC200_190118	18/01/2019	210062	<0.0001	0.0004	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005	0.0004
SD005	-	0356_NSW1164_SD005_19011	18/01/2019	ES1902070	<0.0002	0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0002
SD005	-	0356_SD_QC100_190118	18/01/2019	ES1902070	<0.0002	0.0004	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0004
SD005	-	0356_SD005_190305	5/03/2019	ES1906973	<0.0002	0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0002
SD005	-	0356_QC241_SD_190418	18/04/2019	216434	<0.0001	0.0004	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005	0.0004
SD005	-	0356_SD005_190418	18/04/2019	ES1912500	<0.0002	0.0004	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0004
SD005	-	0356_SD005_200418	18/04/2020	ES2013148	<0.0002	0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0002
SD005	-	0356_SD005_220719	19/07/2022	ES2226191	<0.0002	0.0018	<0.0002	0.0018	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0018
SD032	SD032	0356_SD032_190322	22/03/2019	ES1913790	<0.0002	0.0006	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0006
SD032	SD032	0356_SD032_220721	21/07/2022	ES2226191	<0.0002	0.0044	0.0007	0.0051	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0051
SD039	RESI_SD039	0356_QC240_190412	12/04/2019	215778	0.0002	0.0019	<0.0001	0.0019	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005	0.002
SD039	RESI_SD039	0356_RESI_SD039_190412	12/04/2019	ES1911621	<0.0002	0.0003	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0003
SD039	RESI_SD039	0356_RESI_SD039_200420	20/04/2020	ES2013315	0.0003	0.0036	<0.0002	0.0036	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0039
SD039	RESI_SD039	0356_SD039_220720	20/07/2022	ES2226119	<0.0002	0.0038	<0.0002	0.0038	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0038
SD040	SD040	0356_SD040_190507	7/05/2019	ES1913967	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002
SD040	SD040	0356_SD040_220721	21/07/2022	ES2226191	<0.0002	0.0004	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0004
SD046	RESI_SD041	0356_QC141_190417	17/04/2019	ES1912500	<0.0002	0.0028	<0.0002	0.0028	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0028
SD046	RESI_SD041	0356_RESI_SD041_190417	17/04/2019	ES1912501	<0.0002	0.0034	<0.0002	0.0034	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0034
SD046	RESI_SD041	0356_QC203_200422	22/04/2020	241483	<0.0002	0.0007	<0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0004	<0.0004	<0.0004	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.01	<0.0002	<0.0002	<0.0002	<0.0002	<0.002	<0.002	<0.0004	<0.002	<0.002	<0.0004	<0.01	0.0007
SD046	RESI_SD041	0356_RESI_SD041_200422	22/04/2020	ES2013744	<0.0002	0.0004	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0004
SD046	RESI_SD041	0356_SD046_220720	20/07/2022	ES2226474	<0.0002	0.0034	0.0002	0.0036	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0036
SD047	RESI_SD042	0356_RESI_SD042_190417	17/04/2019	ES1912501	<0.0002	0.0047	<0.0002	0.0047	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0049
SD047	RESI_SD042	0356_QC200_220720	20/07/2022	301227	0.0002	0.0094	0.0002	0.0096	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	<0.0001	<0.0001	<0.0002	<0.0002	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005	0.0099
SD047	RESI_SD042	0356_QC100_220720	20/07/2022	ES2226191	0.0002	0.0081	0.0002	0.0083	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0085
SD047	RESI_SD042	0356_SD047_220720	20/07/2022	ES2226474	<0.0002	0.0075	<0.0002	0.0075	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0075
SD052	RESI_SD035	0356_RESI_SD035_190411	11/04/2019	ES1911618	<0.0002	0.0012	0.0003	0.0015	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0015
SD052	RESI_SD035	0356_QC140_190411	11/04/2019	ES1911619	<0.0002	0.0017	0.0003	0.0020	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0020
SD052	RESI_SD035	0356_SD052_220719	19/07/2022	ES2226120	<0.0002	0.0009	<0.0002	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0019
SD053	SMA13_SD	0356_SMA13_SD_181008	8/10/2018	ES1832293	<0.0002	0.0020	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	-
SD053	SMA13_SD	0356_SMA13__SD_190228	28/02/2019	ES1906391	<0.0002	0.0226	0.0011	0.0237	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0237
SD053	SMA13_SD	0356_SMA13_SD_190424	24/04/2019	ES1912502	<0.0002	0.0016	<0.0002	0.0016	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0016
SD053	SMA13_SD	0356_QC102_200416	16/04/2020	ES2013148	<0.0002	0.0613	0.0004	0.0617	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0617
SD053	SMA13_SD	0356_SMA13_SD_200416	16/04/2020	ES2013148	<0.0002	0.0118	<0.0002	0.0118	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0118

Table T9 - Historical Sediment Analytical Results

AECOM

					PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides							
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0005	0.0001	0.0001	0.0001	0.0001	0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005	0.0001
Location Code	Alt. Name	Field ID	Date	Lab Report #																													
SD053	SMA13_SD	0356_SD053_220721	21/07/2022	ES2226191	<0.0002	0.0043	0.0002	0.0045	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0045
SD055	SMA7_SD	0356_QC234_SD_181025	25/10/2018	204852	<0.0002	0.0027	<0.0002	0.0027	<0.0002	<0.0002	<0.0002	0.0030	<0.0004	<0.0004	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.01	<0.0002	<0.0002	<0.0002	<0.0002	<0.002	<0.002	<0.0004	<0.002	<0.002	<0.0004	<0.01	0.0057
SD055	SMA7_SD	0356_SMA7_SD_181025	25/10/2018	ES1832529	<0.0002	0.0048	0.0006	-	<0.0002	<0.0002	<0.0002	0.0017	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	-
SD055	SMA7_SD	0356_QC134_SD_181025	25/10/2018	ES1832529	<0.0002	0.0053	0.0004	-	<0.0002	<0.0002	<0.0002	0.0018	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	-
SD055	SMA7_SD	0356_QC134_SD_181025	25/10/2018	ES1832714	<0.0002	0.0012	<0.0002	-	<0.0002	<0.0002	<0.0002	0.0004	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	-
SD055	SMA7_SD	0356_SMA7__SD_190228	28/02/2019	ES1906391	<0.0002	0.0010	<0.0002	0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0010
SD055	SMA7_SD	0356_SMA7_SD_190417	17/04/2019	ES1912500	<0.0002	0.0010	<0.0002	0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0010
SD055	SMA7_SD	0356_SD055_220721	21/07/2022	ES2226191	<0.0002	0.0026	0.0003	0.0029	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0029
SD065	SMA8_SD	0356_SMA8_SD_181008	8/10/2018	ES1832293	<0.0002	0.0024	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	-
SD065	SMA8_SD	0356_SMA8_SD_190228	28/02/2019	ES1906391	<0.0002	0.0066	0.0005	0.0071	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0071
SD065	SMA8_SD	0356_SMA8_SD_190424	24/04/2019	ES1912502	<0.0002	0.0048	0.0004	0.0052	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0052
SD065	SMA8_SD	0356_SD065_220721	21/07/2022	ES2226191	<0.0002	0.0007	<0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0007
SD080	RESI_SD013	0356_RESI_SD013_181116	16/11/2018	ES1834282	<0.0002	0.0135	0.0024	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	-
SD080	RESI_SD013	0356_RESI_SD013_200420	20/04/2020	ES2013314	<0.0002	0.0111	0.0013	0.0124	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0124
SD080	RESI_SD013	0356_QC103_200420	20/04/2020	ES2013314	<0.0002	0.0118	0.0014	0.0132	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0132
SD080	RESI_SD013	0356_SD080_220719	19/07/2022	ES2226120	<0.0002	0.0010	<0.0002	0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0010
SD114	-	0356_SD114_220721	21/07/2022	ES2226191	<0.0002	0.0029	<0.0002	0.0029	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0029
SD115	-	0356_SD115_220721	21/07/2022	ES2226191	0.0002	0.0457	0.0023	0.0480	<0.0002	<0.0002	<0.0002	0.0010	<0.001	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0496
SD116	-	0356_SD116_220721	21/07/2022	ES2226191	<0.0002	0.0007	<0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0007
SD539	-	0356_SD539_201019	19/10/2020	ES2036629	<0.0002	0.0088	0.0008	0.0096	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0096
SD539	-	0356_SD539_220720	20/07/2022	ES2226474	<0.0002	0.0016	<0.0002	0.0016	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0016
SD540	-	0356_SD540_201019	19/10/2020	ES2036629	<0.0002	0.0128	<0.0002	0.0128	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0003	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0133
SD540	-	0356_SD540_220720	20/07/2022	ES2226474	0.0002	0.0120	0.0003	0.0123	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0125
SD555	-	0356_SD555_220721	21/07/2022	ES2226191	<0.0002	0.0003	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0003

Appendix C

Calibration Certificates

Oil / Water Interface Meter

Instrument Interface Meter (30M)
Serial No. 348724

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: 15/06/2022

Next calibration due: 14/08/2022

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 10H100319

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		381241	pH 7.02
2. pH 4.00		pH 4.00		389384	3.99pH
3. mV		238.64mV		381241/387761	238.40mV
4. EC		2.76mS		385047	2.76mS
5. D.O		0.00%		11343	0.02%
6. Temp		21.6°C		MultiTherm	20.7°C

Calibrated by: [redacted]

Calibration date: 12/07/2022

Next calibration due: 11/08/2022

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Defence OMP - Singleton	**Project Number:**	60612562
Project Location:	Singleton Military Area	**Client:**	Department of Defence
PM Name:	GT	**Fieldwork Staff Name:**	BM, SM, SH

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
Serial Number:	10H100831

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	22/7/22 7:10				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2886	0	Wrong spot
Calibration Reading:		7.02			
Calibration Temperature:		15.6			

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:	4	7	2886	0	
Bump Test Reading:	4.03	7.02	2870	0.0	
Bump Test Temperature:	16.8	15.8	15.2	16.3	

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.

Fieldwork Staff Signature

22/7/22
Date

Distribution: Project Central File

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Defence OMP - Singleton	**Project Number:**	60612562
Project Location:	Singleton Military Area	**Client:**	Department of Defence
PM Name:	GT	**Fieldwork Staff Name:**	BM, SM, SH

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	LMS Airmet
Make and Model:	YSI PRO
Serial Number:	10H100319

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	20/7/22 7:45				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2286	0	
Calibration Reading:		7.01	2290		
Calibration Temperature:		15.8	16.0	16.5	

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:	4.0	7	2286	0	
Bump Test Reading:	4.04	6.88	2280	0.0	
Bump Test Temperature:	17.3	15.7	15.8	16.5	

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

calibrated conductivity + pH

Approval and Distribution

☑ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature

20/7/22
Date

Distribution: Project Central File

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Defence OMP - Singleton	**Project Number:**	60612562
Project Location:	Singleton Military Area	**Client:**	Department of Defence
PM Name:	GT	**Fieldwork Staff Name:**	BM, SH

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:	10H100319

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	21/7/22 7:05				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.0	7.04			
Calibration Reading:	3.99	[illegible]			
Calibration Temperature:	17.8	18.3			

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	21/7/22 7:05				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.0	7.04	2381	0	
Bump Test Reading:	4.14	7.18	2350	0	
Bump Test Temperature:	17.8	18.3	17.8	18.6	

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Calibrated pH (4)

Approval and Distribution

☑ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature

21/7/22
Date

Distribution: Project Central File

Appendix D

Analytical Data Validation

Data Validation

Project number:	60612562	**Validation by:**	[redacted]	**Date:** 26/08/2022
Client:	Department of Defence	**Reviewed by:**	[redacted]	**Date:** 26/08/2022
Site:	Singleton Lone Pine Barracks			
Matrix type:	Soil / Groundwater / Surface Water / Other	**Project Manager:**	[redacted]	
Primary samples:	25 Groundwater samples / 21 Surface water samples / 20 Sediment samples			
Laboratory:	ALS (Primary) Envirolab (Secondary)			
Lab report references:	ES2226118, ES2226119, ES2226120, ES2226191, ES2226474, 301227			
Key Issues:	No issues were identified that have the potential to impact upon the reliability of the Data. AECOM considers that the field procedures and laboratory QA/QC processes employed were appropriate for the purposes of the monitoring.			

Field QA / QC	
Field DQOs and DQIs	The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2022).
Sampling personnel	Sampling was conducted by [redacted] and [redacted] between 19 to 22 July 2022. Field personnel were all suitably qualified and experienced AECOM Environmental Scientists.
Handling and Preservation	Primary and duplicate samples for groundwater, surface water and sediment were placed in a chilled cooler between sampling and analysis. Samples were received preserved and chilled at the laboratory, with all containers received by the primary laboratory at 17.8°C, and by the secondary laboratory at 14°C. Given that the laboratory reported that ice was present, AECOM considers that the samples were appropriately preserved. Additionally, given that PFAS are non-volatile, the elevated temperature recorded at sample receipt is not considered to impact the reliability of the data. All samples were received at the laboratory in appropriate sample containers with the security seal intact.
Calibration of Equipment	Measurement of groundwater geochemical parameters was undertaken using the YSI Quatro Pro Plus, which was calibrated by the supplier prior to use, in accordance with manufacturer's instructions and "bump tested" in the field at the beginning of each subsequent sampling day. Measurement of depth to groundwater was undertaken by an interface probe, which was serviced by the supplier Airmet prior to use. All calibration and service certificates are presented in **Appendix C**.

Data Validation	
Sampling Methodology	All water and sediment samples were collected in accordance with the SAQP (AECOM, 2022), except for samples OTH006 and MW126: • OTH006 was collected using a disposable bailer rather than a sampling pole as it was determined by the field team to be a safer methodology which did not require decontamination; and • MW126 had insufficient water to remove sufficient water to measure parameters. After each sample was collected, re-usable equipment was decontaminated using Liquinox and then rinsed with de-ionised water, and the consumables (nitrile gloves, HydraSleeves™ and/or bailers) were disposed of in a waste bin.
Chain of Custody (COC)	All samples taken were reported on the Chain of Custody documents (COC) and subsequent email amendments analysed for requested analytes.
Rinsate Blank	Rinsate blank samples were collected at a frequency of one per day of sampling (4 in total). Rinsate samples were collected from the final rinse of either the interface probe, or sampling trowel, following decontamination.
Frequency of field QC	Field duplicates (intra-laboratory) and triplicates (inter-laboratory duplicates) were to be collected at a frequency of 1 in 10 primary samples (10%). In total: • 5 water field duplicates and 5 water field triplicates (10.8%) were collected for 46 primary water samples; • 2 soil (sediment) field duplicates and 2 field triplicates (10%) were collected for 20 primary soil samples.
Laboratory QA / QC	
Laboratory DQOs and DQIs	The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2022).
Tests requested / reported	All primary water and sediment samples were analysed for the Per- and Polyfluoroalkyl Substances (PFAS) extended suite. All sample request of analysis was reported on the COC.
Holding time compliance	All samples were extracted and analysed within recommended holding times.
Laboratory Accreditation	Laboratory analysis was undertaken by National Association of Testing Authorities (NATA) accredited laboratories: ALS Environmental Pty Ltd (Sydney) (Accreditation No. 825), and Envirolab Services Pty Ltd (Envirolab, Sydney) (Accreditation number 2901).

Data Validation	
Frequency of laboratory QC	The laboratory reported a sufficient frequency of quality control samples to assess whether the results had been reported to an acceptable accuracy and precision, except for the following laboratory certificates which reported quality control (laboratory duplicate) frequency outliers: • ES2226191 – Actual: 5.08%, Expected: 10.0% • ES2226120 – Actual: 5.00%, Expected: 10.0% • ES2226474 – Actual: 5.00%, Expected: 10.0% The precision of the data can be assessed as acceptable based on the intra-laboratory and inter-laboratory duplicate RPDs, which were reported at the required frequencies and within the control limits. The accuracy of the data can be assessed as acceptable based on the method blanks, laboratory control spike and surrogate spike recoveries, which were reported at the required frequencies and within the control limits.
Method Blank	All method blank concentrations were reported below the LOR for the analytes tested from the primary laboratory, ALS. This is presented in the laboratory Quality Control Report.
Laboratory duplicate RPDs	The reported laboratory RPDs were within laboratories control limits. The laboratory duplicate RPDs are presented in the laboratory Quality Control Report.
Laboratory control spike recovery	Laboratory Control Spike (LCS) recoveries were within AECOM limits (70-130%) and / or laboratory analyte specific acceptance criteria (ASAC). The laboratory control spike recovery percentages are presented in the laboratory QC Reports.
Matrix spike recovery	Matrix Spike (MS) recoveries mostly met the DQI requirements except for one anonymous sample which was reported in three work orders (ES2226191, ES2226120, ES2226119). Matrix Spike recoveries were not determined for this sample for the following analytes: • Perfluorohexane sulfonic acid (PFHxs) • Perfluorooctane sulfonic acid (PFOS • Perfluorooctanoic acid (PFOA) These MS recoveries were not determined as the background level was greater than or equal to 4x the spike level. These non-determinants are unlikely to reflect method bias and considered unlikely to affect data interpretation. It is noted the non-determinants are non-AECOM anonymous samples.
Surrogate spike recovery	The reported laboratory Surrogate Spikes (SS) recoveries were within the control limits. This is presented in the laboratory Quality Control Report.
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 check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.

Data Validation	
Limits of reporting	With the exception of the PFAS NEMP Freshwater 99% species protection (HEPA 2020) values for PFOS, the laboratory LORs were sufficiently low to enable assessment against adopted guideline criteria.
Rinsate Blank Results	The results of the rinsate analysis indicated that concentrations of PFAS were below the laboratory limits of reporting (LORs) for all analytes tested, indicating the decontamination procedures were appropriate. Rinsate blank sample results are presented in **Table D3** in **Appendix D**.
Field duplicate and Triplicate RPDs	The RPDs were within the acceptance criteria stated in the SAQP (AECOM, 2022). Where RPDs exceeded the 30% acceptable range, they can be considered acceptable as the results are less than 10 times the LOR (no limit for RPD acceptable range) or less than 20 times the LOR (and the RPD is less than 50%). The calculated RPDs are presented in **Table D1** and **Table D2** in **Appendix D**.
Overall Assessment	
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.	

Table D1 - Relative Difference Percentage - Water

	Lab Report Number	ES2226474	ES2226191			ES2226474	ES2226191			ES2226191	ES2226191			ES2226191	ES2226191			ES2226474	ES2226191	
	Field ID	0356 SW065 220720	0356 QC101 220720	**RPD**		0356 MW1875 220720	0356 QC102 220720	**RPD**		0356 MW048 220721	0356 QC103 220721	**RPD**		0356 SW002 220721	0356 QC104 220721	**RPD**		0356 MW121 220722	0356 QC106 220722	**RPD**
	Sampled Date/Time	20/07/2022 11:59	20/07/2022 11:59			20/07/2022 11:59	20/07/2022 11:59			21/07/2022 8:38	21/07/2022 8:38			21/07/2022 9:33	21/07/2022 9:33			22/07/2022 11:59	22/07/2022 11:59	
Chem_Group	**ChemName**	**Units**	**LOR**																	
	Sum of PFAS (WA DER List)	µg/L	0.01	**0.02**	**0.03**	**40**	<0.01	<0.01	nc	2.83	2.84	0	0.65	0.6	8	<0.01	<0.01	nc		
PFAS Full Suite	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc		
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc		
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc		
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc		
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc		
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc		
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc		
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc		
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc		
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<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	<0.02	nc	0.15	0.19	24	0.03	<0.02	nc	<0.02	<0.02	nc		
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc		
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc		
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc		
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc		
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<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	<0.02	nc	0.04	0.04	0	<0.02	<0.02	nc	<0.02	<0.02	nc		
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.27	0.24	12	0.04	0.04	0	<0.02	<0.02	nc		
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc		
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc		
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.31	0.31	0	<0.02	<0.02	nc	<0.02	<0.02	nc		
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	**0.04**	**0.06**	**40**	<0.02	<0.02	nc	<0.02	<0.02	nc		
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc		
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc		
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc		
	Sum of PFAS	µg/L	0.01	**0.02**	**0.03**	**40**	<0.01	<0.01	nc	3.14	3.15	0	0.65	0.6	8	<0.01	<0.01	nc		
	Sum of PFHxS and PFOS	µg/L	0.01	**0.02**	**0.03**	**40**	<0.01	<0.01	nc	2.28	2.26	1	0.57	0.55	4	<0.01	<0.01	nc		
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	**0.01**	**0.02**	**67**	<0.01	<0.01	nc	0.02	0.02	0	0.33	0.34	3	<0.01	<0.01	nc		
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.05	0.05	0	0.01	0.01	0	<0.01	<0.01	nc		
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.01	0.01	0	<0.01	<0.01	nc	2.26	2.24	1	0.24	0.21	13	<0.01	<0.01	nc		

Notes:
LOR: Limit of Reporting
µg/L - micrograms per litre
Interlab_D - Interlaboratory duplicate
Field_D - Intralaboratory duplicate
nc - non calculable as concentrations in one or both samples were below the LOR or the result was not required to be reported by the secondary laboratory
*RPDs have only been considered where a concentration is greater than 10 times the LOR.
**High RPDs are in bold (>30%)

Table D1 - Relative Difference Percentage - Water

Lab Report Number	ES2226474		301227			ES2226474		301227			ES2226191		301227			ES2226191		301227			ES2226474		301227		
Field ID	0356 SW065 220720		0356 QC201 220720		**RPD**	0356 MW1875 220720		0356 QC202 220720		**RPD**	0356 MW048 220721		0356 QC203 220721		**RPD**	0356 SW002 220721		0356 QC204 220721		**RPD**	0356 MW121 220722		0356 QC206 220722		**RPD**
Sampled Date/Time	20/07/2022 11:59		20/07/2022 11:59			20/07/2022 11:59		20/07/2022 11:59			21/07/2022 8:38		21/07/2022 8:38			21/07/2022 9:33		21/07/2022 9:33			22/07/2022 11:59		22/07/2022 11:59		
Chem_Group	**ChemName**	**Units**	**LOR**																						
	Sum of PFAS (WA DER List)	µg/L	0.01	0.02		nc	<0.01		nc	2.83		nc	0.65		nc	<0.01		nc							
PFAS Full Suite	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc							
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc							
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc							
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc							
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc							
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc							
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc							
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc							
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc							
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc							
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	**0.15**	**0.21**	**33**	**0.03**	**0.02**	**40**	<0.02	<0.01	nc							
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	0.04	nc	<0.1	<0.02	nc	<0.1	<0.02	nc							
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc							
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc							
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc							
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	0.02	nc	<0.02	0.01	nc	<0.02	<0.01	nc							
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	0.04	0.05	22	<0.02	<0.01	nc	<0.02	<0.01	nc							
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	0.27	0.23	16	0.04	0.04	0	<0.02	<0.01	nc							
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc							
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc							
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	0.31	0.31	0	<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	0.04	0.05	22	<0.02	<0.02	nc	<0.02	<0.02	nc							
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc							
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc							
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc							
	Sum of PFAS	µg/L	0.01	**0.02**	**0.05**	**86**	<0.01	<0.01	nc	3.14	3.6	14	0.65	0.76	16	<0.01	<0.01	nc							
	Sum of PFHxS and PFOS	µg/L	0.01	**0.02**	**0.05**	**86**	<0.01	<0.01	nc	2.28	2.7	17	0.57	0.66	15	<0.01	<0.01	nc							
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	**0.01**	**0.02**	**67**	<0.01	<0.01	nc	0.02	0.02	0	0.33	0.42	24	<0.01	<0.01	nc							
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.05	0.06	18	0.01	0.01	0	<0.01	<0.01	nc							
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	**0.01**	**0.02**	**67**	<0.01	<0.01	nc	2.26	2.6	14	0.24	0.24	0	<0.01	<0.01	nc							

Notes:
LOR: Limit of Reporting
µg/L - micrograms per litre
Interlab_D - Interlaboratory duplicate
Field_D - Intralaboratory duplicate
nc - non calculable as concentrations in one or both samples were below the LOR or the result was not required to be
*RPDs have only been considered where a concentration is greater than 10 times the LOR.
**High RPDs are in bold (>30%)

Table D2 - Relative Difference Percentage - Sediment

			Lab Report Number	ES2226474	ES2226191		ES2226191	ES2226191		ES2226474	301227		ES2226191	301227	
			Field ID	0356_SD047_220720	0356_QC100_220720	**RPD**	0356_SD002_220721	0356_QC105_220721	**RPD**	0356_SD047_220720	0356_QC200_220720	**RPD**	0356_SD002_220721	0356_QC205_220721	**RPD**
			Sampled Date/Time	20/07/2022 11:59	20/07/2022 11:59		21/07/2022 9:32	21/07/2022 9:32		20/07/2022 11:59	20/07/2022 11:59		21/07/2022 9:32	21/07/2022 9:32	
Chem_Group	**ChemName**	**Units**	**LOR**												
	Sum of PFAS (WA DER List)	mg/kg	0.0002	0.0075	0.0085	13	0.0448	0.0364	21	0.0075		nc	0.0448		nc
PFAS Full Suite	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001 : 0.0002 (Interlab)	<0.001	<0.001	nc	<0.001	<0.001	nc	<0.001	<0.0002	nc	<0.001	0.0002	nc
	Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	0.0003	nc
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	0.0005	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	0.0002	nc
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	0.0002	nc
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.001	nc	<0.0002	<0.001	nc
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	0.0002	nc
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	0.0003	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Sum of PFAS	mg/kg	0.0002 : 0.0001 (Interlab)	0.0075	0.0085	13	0.0448	0.0372	19	0.0075	0.0099	28	0.0448	0.04	11
	Sum of PFHxS and PFOS	mg/kg	0.0002 : 0.0001 (Interlab)	0.0075	0.0083	10	0.0446	0.0362	21	0.0075	0.0096	25	0.0446	0.039	13
	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0075	0.0081	8	0.0428	0.0345	21	0.0075	0.0094	22	0.0428	0.037	15
	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	0.0002	nc	0.0002	0.0002	0	<0.0002	0.0002	nc	0.0002	<0.0001	nc
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	0.0002	nc	0.0018	0.0017	6	<0.0002	0.0002	nc	0.0018	0.0017	6

Notes:
LOR: Limit of Reporting
mg/kg - milligrams per kilogram
Interlab_D - Interlaboratory duplicate
Field_D - Intralaboratory duplicate
nc - non calculable as concentrations in one or both samples were below the LOR or the result was not required to be reported by the secondary laboratory
*RPDs have only been considered where a concentration is greater than 10 times the LOR.
**High RPDs are in bold (>30%)

Table D3 - Rinsate Results

	ES2226191	ES2226191	ES2226191	ES2226191
	0356_QC300_220719	0356_QC302_220721	0356_QC303_220722	0356_QC301_220720
Sampled_Date/Time	19/07/2022 15:41	21/07/2022 15:10	22/07/2022 14:12	20/07/2022 16:25
Sample Type	Rinsate	Rinsate	Rinsate	Rinsate

Chem_Group	ChemName	Units	LOR				
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
PFAS Full Suite	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<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	<0.05
	6:2 Fluorotelomer Sulfonate (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
	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
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	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
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	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
	Perfluoroheptane sulfonic acid (PFHpS)	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
	Perfluorohexanoic acid (PFHxA)	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 sulfonamide (FOSA)	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
	Perfluoropentanoic acid (PFPeA)	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
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
	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
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01

Appendix E

Laboratory Certificates

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2226118**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: NSW_0356_PFASOMP	Page	: 1 of 3
Order number	: 60612562_8.1	Quote number	: ES2021AECOMAU0030 (SY/139/19 v4 60612562_8.1)
C-O-C number	: 40357	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: NSW_0356		
Sampler	: [redacted]		

Dates

Date Samples Received	: 25-Jul-2022 09:00	Issue Date	: 01-Aug-2022
Client Requested Due Date	: 01-Aug-2022	Scheduled Reporting Date	: **01-Aug-2022**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 17.8' c - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is an updated a SRN to reflect the changes in Sample ID and Time for Sample 1**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2226118-001	19-Jul-2022 14:30	0356_MW132_220719	✓

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]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)	Email	[redacted]@esdat.com.au

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]
- Chain of Custody (CoC) (COC)	Email	[redacted]
- EDI Format - ENMRG (ENMRG)	Email	[redacted]
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	[redacted]
- EDI Format - ESDAT (ESDAT)	Email	[redacted]
- EDI Format - XTab (XTAB)	Email	[redacted]
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com

CHAIN OF CUSTODY

ALS COC#: 40357 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 25/7/22 9AM

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: NSW_0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0356_MW132_220719		20/07/2022 07:46 AM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2226118

Telephone - 61-2-8784 8555

CHAIN OF CUSTODY

(ALS) COC#: 40357 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: NSW_0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU003 0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: ASD
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 27/7/22 9AM

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	0356_MW132_220719	HDPE (no PTFE)	20 mL	00350821019090	Grey	No	
001	0356_MW132_220719	HDPE (no PTFE)	20 mL	00350821042766	Grey	No	
001	0356_MW132_220719	HDPE (no PTFE)	20 mL	00350821018885	Grey	No	

Total Bottle Count: ALS: 3, Non ALS: 0

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2226118**	Page	: 1 of 5
Amendment	: **2**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_22	Date Samples Received	: 25-Jul-2022 09:00
Order number	: 60612562_8.1	Date Analysis Commenced	: 27-Jul-2022
C-O-C number	: 40357	Issue Date	: 10-Aug-2022 13:14
Sampler	: [redacted]		
Site	: NSW_0356		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (03/08/2022): This report has been amended to alter the project name. All analysis results are as per the previous report.
- Amendment (10/08/2022): This report has been amended following a change to the EP231 results reported for sample #1 due to a client request.
- 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: GROUNDWATER (Matrix: WATER)				Sample ID	0356_MW132_220719	----	----	----	----
				Sampling date / time	19-Jul-2022 14:30	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2226118-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.03**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.03**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0356_MW132_220719	----	----	----	----
				Sampling date / time	19-Jul-2022 14:30	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2226118-001	--------	--------	--------	--------
					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		**0.06**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.06**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.06**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**92.3**	----	----	----	----
13C8-PFOA	----	0.02	%		**98.0**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2226118**	Page	: 1 of 7
Amendment	: **2**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_22	Date Samples Received	: 25-Jul-2022
Order number	: 60612562_8.1	Date Analysis Commenced	: 27-Jul-2022
C-O-C number	: 40357	Issue Date	: 10-Aug-2022
Sampler	: [redacted]		
Site	: NSW_0356		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

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: 4489451)									
EP2209224-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	11.6	10.6	8.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.18	1.99	9.2	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	1.20	1.18	1.2	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	1.85	1.82	1.8	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.52	0.51	0.0	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP2209225-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.18	0.18	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.48	0.42	15.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4489451)									
EP2209224-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	1.46	1.38	5.4	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.67	2.64	1.4	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	4.01	3.96	1.2	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	1.76	1.74	0.9	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.03	0.03	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	1.4	1.4	0.0	0% - 50%

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4489451) - continued									
EP2209225-001	Anonymous	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	0.04	0.04	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4489451)									
EP2209224-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP2209225-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4489451)									
EP2209224-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

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: 4489451) - continued									
EP2209224-001	Anonymous	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
EP2209225-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4489451)									
EP2209224-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	28.7	27.2	5.1	0% - 20%
EP2209225-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.72	0.66	8.7	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4489451)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	94.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	89.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	86.8	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	92.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	92.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4489451)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	79.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	90.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	102	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	99.1	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4489451)								
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	85.9	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	81.1	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	84.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.9	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	100	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	89.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4489451)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	89.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	110	67.0	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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4489451) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	80.8	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4489451)							
EP2209224-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	94.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	89.0	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	87.4	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	96.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	86.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4489451)							
EP2209224-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	81.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	85.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	99.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	98.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	87.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	88.6	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	86.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	96.3	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4489451)							
EP2209224-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	108	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	106	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	85.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	79.4	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	89.4	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	113	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: 4489451) - continued							
EP2209224-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	97.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4489451)							
EP2209224-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	90.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	114	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.0	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2226118**	Page	: 1 of 4
Amendment	: **2**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_22	Date Samples Received	: 25-Jul-2022
Site	: NSW_0356	Issue Date	: 10-Aug-2022
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60612562_8.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0356_MW132_220719	**19-Jul-2022**	**30-Jul-2022**	15-Jan-2023	✓	**30-Jul-2022**	15-Jan-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0356_MW132_220719	**19-Jul-2022**	**30-Jul-2022**	15-Jan-2023	✓	**30-Jul-2022**	15-Jan-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0356_MW132_220719	**19-Jul-2022**	**30-Jul-2022**	15-Jan-2023	✓	**30-Jul-2022**	15-Jan-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0356_MW132_220719	**19-Jul-2022**	**30-Jul-2022**	15-Jan-2023	✓	**30-Jul-2022**	15-Jan-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0356_MW132_220719	**19-Jul-2022**	**30-Jul-2022**	15-Jan-2023	✓	**30-Jul-2022**	15-Jan-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: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2226119**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: NSW_0356_PFASOMP	Page	: 1 of 3
Order number	: 60612562_8.1	Quote number	: ES2021AECOMAU0030 (SY/139/19 v4 60612562_8.1)
C-O-C number	: 40358	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: NSW_0356		
Sampler	: [redacted]		

Dates

Date Samples Received	: 25-Jul-2022 09:00	Issue Date	: 27-Jul-2022
Client Requested Due Date	: 01-Aug-2022	Scheduled Reporting Date	: **01-Aug-2022**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 17.8'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2226119-001	20-Jul-2022 08:30	0356_SD039_220720	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2226119-002	20-Jul-2022 08:31	0356_SW039_220720	✓

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]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)	Email	[redacted]@esdat.com.au

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]
- Chain of Custody (CoC) (COC)	Email	[redacted]
- EDI Format - ENMRG (ENMRG)	Email	[redacted]
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	[redacted]
- EDI Format - ESDAT (ESDAT)	Email	[redacted]
- EDI Format - XTab (XTAB)	Email	[redacted]
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com

CHAIN OF CUSTODY

ALS COC#: 40358 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: ASD 25/7/22 9AM

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: NSW_0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0356_SD039_220720		20/07/2022 08:30 AM	Soil	ALS: 1 Non ALS: 0	No	X			
002	0356_SW039_220720		20/07/2022 08:31 AM	Water	ALS: 3 Non ALS: 0	No		X		

Environmental Division Sydney

Work Order Reference

ES2226119

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

(ALS) COC#: 40358 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 27/7/22 9AM

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: NSW_0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0356_SD039_220720	HDPE Soil Jar	200 mL	00621121021162	Grey	No	
002	0356_SW039_220720	HDPE (no PTFE)	20 mL	00350821019012	Grey	No	
002	0356_SW039_220720	HDPE (no PTFE)	20 mL	00350821042684	Grey	No	
002	0356_SW039_220720	HDPE (no PTFE)	20 mL	00350821042836	Grey	No	

Total Bottle Count: ALS: 4, Non ALS: 0

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2226119**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP	Date Samples Received	: 25-Jul-2022 09:00
Order number	: 60612562_8.1	Date Analysis Commenced	: 27-Jul-2022
C-O-C number	: 40358	Issue Date	: 02-Aug-2022 11:48
Sampler	: [redacted]		
Site	: NSW_0356		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. 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	0356_SD039_220720	----	----	----	----
			Sampling date / time	20-Jul-2022 08:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2226119-001	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**67.2**	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0038**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0356_SD039_220720	----	----	----	----
				Sampling date / time	20-Jul-2022 08:30	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2226119-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<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	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0038**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0038**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0038**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**83.0**	----	----	----	----
13C8-PFOA	----	0.0002	%		**97.0**	----	----	----	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW039_220720	----	----	----	----
				Sampling date / time	20-Jul-2022 08:31	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2226119-002	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.01**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.01**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW039_220720	----	----	----	----
				Sampling date / time	20-Jul-2022 08:31	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2226119-002	--------	--------	--------	--------
					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		**0.02**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.02**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.02**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**86.7**	----	----	----	----
13C8-PFOA	----	0.02	%		**101**	----	----	----	----

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: **SURFACE WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2226119**	Page	: 1 of 11
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP	Date Samples Received	: 25-Jul-2022
Order number	: 60612562_8.1	Date Analysis Commenced	: 27-Jul-2022
C-O-C number	: 40358	Issue Date	: 02-Aug-2022
Sampler	: [redacted]		
Site	: NSW_0356		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

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: 4486221)									
ES2225843-012	Anonymous	EA055: Moisture Content	----	0.1	%	21.8	20.3	7.0	0% - 20%
ES2226191-033	Anonymous	EA055: Moisture Content	----	0.1	%	45.3	44.5	1.8	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4484889)									
ES2225826-013	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	0.0010	0.0010	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	0.0015	0.0015	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0235	0.0233	0.9	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0036	0.0036	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.436	0.421	3.6	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0009	0.0010	0.0	No Limit
ES2226191-025	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	0.0026	0.0019	30.7	0% - 50%
		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: 4484889)									
ES2225826-013	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0012	0.0012	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0005	0.0005	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0055	0.0052	5.1	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	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 (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4484889) - continued									
ES2225826-013	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.002	<0.002	0.0	No Limit
ES2226191-025	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: 4484889)									
ES2225826-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	0.0006	0.0007	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
ES2226191-025	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

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: 4484889)									
ES2225826-013	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
ES2226191-025	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 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: 4489451)									
EP2209224-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	11.6	10.6	8.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.18	1.99	9.2	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	1.20	1.18	1.2	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	1.85	1.82	1.8	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.52	0.51	0.0	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP2209225-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.18	0.18	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.48	0.42	15.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4489451)									
EP2209224-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	1.46	1.38	5.4	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.67	2.64	1.4	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	4.01	3.96	1.2	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	1.76	1.74	0.9	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.03	0.03	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

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: 4489451) - continued									
EP2209224-001	Anonymous	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	1.4	1.4	0.0	0% - 50%
EP2209225-001	Anonymous	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	0.04	0.04	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4489451)									
EP2209224-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP2209225-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

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: 4489451)									
EP2209224-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP2209225-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4489451)									
EP2209224-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	28.7	27.2	5.1	0% - 20%
EP2209225-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.72	0.66	8.7	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **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: 4484889)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.8	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4484889)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	82.1	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.0	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.0	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.6	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.5	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4484889)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.1	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	81.7	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.5	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.0	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4484889)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	77.2	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	78.8	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	90.0	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: 4484889) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	85.6	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: 4489451)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	94.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	89.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	86.8	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	92.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	92.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4489451)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	79.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	90.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	102	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	99.1	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4489451)								
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	85.9	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	81.1	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	84.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.9	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	100	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	89.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4489451)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	89.4	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: 4489451) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	110	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	80.8	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 4484889)							
ES2225826-013	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	100	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	76.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	# Not Determined	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	76.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	92.0	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4484889)							
ES2225826-013	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	72.0	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	84.0	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	72.0	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	92.0	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	# Not Determined	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	80.0	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	72.0	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	72.0	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	80.0	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	92.9	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4484889)							
ES2225826-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	96.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	80.1	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	81.7	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	92.9	68.7	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	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4484889) - continued							
ES2225826-013	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	84.9	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	80.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	68.0	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4484889)							
ES2225826-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	92.0	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	72.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	84.0	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	104	69.2	143

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: 4489451)							
EP2209224-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	94.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	89.0	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	87.4	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	96.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	86.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4489451)							
EP2209224-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	81.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	85.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	99.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	98.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	87.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	88.6	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	86.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	96.3	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4489451)							
EP2209224-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	108	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	106	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	85.2	62.6	147

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: 4489451) - continued							
EP2209224-002	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	79.4	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	89.4	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	113	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	97.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4489451)							
EP2209224-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	90.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	114	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.0	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2226119**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP	Date Samples Received	: 25-Jul-2022
Site	: NSW_0356	Issue Date	: 02-Aug-2022
Sampler	: [redacted]	No. of samples received	: 2
Order number	: 60612562_8.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **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: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2225826--013	Anonymous	**Perfluorohexane sulfonic acid (PFHxS)**	355-46-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2225826--013	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	ES2225826--013	Anonymous	**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)							
0356_SD039_220720	**20-Jul-2022**	**----**	----	----	**28-Jul-2022**	03-Aug-2022	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0356_SD039_220720	**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
0356_SD039_220720	**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
0356_SD039_220720	**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0356_SD039_220720	**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
0356_SD039_220720	**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-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
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0356_SW039_220720	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0356_SW039_220720	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0356_SW039_220720	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0356_SW039_220720	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0356_SW039_220720	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-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	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**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	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
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	: **ES2226120**		
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: NSW_0356_PFASOMP_22	Page	: 1 of 3
Order number	: 60612562_8.1	Quote number	: ES2021AECOMAU0030 (SY/139/19 v4 60612562_8.1)
C-O-C number	: 40401	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: NSW_0356		
Sampler	: [redacted]		

Dates

Date Samples Received	: 25-Jul-2022 09:00	Issue Date	: 03-Aug-2022
Client Requested Due Date	: 01-Aug-2022	Scheduled Reporting Date	: **01-Aug-2022**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 17.8' c
Receipt Detail	:	No. of samples received / analysed	: 6 / 6

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2226120-005	19-Jul-2022 15:31	0356_SD052_220719	✓	✓
ES2226120-006	19-Jul-2022 16:20	0356_SD080_220719	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2226120-001	22-Jul-2022 11:50	0356_MW126_220722	✓
ES2226120-002	22-Jul-2022 10:56	0356_MW128_220722	✓
ES2226120-003	19-Jul-2022 15:36	0356_SW035_220719	✓
ES2226120-004	19-Jul-2022 16:20	0356_SW036_220719	✓

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]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)	Email	[redacted]@esdat.com.au

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]
- Chain of Custody (CoC) (COC)	Email	[redacted]
- EDI Format - ENMRG (ENMRG)	Email	[redacted]
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	[redacted]
- EDI Format - ESDAT (ESDAT)	Email	[redacted]
- EDI Format - XTab (XTAB)	Email	[redacted]
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- EDI Format - XTab (XTAB)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

CHAIN OF CUSTODY

ALS COC#: 40401 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 25/7/22 9AM

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: NSW_0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0356_MW126_220722		22/07/2022 11:50 AM	Water	ALS: 3 Non ALS: 0	No		X		
002	0356_MW128_220722		22/07/2022 10:56 AM	Water	ALS: 5 Non ALS: 0	No		X		Extra volume
003	0356_SW035_220719		19/07/2022 03:36 PM	Water	ALS: 3 Non ALS: 0	No		X		
004	0356_SW036_220719		19/07/2022 04:20 PM	Water	ALS: 3 Non ALS: 0	No		X		
005	0356_SD052_220719		19/07/2022 03:31 PM	Soil	ALS: 1 Non ALS: 0	No	X			
006	0356_SD080_220719		19/07/2022 04:20 PM	Soil	ALS: 1 Non ALS: 0	No	X			

Environmental Division Sydney

Work Order Reference

ES2226120

Telephone : 61-2-8784 8555

CHAIN OF CUSTODY

(ALS) COC#: 40401 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: ASD 27/7/22 9AM

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: NSW_0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0356_MW126_220722	HDPE (no PTFE)	20 mL	00350821042815	Grey	No	
001	0356_MW126_220722	HDPE (no PTFE)	20 mL	00350821042971	Grey	No	
001	0356_MW126_220722	HDPE (no PTFE)	20 mL	00350821042692	Grey	No	
002	0356_MW128_220722	HDPE (no PTFE)	20 mL	00350821042887	Grey	No	
002	0356_MW128_220722	HDPE (no PTFE)	20 mL	00350821042687	Grey	No	
002	0356_MW128_220722	HDPE (no PTFE)	20 mL	00350821042768	Grey	No	
002	0356_MW128_220722	HDPE (no PTFE)	20 mL	00350821042772	Grey	No	
002	0356_MW128_220722	HDPE (no PTFE)	20 mL	00350821042954	Grey	No	
003	0356_SW035_220719	HDPE (no PTFE)	20 mL	00350821018803	Grey	No	
003	0356_SW035_220719	HDPE (no PTFE)	20 mL	00350821018836	Grey	No	
003	0356_SW035_220719	HDPE (no PTFE)	20 mL	00350821019070	Grey	No	
004	0356_SW036_220719	HDPE (no PTFE)	20 mL	00350821018827	Grey	No	
004	0356_SW036_220719	HDPE (no PTFE)	20 mL	00350821042927	Grey	No	
004	0356_SW036_220719	HDPE (no PTFE)	20 mL	00350821042934	Grey	No	
005	0356_SD052_220719	HDPE Soil Jar	200 mL	00621121021189	Grey	No	
006	0356_SD080_220719	HDPE Soil Jar	200 mL	00621121021117	Grey	No	

Total Bottle Count: ALS: 16, Non ALS: 0

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2226120**	Page	: 1 of 9
Amendment	: **2**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_22	Date Samples Received	: 25-Jul-2022 09:00
Order number	: 60612562_8.1	Date Analysis Commenced	: 27-Jul-2022
C-O-C number	: 40401	Issue Date	: 10-Aug-2022 13:14
Sampler	: [redacted]		
Site	: NSW_0356		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW
	Inorganics Coordinator	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 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.
- Amendment (03/08/2022): This report has been amended to alter the project name. All analysis results are as per the previous report.
- Amendment (10/08/2022): This report has been amended following a change to the EP231 result reported for sample #001 as per client request.
- 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: GROUNDWATER (Matrix: WATER)				Sample ID	0356_MW126_220722	0356_MW128_220722	----	----	----
				Sampling date / time	22-Jul-2022 11:50	22-Jul-2022 10:56	----	----	----
Compound	CAS Number	LOR	Unit		ES2226120-001	ES2226120-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.03**	<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: GROUNDWATER (Matrix: WATER)				Sample ID	0356_MW126_220722	0356_MW128_220722	----	----	----
				Sampling date / time	22-Jul-2022 11:50	22-Jul-2022 10:56	----	----	----
Compound	CAS Number	LOR	Unit		ES2226120-001	ES2226120-002	--------	--------	--------
					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		**0.03**	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.03**	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.03**	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**95.1**	**97.0**	----	----	----
13C8-PFOA	----	0.02	%		**100**	**103**	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0356_SD052_220719	0356_SD080_220719	----	----	----
			Sampling date / time	19-Jul-2022 15:31	19-Jul-2022 16:20	----	----	----
Compound	CAS Number	LOR	Unit	ES2226120-005	ES2226120-006	--------	--------	--------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**65.0**	**10.0**	----	----	----
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	**0.0009**	**0.0010**	----	----	----
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	0356_SD052_220719	0356_SD080_220719	----	----	----
				Sampling date / time	19-Jul-2022 15:31	19-Jul-2022 16:20	----	----	----
Compound	CAS Number	LOR	Unit		ES2226120-005	ES2226120-006	--------	--------	--------
					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		**0.0019**	**0.0010**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0009**	**0.0010**	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0019**	**0.0010**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**92.5**	**104**	----	----	----
13C8-PFOA	----	0.0002	%		**98.5**	**101**	----	----	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW035_220719	0356_SW036_220719	----	----	----
				Sampling date / time	19-Jul-2022 15:36	19-Jul-2022 16:20	----	----	----
Compound	CAS Number	LOR	Unit		ES2226120-003	ES2226120-004	--------	--------	--------
					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	**0.15**	----	----	----
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	**0.23**	----	----	----
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	**0.03**	----	----	----
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: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW035_220719	0356_SW036_220719	----	----	----
				Sampling date / time	19-Jul-2022 15:36	19-Jul-2022 16:20	----	----	----
Compound	CAS Number	LOR	Unit		ES2226120-003	ES2226120-004	--------	--------	--------
					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	**0.41**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.38**	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.41**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**95.9**	**97.4**	----	----	----
13C8-PFOA	----	0.02	%		**105**	**110**	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: **SEDIMENT**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: **SURFACE WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2226120**	Page	: 1 of 10
Amendment	: **2**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_22	Date Samples Received	: 25-Jul-2022
Order number	: 60612562_8.1	Date Analysis Commenced	: 27-Jul-2022
C-O-C number	: 40401	Issue Date	: 10-Aug-2022
Sampler	: [redacted]		
Site	: NSW_0356		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW
[redacted]	Inorganics Coordinator	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: 4486221)									
ES2225843-012	Anonymous	EA055: Moisture Content	----	0.1	%	21.8	20.3	7.0	0% - 20%
ES2226191-033	Anonymous	EA055: Moisture Content	----	0.1	%	45.3	44.5	1.8	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4484889)									
ES2225826-013	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	0.0010	0.0010	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	0.0015	0.0015	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0235	0.0233	0.9	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0036	0.0036	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.436	0.421	3.6	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0009	0.0010	0.0	No Limit
ES2226191-025	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	0.0026	0.0019	30.7	0% - 50%
		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: 4484889)									
ES2225826-013	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0012	0.0012	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0005	0.0005	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0055	0.0052	5.1	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	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 (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4484889) - continued									
ES2225826-013	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.002	<0.002	0.0	No Limit
ES2226191-025	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: 4484889)									
ES2225826-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	0.0006	0.0007	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
ES2226191-025	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

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: 4484889)									
ES2225826-013	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
ES2226191-025	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: 4485407)									
ES2226191-006	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.04	0.03	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: 4485407)									
ES2226191-006	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4485407)									
ES2226191-006	Anonymous	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: 4485407) - continued									
ES2226191-006	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4485407)									
ES2226191-006	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4485407)									
ES2226191-006	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.03	28.6	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: 4484889)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.8	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4484889)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	82.1	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.0	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.0	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.6	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.5	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4484889)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.1	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	81.7	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.5	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.0	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4484889)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	77.2	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	78.8	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	90.0	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: 4484889) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	85.6	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: 4485407)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	88.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	82.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	76.8	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	84.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	89.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4485407)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	78.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	79.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	93.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	80.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	78.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	101	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	96.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	94.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4485407)								
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	90.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	87.8	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	87.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	101	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.0	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	85.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4485407)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	78.8	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	82.2	64.0	140

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4485407) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	82.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	74.6	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**

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: 4484889)							
ES2225826-013	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	100	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	76.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	# Not Determined	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	76.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	92.0	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4484889)							
ES2225826-013	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	72.0	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	84.0	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	72.0	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	92.0	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	# Not Determined	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	80.0	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	72.0	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	72.0	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	80.0	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	92.9	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4484889)							
ES2225826-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	96.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	80.1	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	81.7	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	92.9	68.7	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	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4484889) - continued							
ES2225826-013	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	84.9	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	80.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	68.0	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4484889)							
ES2225826-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	92.0	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	72.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	84.0	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	104	69.2	143

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: 4485407)							
ES2226120-002	0356_MW128_220722	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	79.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	90.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	87.0	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	80.0	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	88.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	93.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4485407)							
ES2226120-002	0356_MW128_220722	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	77.3	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	84.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	97.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	83.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	95.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	77.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	77.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.8	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.2	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	86.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4485407)							
ES2226120-002	0356_MW128_220722	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	104	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	107	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	85.9	62.6	147

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: 4485407) - continued							
ES2226120-002	0356_MW128_220722	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.6	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	95.7	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	101	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	94.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4485407)							
ES2226120-002	0356_MW128_220722	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	77.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	84.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	90.8	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	83.0	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2226120**	Page	: 1 of 5
Amendment	: **2**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_22	Date Samples Received	: 25-Jul-2022
Site	: NSW_0356	Issue Date	: 10-Aug-2022
Sampler	: [redacted]	No. of samples received	: 6
Order number	: 60612562_8.1	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **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
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2225826--013	Anonymous	**Perfluorohexane sulfonic acid (PFHxS)**	355-46-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2225826--013	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	ES2225826--013	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	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	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **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)								
0356_SD052_220719,	0356_SD080_220719	**19-Jul-2022**	**----**	----	----	**28-Jul-2022**	02-Aug-2022	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0356_SD052_220719,	0356_SD080_220719	**19-Jul-2022**	**28-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
0356_SD052_220719,	0356_SD080_220719	**19-Jul-2022**	**28-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	06-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
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
0356_SD052_220719,	0356_SD080_220719	**19-Jul-2022**	**28-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0356_SD052_220719,	0356_SD080_220719	**19-Jul-2022**	**28-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
0356_SD052_220719,	0356_SD080_220719	**19-Jul-2022**	**28-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	06-Sep-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
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0356_SW035_220719,	0356_SW036_220719	**19-Jul-2022**	**29-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	15-Jan-2023	✓
HDPE (no PTFE) (EP231X)								
0356_MW126_220722,	0356_MW128_220722	**22-Jul-2022**	**29-Jul-2022**	18-Jan-2023	✓	**29-Jul-2022**	18-Jan-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0356_SW035_220719,	0356_SW036_220719	**19-Jul-2022**	**29-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	15-Jan-2023	✓
HDPE (no PTFE) (EP231X)								
0356_MW126_220722,	0356_MW128_220722	**22-Jul-2022**	**29-Jul-2022**	18-Jan-2023	✓	**29-Jul-2022**	18-Jan-2023	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0356_SW035_220719,	0356_SW036_220719	**19-Jul-2022**	**29-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	15-Jan-2023	✓
HDPE (no PTFE) (EP231X)								
0356_MW126_220722,	0356_MW128_220722	**22-Jul-2022**	**29-Jul-2022**	18-Jan-2023	✓	**29-Jul-2022**	18-Jan-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0356_SW035_220719,	0356_SW036_220719	**19-Jul-2022**	**29-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	15-Jan-2023	✓
HDPE (no PTFE) (EP231X)								
0356_MW126_220722,	0356_MW128_220722	**22-Jul-2022**	**29-Jul-2022**	18-Jan-2023	✓	**29-Jul-2022**	18-Jan-2023	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0356_SW035_220719,	0356_SW036_220719	**19-Jul-2022**	**29-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	15-Jan-2023	✓
HDPE (no PTFE) (EP231X)								
0356_MW126_220722,	0356_MW128_220722	**22-Jul-2022**	**29-Jul-2022**	18-Jan-2023	✓	**29-Jul-2022**	18-Jan-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	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**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	1	20	**5.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**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	: **ES2226191**		
Amendment	: **3**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: NSW_0356_PFASOMP_22	Page	: 1 of 4
Order number	: 60612562_8.1	Quote number	: ES2021AECOMAU0030 (SY/139/19 v4 60612562_8.1)
C-O-C number	: 40257	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: 0356		
Sampler	: [redacted]		

Dates

Date Samples Received	: 25-Jul-2022 16:30	Issue Date	: 02-Nov-2022
Client Requested Due Date	: 01-Aug-2022	Scheduled Reporting Date	: **01-Aug-2022**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 17.8' C
Receipt Detail	:	No. of samples received / analysed	: 53 / 53

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
- This is an updated SRN which indicates the changes made to sample IDs for samples 35 & 52
- **Split Batch to ES2226474.**
- **This is an updated SRN to reflect changes in sample ID and time for Sample 26 & 43**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2226191-024	21-Jul-2022 09:32	0356_SD002_220721	✓	✓
ES2226191-025	21-Jul-2022 12:36	0356_SD003_220721	✓	✓
ES2226191-026	19-Jul-2022 13:15	0356_SD004_220719	✓	✓
ES2226191-027	19-Jul-2022 13:00	0356_SD005_220719	✓	✓
ES2226191-028	21-Jul-2022 12:50	0356_SD032_220721	✓	✓
ES2226191-029	21-Jul-2022 13:30	0356_SD040_220721	✓	✓
ES2226191-032	21-Jul-2022 13:06	0356_SD053_220721	✓	✓
ES2226191-033	21-Jul-2022 07:44	0356_SD055_220721	✓	✓
ES2226191-034	21-Jul-2022 11:41	0356_SD065_220721	✓	✓
ES2226191-035	21-Jul-2022 14:02	0356_SD116_220721	✓	✓
ES2226191-036	21-Jul-2022 14:45	0356_SD114_220721	✓	✓
ES2226191-037	21-Jul-2022 12:03	0356_SD115_220721	✓	✓
ES2226191-040	21-Jul-2022 14:31	0356_SD555_220721	✓	✓
ES2226191-059	20-Jul-2022 10:15	0356_QC100_220720	✓	✓
ES2226191-063	21-Jul-2022 09:33	0356_QC105_220721	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2226191-001	21-Jul-2022 08:09	0356_MW008_220721	✓
ES2226191-002	21-Jul-2022 08:10	0356_MW011_220721	✓
ES2226191-003	21-Jul-2022 08:38	0356_MW048_220721	✓
ES2226191-004	21-Jul-2022 09:30	0356_MW050_220721	✓
ES2226191-005	21-Jul-2022 08:58	0356_MW052_220721	✓
ES2226191-006	21-Jul-2022 07:42	0356_MW059_220721	✓
ES2226191-007	19-Jul-2022 12:45	0356_MW063_220719	✓
ES2226191-008	19-Jul-2022 12:15	0356_MW071_220719	✓

			WATER - EP231X PFAS - Full Suite (28 analytes)
ES2226191-009	19-Jul-2022 12:10	0356_MW073_220719	✓
ES2226191-010	21-Jul-2022 10:05	0356_MW102_220721	✓
ES2226191-011	21-Jul-2022 11:13	0356_MW109_220721	✓
ES2226191-012	21-Jul-2022 10:32	0356_MW110_220721	✓
ES2226191-013	21-Jul-2022 10:45	0356_MW114_220721	✓
ES2226191-014	21-Jul-2022 11:11	0356_MW115_220721	✓
ES2226191-015	21-Jul-2022 10:50	0356_MW118_220721	✓
ES2226191-018	21-Jul-2022 08:18	0356_MW167_220721	✓
ES2226191-041	21-Jul-2022 09:33	0356_SW002_220721	✓
ES2226191-042	21-Jul-2022 12:37	0356_SW003_220721	✓
ES2226191-043	19-Jul-2022 13:15	0356_SW004_220719	✓
ES2226191-044	19-Jul-2022 13:00	0356_SW005_220719	✓
ES2226191-045	21-Jul-2022 13:07	0356_SW026_220721	✓
ES2226191-046	21-Jul-2022 07:43	0356_SW028_220721	✓
ES2226191-047	21-Jul-2022 12:49	0356_SW032_220721	✓
ES2226191-048	21-Jul-2022 11:41	0356_SW034_220721	✓
ES2226191-049	21-Jul-2022 13:30	0356_SW040_220721	✓
ES2226191-052	21-Jul-2022 14:03	0356_SW116_220721	✓
ES2226191-053	21-Jul-2022 15:00	0356_SW114_220721	✓
ES2226191-054	21-Jul-2022 12:17	0356_SW115_220721	✓
ES2226191-057	21-Jul-2022 14:58	0356_SW555_220721	✓
ES2226191-058	19-Jul-2022 15:41	0356_QC300_220719	✓
ES2226191-060	20-Jul-2022 10:18	0356_QC101_220720	✓
ES2226191-061	20-Jul-2022 13:27	0356_QC102_220720	✓
ES2226191-062	21-Jul-2022 08:39	0356_QC103_220721	✓
ES2226191-064	21-Jul-2022 09:34	0356_QC104_220721	✓
ES2226191-065	21-Jul-2022 15:10	0356_QC302_220721	✓
ES2226191-066	22-Jul-2022 14:12	0356_QC303_220722	✓
ES2226191-067	22-Jul-2022 14:12	0356_QC106_220722	✓
ES2226191-068	20-Jul-2022 16:25	0356_QC301_220720	✓

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]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)	Email	[redacted]@esdat.com.au

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]
- Chain of Custody (CoC) (COC)	Email	[redacted]
- EDI Format - ENMRG (ENMRG)	Email	[redacted]
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	[redacted]
- EDI Format - ESDAT (ESDAT)	Email	[redacted]
- EDI Format - XTab (XTAB)	Email	[redacted]
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com

CHAIN OF CUSTODY

(ALS) COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0356_MW008_220721		21/07/2022 08:09 AM	Water	ALS: 3 Non ALS: 0	No		X		
002	0356_MW011_220721		21/07/2022 08:10 AM	Water	ALS: 3 Non ALS: 0	No		X		
003	0356_MW048_220721		21/07/2022 08:38 AM	Water	ALS: 3 Non ALS: 0	No		X		
004	0356_MW050_220721		21/07/2022 09:30 AM	Water	ALS: 3 Non ALS: 0	No		X		
005	0356_MW052_220721		21/07/2022 08:58 AM	Water	ALS: 3 Non ALS: 0	No		X		
006	0356_MW059_220721		21/07/2022 07:42 AM	Water	ALS: 5 Non ALS: 0	No		X		Extra volume for lab qc's
007	0356_MW063_220719		19/07/2022 12:45 PM	Water	ALS: 3 Non ALS: 0	No		X		
008	0356_MW071_220719		19/07/2022 12:15 PM	Water	ALS: 3 Non ALS: 0	No		X		
009	0356_MW073_220719		19/07/2022 12:10 PM	Water	ALS: 3 Non ALS: 0	No		X		

Environmental Division Sydney

Work Order Reference

ES2226191

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU003 0

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0356_MW102_220721		21/07/2022 10:05 AM	Water	ALS: 3 Non ALS: 0	No		X		
011	0356_MW109_220721		21/07/2022 11:13 AM	Water	ALS: 3 Non ALS: 0	No		X		
012	0356_MW110_220721		21/07/2022 10:32 AM	Water	ALS: 3 Non ALS: 0	No		X		
013	0356_MW114_220721		21/07/2022 10:45 AM	Water	ALS: 3 Non ALS: 0	No		X		
014	0356_MW115_220721		21/07/2022 11:11 AM	Water	ALS: 3 Non ALS: 0	No		X		
015	0356_MW118_220721		21/07/2022 10:50 AM	Water	ALS: 3 Non ALS: 0	No		X		
016	0356_MW121_220722		22/07/2022 02:11 PM	Water	ALS: 3 Non ALS: 0	No		X		
017	0356_MW124_220720		20/07/2022 03:18 PM	Water	ALS: 3 Non ALS: 0	No		X		
018	0356_MW167_220721		21/07/2022 08:18 AM	Water	ALS: 3 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0356_MW187D_220720		20/07/2022 01:50 PM	Water	ALS: 3 Non ALS: 0	No		X		
020	0356_MW187S_220720		20/07/2022 01:28 PM	Water	ALS: 3 Non ALS: 0	No		X		
021	0356_MW188D_220722		20/07/2022 02:01 PM	Water	ALS: 3 Non ALS: 0	No		X		
022	0356_MW188S_220722		22/07/2022 01:16 PM	Water	ALS: 3 Non ALS: 0	No		X		
023	0356_OTH006_220720		20/07/2022 11:30 AM	Water	ALS: 3 Non ALS: 0	No		X		
024	0356_SD002_220721		21/07/2022 09:32 AM	Soil	ALS: 1 Non ALS: 0	No	X			
025	0356_SD003_220721		21/07/2022 12:36 PM	Soil	ALS: 1 Non ALS: 0	No	X			
026	0356_SD004_220719		20/07/2022 07:43 AM	Soil	ALS: 1 Non ALS: 0	No	X			
027	0356_SD005_220719		19/07/2022 01:00 PM	Soil	ALS: 1 Non ALS: 0	No	X			

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0356_SD032_220721		21/07/2022 12:50 PM	Soil	ALS: 1 Non ALS: 0	No	X			
029	0356_SD040_220721		21/07/2022 01:30 PM	Soil	ALS: 1 Non ALS: 0	No	X			
030	0356_SD046_220720		20/07/2022 02:21 PM	Soil	ALS: 1 Non ALS: 0	No	X			
031	0356_SD047_220720		20/07/2022 10:14 AM	Soil	ALS: 1 Non ALS: 0	No	X			
032	0356_SD053_220721		21/07/2022 01:06 PM	Soil	ALS: 1 Non ALS: 0	No	X			
033	0356_SD055_220721		21/07/2022 07:44 AM	Soil	ALS: 1 Non ALS: 0	No	X			
034	0356_SD065_220721		21/07/2022 11:41 AM	Soil	ALS: 1 Non ALS: 0	No	X			
035	0356_SD113_220721		21/07/2022 02:02 PM	Soil	ALS: 1 Non ALS: 0	No	X			
036	0356_SD114_220721		21/07/2022 02:45 PM	Soil	ALS: 1 Non ALS: 0	No	X			

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0356_SD115_220721		21/07/2022 12:03 PM	Soil	ALS: 1 Non ALS: 0	No	X			
038	0356_SD539_220720		20/07/2022 10:47 AM	Soil	ALS: 1 Non ALS: 0	No	X			
039	0356_SD540_220720		20/07/2022 12:26 PM	Soil	ALS: 1 Non ALS: 0	No	X			
040	0356_SD555_220721		21/07/2022 02:31 PM	Soil	ALS: 1 Non ALS: 0	No	X			
041	0356_SW002_220721		21/07/2022 09:33 AM	Water	ALS: 3 Non ALS: 0	No		X		
042	0356_SW003_220721		21/07/2022 12:37 PM	Water	ALS: 3 Non ALS: 0	No		X		
043	0356_SW004_220719		20/07/2022 08:38 AM	Water	ALS: 3 Non ALS: 0	No		X		
044	0356_SW005_220719		19/07/2022 01:00 PM	Water	ALS: 3 Non ALS: 0	No		X		
045	0356_SW026_220721		21/07/2022 01:07 PM	Water	ALS: 3 Non ALS: 0	No		X		

CHAIN OF CUSTODY

(ALS) COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0356_SW028_220721		21/07/2022 07:43 AM	Water	ALS: 3 Non ALS: 0	No		X		
047	0356_SW032_220721		21/07/2022 12:49 PM	Water	ALS: 3 Non ALS: 0	No		X		
048	0356_SW034_220721		21/07/2022 11:41 AM	Water	ALS: 3 Non ALS: 0	No		X		
049	0356_SW040_220721		21/07/2022 01:30 PM	Water	ALS: 3 Non ALS: 0	No		X		
050	0356_SW064_220720		20/07/2022 02:21 PM	Water	ALS: 3 Non ALS: 0	No		X		
051	0356_SW065_220720		20/07/2022 10:16 AM	Water	ALS: 3 Non ALS: 0	No		X		
052	0356_SW113_220721		21/07/2022 02:03 PM	Water	ALS: 3 Non ALS: 0	No		X		
053	0356_SW114_220721		21/07/2022 03:00 PM	Water	ALS: 3 Non ALS: 0	No		X		
054	0356_SW115_220721		21/07/2022 12:17 PM	Water	ALS: 6 Non ALS: 0	No		X		Extra volume for lab QC's

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0356_SW553_220720		20/07/2022 10:48 AM	Water	ALS: 6 Non ALS: 0	No		X		Extra volume for lab QC
056	0356_SW554_220720		20/07/2022 12:27 PM	Water	ALS: 3 Non ALS: 0	No		X		
057	0356_SW555_220721		21/07/2022 02:58 PM	Water	ALS: 3 Non ALS: 0	No		X		
058	0356_QC300_220719		19/07/2022 03:41 PM	Water	ALS: 3 Non ALS: 0	No		X		
059	0356_QC100_220720		20/07/2022 10:15 AM	Soil	ALS: 1 Non ALS: 0	No	X			
060	0356_QC101_220720		20/07/2022 10:18 AM	Water	ALS: 3 Non ALS: 0	No		X		
061	0356_QC102_220720		20/07/2022 01:27 PM	Water	ALS: 3 Non ALS: 0	No		X		
062	0356_QC103_220721		21/07/2022 08:39 AM	Water	ALS: 3 Non ALS: 0	No		X		
063	0356_QC105_220721		21/07/2022 09:33 AM	Soil	ALS: 1 Non ALS: 0	No	X			

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
064	0356_QC104_220721		21/07/2022 09:34 AM	Water	ALS: 3 Non ALS: 0	No		X		
065	0356_QC302_220721		21/07/2022 03:10 PM	Water	ALS: 3 Non ALS: 0	No		X		
066	0356_QC303_220722		22/07/2022 02:12 PM	Water	ALS: 3 Non ALS: 0	No		X		
067	0356_QC106_220722		22/07/2022 02:12 PM	Water	ALS: 3 Non ALS: 0	No		X		
068	0356_QC301_220720		20/07/2022 04:25 PM	Water	ALS: 0 Non ALS: 0	No		X		Sample bottles are in esky - bottles not scanned up.

CHAIN OF CUSTODY

ALS COC#: 40257 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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	0356_MW008_220721	HDPE (no PTFE)	20 mL	00350821042926	Grey	No	
001	0356_MW008_220721	HDPE (no PTFE)	20 mL	00350821042740	Grey	No	
001	0356_MW008_220721	HDPE (no PTFE)	20 mL	00350821042965	Grey	No	
002	0356_MW011_220721	HDPE (no PTFE)	20 mL	00350821042813	Grey	No	
002	0356_MW011_220721	HDPE (no PTFE)	20 mL	00350821042955	Grey	No	
002	0356_MW011_220721	HDPE (no PTFE)	20 mL	00350821042814	Grey	No	
003	0356_MW048_220721	HDPE (no PTFE)	20 mL	00350821042856	Grey	No	
003	0356_MW048_220721	HDPE (no PTFE)	20 mL	00350821042867	Grey	No	
003	0356_MW048_220721	HDPE (no PTFE)	20 mL	00350821042735	Grey	No	
004	0356_MW050_220721	HDPE (no PTFE)	20 mL	00350821042835	Grey	No	
004	0356_MW050_220721	HDPE (no PTFE)	20 mL	00350821042884	Grey	No	
004	0356_MW050_220721	HDPE (no PTFE)	20 mL	00350821042876	Grey	No	
005	0356_MW052_220721	HDPE (no PTFE)	20 mL	00350821042948	Grey	No	
005	0356_MW052_220721	HDPE (no PTFE)	20 mL	00350821042786	Grey	No	
005	0356_MW052_220721	HDPE (no PTFE)	20 mL	00350821042769	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042847	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042865	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042905	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042861	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042859	Grey	No	
007	0356_MW063_220719	HDPE (no PTFE)	20 mL	00350821019088	Grey	No	
007	0356_MW063_220719	HDPE (no PTFE)	20 mL	00350821018880	Grey	No	
007	0356_MW063_220719	HDPE (no PTFE)	20 mL	00350821018881	Grey	No	
008	0356_MW071_220719	HDPE (no PTFE)	20 mL	00350821018882	Grey	No	
008	0356_MW071_220719	HDPE (no PTFE)	20 mL	00350821019024	Grey	No	
008	0356_MW071_220719	HDPE (no PTFE)	20 mL	00350821018943	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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:

009	0356_MW073_220719	HDPE (no PTFE)	20 mL	00350821018896	Grey	No	
009	0356_MW073_220719	HDPE (no PTFE)	20 mL	00350821018852	Grey	No	
009	0356_MW073_220719	HDPE (no PTFE)	20 mL	00350821018953	Grey	No	
010	0356_MW102_220721	HDPE (no PTFE)	20 mL	00350821042696	Grey	No	
010	0356_MW102_220721	HDPE (no PTFE)	20 mL	00350821042802	Grey	No	
010	0356_MW102_220721	HDPE (no PTFE)	20 mL	00350821042714	Grey	No	
011	0356_MW109_220721	HDPE (no PTFE)	20 mL	00350821042949	Grey	No	
011	0356_MW109_220721	HDPE (no PTFE)	20 mL	00350821042762	Grey	No	
011	0356_MW109_220721	HDPE (no PTFE)	20 mL	00350821019057	Grey	No	
012	0356_MW110_220721	HDPE (no PTFE)	20 mL	00350821042702	Grey	No	
012	0356_MW110_220721	HDPE (no PTFE)	20 mL	00350821042827	Grey	No	
012	0356_MW110_220721	HDPE (no PTFE)	20 mL	00350821042749	Grey	No	
013	0356_MW114_220721	HDPE (no PTFE)	20 mL	00350821042846	Grey	No	
013	0356_MW114_220721	HDPE (no PTFE)	20 mL	00350821042852	Grey	No	
013	0356_MW114_220721	HDPE (no PTFE)	20 mL	00350821042705	Grey	No	
014	0356_MW115_220721	HDPE (no PTFE)	20 mL	00350821018845	Grey	No	
014	0356_MW115_220721	HDPE (no PTFE)	20 mL	00350821042932	Grey	No	
014	0356_MW115_220721	HDPE (no PTFE)	20 mL	00350821042953	Grey	No	
015	0356_MW118_220721	HDPE (no PTFE)	20 mL	00350821042936	Grey	No	
015	0356_MW118_220721	HDPE (no PTFE)	20 mL	00350821042715	Grey	No	
015	0356_MW118_220721	HDPE (no PTFE)	20 mL	00350821042938	Grey	No	
016	0356_MW121_220722	HDPE (no PTFE)	20 mL	00350821042807	Grey	No	
016	0356_MW121_220722	HDPE (no PTFE)	20 mL	00350821042798	Grey	No	
016	0356_MW121_220722	HDPE (no PTFE)	20 mL	00350821042879	Grey	No	
017	0356_MW124_220720	HDPE (no PTFE)	20 mL	00350821042841	Grey	No	
017	0356_MW124_220720	HDPE (no PTFE)	20 mL	00350821042839	Grey	No	
017	0356_MW124_220720	HDPE (no PTFE)	20 mL	00350821042912	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU003 0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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	0356_MW167_220721	HDPE (no PTFE)	20 mL	00350821042698	Grey	No	
018	0356_MW167_220721	HDPE (no PTFE)	20 mL	00350821042803	Grey	No	
018	0356_MW167_220721	HDPE (no PTFE)	20 mL	00350821042758	Grey	No	
019	0356_MW187D_220720	HDPE (no PTFE)	20 mL	00350821042892	Grey	No	
019	0356_MW187D_220720	HDPE (no PTFE)	20 mL	00350821042829	Grey	No	
019	0356_MW187D_220720	HDPE (no PTFE)	20 mL	00350821042719	Grey	No	
020	0356_MW187S_220720	HDPE (no PTFE)	20 mL	00350821042868	Grey	No	
020	0356_MW187S_220720	HDPE (no PTFE)	20 mL	00350821042685	Grey	No	
020	0356_MW187S_220720	HDPE (no PTFE)	20 mL	00350821042858	Grey	No	
021	0356_MW188D_220722	HDPE (no PTFE)	20 mL	00350821042957	Grey	No	
021	0356_MW188D_220722	HDPE (no PTFE)	20 mL	00350821042860	Grey	No	
021	0356_MW188D_220722	HDPE (no PTFE)	20 mL	00350821042850	Grey	No	
022	0356_MW188S_220722	HDPE (no PTFE)	20 mL	00350821042796	Grey	No	
022	0356_MW188S_220722	HDPE (no PTFE)	20 mL	00350821042734	Grey	No	
022	0356_MW188S_220722	HDPE (no PTFE)	20 mL	00350821042683	Grey	No	
023	0356_OTH006_220720	HDPE (no PTFE)	20 mL	00350821042944	Grey	No	
023	0356_OTH006_220720	HDPE (no PTFE)	20 mL	00350821018879	Grey	No	
023	0356_OTH006_220720	HDPE (no PTFE)	20 mL	00350821018949	Grey	No	
024	0356_SD002_220721	HDPE Soil Jar	200 mL	00620322018653	Grey	No	
025	0356_SD003_220721	HDPE Soil Jar	200 mL	00620322018601	Grey	No	
026	0356_SD004_220719	HDPE Soil Jar	200 mL	00621121021128	Grey	No	
027	0356_SD005_220719	HDPE Soil Jar	200 mL	00621121021191	Grey	No	
028	0356_SD032_220721	HDPE Soil Jar	200 mL	00620322018662	Grey	No	
029	0356_SD040_220721	HDPE Soil Jar	200 mL	00620322018640	Grey	No	
030	0356_SD046_220720	HDPE Soil Jar	200 mL	00620322051393	Grey	No	
031	0356_SD047_220720	HDPE Soil Jar	200 mL	00621121021108	Grey	No	
032	0356_SD053_220721	HDPE Soil Jar	200 mL	00620322018629	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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:

033	0356_SD055_220721	HDPE Soil Jar	200 mL	00620322052093	Grey	No	
034	0356_SD065_220721	HDPE Soil Jar	200 mL	00621121021170	Grey	No	
035	0356_SD113_220721	HDPE Soil Jar	200 mL	00621121021178	Grey	No	
036	0356_SD114_220721	HDPE Soil Jar	200 mL	00620322018655	Grey	No	
037	0356_SD115_220721	HDPE Soil Jar	200 mL	00620322052102	Grey	No	
038	0356_SD539_220720	HDPE Soil Jar	200 mL	00620322018596	Grey	No	
039	0356_SD540_220720	HDPE Soil Jar	200 mL	00620322018635	Grey	No	
040	0356_SD555_220721	HDPE Soil Jar	200 mL	00620322018621	Grey	No	
041	0356_SW002_220721	HDPE (no PTFE)	20 mL	00350821042875	Grey	No	
041	0356_SW002_220721	HDPE (no PTFE)	20 mL	00350821042752	Grey	No	
041	0356_SW002_220721	HDPE (no PTFE)	20 mL	00350821042890	Grey	No	
042	0356_SW003_220721	HDPE (no PTFE)	20 mL	00350821042765	Grey	No	
042	0356_SW003_220721	HDPE (no PTFE)	20 mL	00350821042908	Grey	No	
042	0356_SW003_220721	HDPE (no PTFE)	20 mL	00350821042916	Grey	No	
043	0356_SW004_220719	HDPE (no PTFE)	20 mL	00350821019094	Grey	No	
043	0356_SW004_220719	HDPE (no PTFE)	20 mL	00350821018829	Grey	No	
043	0356_SW004_220719	HDPE (no PTFE)	20 mL	00350821018931	Grey	No	
044	0356_SW005_220719	HDPE (no PTFE)	20 mL	00350821018941	Grey	No	
044	0356_SW005_220719	HDPE (no PTFE)	20 mL	00350821019063	Grey	No	
044	0356_SW005_220719	HDPE (no PTFE)	20 mL	00350821018989	Grey	No	
045	0356_SW026_220721	HDPE (no PTFE)	20 mL	00350821042823	Grey	No	
045	0356_SW026_220721	HDPE (no PTFE)	20 mL	00350821042899	Grey	No	
045	0356_SW026_220721	HDPE (no PTFE)	20 mL	00350821042820	Grey	No	
046	0356_SW028_220721	HDPE (no PTFE)	20 mL	00350821042745	Grey	No	
046	0356_SW028_220721	HDPE (no PTFE)	20 mL	00350821042713	Grey	No	
046	0356_SW028_220721	HDPE (no PTFE)	20 mL	00350821042832	Grey	No	
047	0356_SW032_220721	HDPE (no PTFE)	20 mL	00350821042843	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 40257 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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:			

047	0356_SW032_220721	HDPE (no PTFE)	20 mL	00350821042795	Grey	No	
047	0356_SW032_220721	HDPE (no PTFE)	20 mL	00350821042806	Grey	No	
048	0356_SW034_220721	HDPE (no PTFE)	20 mL	00350821042799	Grey	No	
048	0356_SW034_220721	HDPE (no PTFE)	20 mL	00350821042952	Grey	No	
048	0356_SW034_220721	HDPE (no PTFE)	20 mL	00350821042763	Grey	No	
049	0356_SW040_220721	HDPE (no PTFE)	20 mL	00350821042818	Grey	No	
049	0356_SW040_220721	HDPE (no PTFE)	20 mL	00350821042907	Grey	No	
049	0356_SW040_220721	HDPE (no PTFE)	20 mL	00350821042718	Grey	No	
050	0356_SW064_220720	HDPE (no PTFE)	20 mL	00350821042828	Grey	No	
050	0356_SW064_220720	HDPE (no PTFE)	20 mL	00350821042848	Grey	No	
050	0356_SW064_220720	HDPE (no PTFE)	20 mL	00350821042854	Grey	No	
051	0356_SW065_220720	HDPE (no PTFE)	20 mL	00350821042951	Grey	No	
051	0356_SW065_220720	HDPE (no PTFE)	20 mL	00350821042720	Grey	No	
051	0356_SW065_220720	HDPE (no PTFE)	20 mL	00350821042784	Grey	No	
052	0356_SW113_220721	HDPE (no PTFE)	20 mL	00350821042976	Grey	No	
052	0356_SW113_220721	HDPE (no PTFE)	20 mL	00350821042739	Grey	No	
052	0356_SW113_220721	HDPE (no PTFE)	20 mL	00350821042935	Grey	No	
053	0356_SW114_220721	HDPE (no PTFE)	20 mL	00350821042968	Grey	No	
053	0356_SW114_220721	HDPE (no PTFE)	20 mL	00350821042922	Grey	No	
053	0356_SW114_220721	HDPE (no PTFE)	20 mL	00350821042748	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042853	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042872	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042906	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042764	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042960	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042746	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042811	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/7/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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:

055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821019085	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042937	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042888	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042733	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042773	Grey	No	
056	0356_SW554_220720	HDPE (no PTFE)	20 mL	00350821042723	Grey	No	
056	0356_SW554_220720	HDPE (no PTFE)	20 mL	00350821042770	Grey	No	
056	0356_SW554_220720	HDPE (no PTFE)	20 mL	00350821042842	Grey	No	
057	0356_SW555_220721	HDPE (no PTFE)	20 mL	00350821042817	Grey	No	
057	0356_SW555_220721	HDPE (no PTFE)	20 mL	00350821042776	Grey	No	
057	0356_SW555_220721	HDPE (no PTFE)	20 mL	00350821042891	Grey	No	
058	0356_QC300_220719	HDPE (no PTFE)	20 mL	00350821019075	Grey	No	
058	0356_QC300_220719	HDPE (no PTFE)	20 mL	00350821018986	Grey	No	
058	0356_QC300_220719	HDPE (no PTFE)	20 mL	00350821019066	Grey	No	
059	0356_QC100_220720	HDPE Soil Jar	200 mL	00621121021149	Grey	No	
060	0356_QC101_220720	HDPE (no PTFE)	20 mL	00350821042691	Grey	No	
060	0356_QC101_220720	HDPE (no PTFE)	20 mL	00350821042929	Grey	No	
060	0356_QC101_220720	HDPE (no PTFE)	20 mL	00350821042824	Grey	No	
061	0356_QC102_220720	HDPE (no PTFE)	20 mL	00350821042964	Grey	No	
061	0356_QC102_220720	HDPE (no PTFE)	20 mL	00350821042866	Grey	No	
061	0356_QC102_220720	HDPE (no PTFE)	20 mL	00350821042732	Grey	No	
062	0356_QC103_220721	HDPE (no PTFE)	20 mL	00350821042730	Grey	No	
062	0356_QC103_220721	HDPE (no PTFE)	20 mL	00350821042767	Grey	No	
062	0356_QC103_220721	HDPE (no PTFE)	20 mL	00350821042808	Grey	No	
063	0356_QC105_220721	HDPE Soil Jar	200 mL	00620322018619	Grey	No	
064	0356_QC104_220721	HDPE (no PTFE)	20 mL	00350821042780	Grey	No	
064	0356_QC104_220721	HDPE (no PTFE)	20 mL	00350821042787	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

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:			

064	0356_QC104_220721	HDPE (no PTFE)	20 mL	00350821042729	Grey	No	
065	0356_QC302_220721	HDPE (no PTFE)	20 mL	00350821042942	Grey	No	
065	0356_QC302_220721	HDPE (no PTFE)	20 mL	00350821042945	Grey	No	
065	0356_QC302_220721	HDPE (no PTFE)	20 mL	00350821042791	Grey	No	
066	0356_QC303_220722	HDPE (no PTFE)	20 mL	00350821042744	Grey	No	
066	0356_QC303_220722	HDPE (no PTFE)	20 mL	00350821042943	Grey	No	
066	0356_QC303_220722	HDPE (no PTFE)	20 mL	00350821042825	Grey	No	
067	0356_QC106_220722	HDPE (no PTFE)	20 mL	00350821042870	Grey	No	
067	0356_QC106_220722	HDPE (no PTFE)	20 mL	00350821042826	Grey	No	
067	0356_QC106_220722	HDPE (no PTFE)	20 mL	00350821042979	Grey	No	

Total Bottle Count: ALS: 171, Non ALS: 0

F CUSTODY

:57 *ALS Laboratory:* ES Sydney

OMAU - AECOM Australia Pty Ltd

W_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0356_MW008_220721		21/07/2022 08:09 AM	Water	ALS: 3 Non ALS: 0	No		X		
002	0356_MW011_220721		21/07/2022 08:10 AM	Water	ALS: 3 Non ALS: 0	No		X		
003	0356_MW048_220721		21/07/2022 08:38 AM	Water	ALS: 3 Non ALS: 0	No		X		
004	0356_MW050_220721		21/07/2022 09:30 AM	Water	ALS: 3 Non ALS: 0	No		X		
005	0356_MW052_220721		21/07/2022 08:58 AM	Water	ALS: 3 Non ALS: 0	No		X		
006	0356_MW059_220721		21/07/2022 07:42 AM	Water	ALS: 5 Non ALS: 0	No		X		Extra volume for lab qc's
007	0356_MW063_220719		19/07/2022 12:45 PM	Water	ALS: 3 Non ALS: 0	No		X		
008	0356_MW071_220719		19/07/2022 12:15 PM	Water	ALS: 3 Non ALS: 0	No		X		
009	0356_MW073_220719		19/07/2022 12:10 PM	Water	ALS: 3 Non-ALS: 0	No		X		

Environmental Division
Sydney
Work Order Reference
ES2226191

Telephone : +61-2-8784 8555

Subcon / Forward Lab / Split WO
Lab / Analysis: ES2226474
Organised By / Date:
Relinquished By / Date:
Courier / Courier:
WO No:
Attach By PO / Internal Sheet:

CHAIN OF CUSTODY

ALS COC#: 40257 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0356_MW102_220721		21/07/2022 10:05 AM	Water	ALS: 3 Non ALS: 0	No		X		
011	0356_MW109_220721		21/07/2022 11:13 AM	Water	ALS: 3 Non ALS: 0	No		X		
012	0356_MW110_220721		21/07/2022 10:32 AM	Water	ALS: 3 Non ALS: 0	No		X		
013	0356_MW114_220721		21/07/2022 10:45 AM	Water	ALS: 3 Non ALS: 0	No		X		
014	0356_MW115_220721		21/07/2022 11:11 AM	Water	ALS: 3 Non ALS: 0	No		X		
015	0356_MW118_220721		21/07/2022 10:50 AM	Water	ALS: 3 Non ALS: 0	No		X		
016	0356_MW121_220722		22/07/2022 02:11 PM	Water	ALS: 3 Non ALS: 0	No		X		
017	0356_MW124_220720		20/07/2022 03:18 PM	Water	ALS: 3 Non ALS: 0	No		X		
018	0356_MW167_220721		21/07/2022 08:18 AM	Water	ALS: 3 Non ALS: 0	No		X		

CHAIN OF CUSTODY

COC#: 40257 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0356_MW187D_220720		20/07/2022 01:50 PM	Water	ALS: 3 Non ALS: 0	No		X		
020	0356_MW187S_220720		20/07/2022 01:28 PM	Water	ALS: 3 Non ALS: 0	No		X		
021	0356_MW188D_220722		20/07/2022 02:01 PM	Water	ALS: 3 Non ALS: 0	No		X		
022	0356_MW188S_220722		22/07/2022 01:16 PM	Water	ALS: 3 Non ALS: 0	No		X		
023	0356_OTH006_220720		20/07/2022 11:30 AM	Water	ALS: 3 Non ALS: 0	No		X		
024	0356_SD002_220721		21/07/2022 09:32 AM	Soil	ALS: 1 Non ALS: 0	No	X			
025	0356_SD003_220721		21/07/2022 12:36 PM	Soil	ALS: 1 Non ALS: 0	No	X			
026	0356_SD004_220719		20/07/2022 07:43 AM	Soil	ALS: 1 Non ALS: 0	No	X			
027	0356_SD005_220719		19/07/2022 01:00 PM	Soil	ALS: 1 Non ALS: 0	No	X			

CHAIN OF CUSTODY

COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER [redacted]

PRIMARY SAMPLER [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0356_SD032_220721		21/07/2022 12:50 PM	Soil	ALS: 1 Non ALS: 0	No	X			
029	0356_SD040_220721		21/07/2022 01:30 PM	Soil	ALS: 1 Non ALS: 0	No	X			
030	0356_SD046_220720		20/07/2022 02:21 PM	Soil	ALS: 1 Non ALS: 0	No	X			
031	0356_SD047_220720		20/07/2022 10:14 AM	Soil	ALS: 1 Non ALS: 0	No	X			
032	0356_SD053_220721		21/07/2022 01:06 PM	Soil	ALS: 1 Non ALS: 0	No	X			
033	0356_SD055_220721		21/07/2022 07:44 AM	Soil	ALS: 1 Non ALS: 0	No	X			
034	0356_SD065_220721		21/07/2022 11:41 AM	Soil	ALS: 1 Non ALS: 0	No	X			
035	0356_SD113_220721		21/07/2022 02:02 PM	Soil	ALS: 1 Non ALS: 0	No	X			
036	0356_SD114_220721		21/07/2022 02:45 PM	Soil	ALS: 1 Non ALS: 0	No	X			

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0356_SD115_220721		21/07/2022 12:03 PM	Soil	ALS: 1 Non ALS: 0	No	X			
038	0356_SD539_220720		20/07/2022 10:47 AM	Soil	ALS: 1 Non ALS: 0	No	X			
039	0356_SD540_220720		20/07/2022 12:26 PM	Soil	ALS: 1 Non ALS: 0	No	X			
040	0356_SD555_220721		21/07/2022 02:31 PM	Soil	ALS: 1 Non ALS: 0	No	X			
041	0356_SW002_220721		21/07/2022 09:33 AM	Water	ALS: 3 Non ALS: 0	No		X		
042	0356_SW003_220721		21/07/2022 12:37 PM	Water	ALS: 3 Non ALS: 0	No		X		
043	0356_SW004_220719		20/07/2022 08:38 AM	Water	ALS: 3 Non ALS: 0	No		X		
044	0356_SW005_220719		19/07/2022 01:00 PM	Water	ALS: 3 Non ALS: 0	No		X		
045	0356_SW026_220721		21/07/2022 01:07 PM	Water	ALS: 3 Non ALS: 0	No		X		

CHAIN OF CUSTODY

COC#: 40257 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0356_SW028_220721		21/07/2022 07:43 AM	Water	ALS: 3 Non ALS: 0	No		X		
047	0356_SW032_220721		21/07/2022 12:49 PM	Water	ALS: 3 Non ALS: 0	No		X		
048	0356_SW034_220721		21/07/2022 11:41 AM	Water	ALS: 3 Non ALS: 0	No		X		
049	0356_SW040_220721		21/07/2022 01:30 PM	Water	ALS: 3 Non ALS: 0	No		X		
050	0356_SW064_220720		20/07/2022 02:21 PM	Water	ALS: 3 Non ALS: 0	No		X		
051	0356_SW065_220720		20/07/2022 10:16 AM	Water	ALS: 3 Non ALS: 0	No		X		
052	0356_SW113_220721		21/07/2022 02:03 PM	Water	ALS: 3 Non ALS: 0	No		X		
053	0356_SW114_220721		21/07/2022 03:00 PM	Water	ALS: 3 Non ALS: 0	No		X		
054	0356_SW115_220721		21/07/2022 12:17 PM	Water	ALS: 6 Non ALS: 0	No		X		Extra volume for lab QC's

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU003 0

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0356_SW553_220720		20/07/2022 10:48 AM	Water	ALS: 6 Non ALS: 0	No		X		Extra volume for lab QC
056	0356_SW554_220720		20/07/2022 12:27 PM	Water	ALS: 3 Non ALS: 0	No		X		
057	0356_SW555_220721		21/07/2022 02:58 PM	Water	ALS: 3 Non ALS: 0	No		X		
058	0356_QC300_220719		19/07/2022 03:41 PM	Water	ALS: 3 Non ALS: 0	No		X		
059	0356_QC100_220720		20/07/2022 10:15 AM	Soil	ALS: 1 Non ALS: 0	No	X			
060	0356_QC101_220720		20/07/2022 10:18 AM	Water	ALS: 3 Non ALS: 0	No		X		
061	0356_QC102_220720		20/07/2022 01:27 PM	Water	ALS: 3 Non ALS: 0	No		X		
062	0356_QC103_220721		21/07/2022 08:39 AM	Water	ALS: 3 Non ALS: 0	No		X		
063	0356_QC105_220721		21/07/2022 09:33 AM	Soil	ALS: 1 Non ALS: 0	No	X			

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
064	0356_QC104_220721		21/07/2022 09:34 AM	Water	ALS: 3 Non ALS: 0	No		X		
065	0356_QC302_220721		21/07/2022 03:10 PM	Water	ALS: 3 Non ALS: 0	No		X		
066	0356_QC303_220722		22/07/2022 02:12 PM	Water	ALS: 3 Non ALS: 0	No		X		
067	0356_QC106_220722		22/07/2022 02:12 PM	Water	ALS: 3 Non ALS: 0	No		X		
068	0356_QC301_220720		20/07/2022 04:25 PM	Water	ALS: 0 Non ALS: 0	No		X		Sample bottles are in esky - bottles not scanned up.

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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	0356_MW008_220721	HDPE (no PTFE)	20 mL	00350821042926	Grey	No	
001	0356_MW008_220721	HDPE (no PTFE)	20 mL	00350821042740	Grey	No	
001	0356_MW008_220721	HDPE (no PTFE)	20 mL	00350821042965	Grey	No	
002	0356_MW011_220721	HDPE (no PTFE)	20 mL	00350821042813	Grey	No	
002	0356_MW011_220721	HDPE (no PTFE)	20 mL	00350821042955	Grey	No	
002	0356_MW011_220721	HDPE (no PTFE)	20 mL	00350821042814	Grey	No	
003	0356_MW048_220721	HDPE (no PTFE)	20 mL	00350821042856	Grey	No	
003	0356_MW048_220721	HDPE (no PTFE)	20 mL	00350821042867	Grey	No	
003	0356_MW048_220721	HDPE (no PTFE)	20 mL	00350821042735	Grey	No	
004	0356_MW050_220721	HDPE (no PTFE)	20 mL	00350821042835	Grey	No	
004	0356_MW050_220721	HDPE (no PTFE)	20 mL	00350821042884	Grey	No	
004	0356_MW050_220721	HDPE (no PTFE)	20 mL	00350821042876	Grey	No	
005	0356_MW052_220721	HDPE (no PTFE)	20 mL	00350821042948	Grey	No	
005	0356_MW052_220721	HDPE (no PTFE)	20 mL	00350821042786	Grey	No	
005	0356_MW052_220721	HDPE (no PTFE)	20 mL	00350821042769	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042847	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042865	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042905	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042861	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042859	Grey	No	
007	0356_MW063_220719	HDPE (no PTFE)	20 mL	00350821019088	Grey	No	
007	0356_MW063_220719	HDPE (no PTFE)	20 mL	00350821018880	Grey	No	
007	0356_MW063_220719	HDPE (no PTFE)	20 mL	00350821018881	Grey	No	
008	0356_MW071_220719	HDPE (no PTFE)	20 mL	00350821018882	Grey	No	
008	0356_MW071_220719	HDPE (no PTFE)	20 mL	00350821019024	Grey	No	
008	0356_MW071_220719	HDPE (no PTFE)	20 mL	00350821018943	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER [redacted]

PRIMARY SAMPLER [redacted]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

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:

009	0356_MW073_220719	HDPE (no PTFE)	20 mL	00350821018896	Grey	No	
009	0356_MW073_220719	HDPE (no PTFE)	20 mL	00350821018852	Grey	No	
009	0356_MW073_220719	HDPE (no PTFE)	20 mL	00350821018953	Grey	No	
010	0356_MW102_220721	HDPE (no PTFE)	20 mL	00350821042696	Grey	No	
010	0356_MW102_220721	HDPE (no PTFE)	20 mL	00350821042802	Grey	No	
010	0356_MW102_220721	HDPE (no PTFE)	20 mL	00350821042714	Grey	No	
011	0356_MW109_220721	HDPE (no PTFE)	20 mL	00350821042949	Grey	No	
011	0356_MW109_220721	HDPE (no PTFE)	20 mL	00350821042762	Grey	No	
011	0356_MW109_220721	HDPE (no PTFE)	20 mL	00350821019057	Grey	No	
012	0356_MW110_220721	HDPE (no PTFE)	20 mL	00350821042702	Grey	No	
012	0356_MW110_220721	HDPE (no PTFE)	20 mL	00350821042827	Grey	No	
012	0356_MW110_220721	HDPE (no PTFE)	20 mL	00350821042749	Grey	No	
013	0356_MW114_220721	HDPE (no PTFE)	20 mL	00350821042846	Grey	No	
013	0356_MW114_220721	HDPE (no PTFE)	20 mL	00350821042852	Grey	No	
013	0356_MW114_220721	HDPE (no PTFE)	20 mL	00350821042705	Grey	No	
014	0356_MW115_220721	HDPE (no PTFE)	20 mL	00350821018845	Grey	No	
014	0356_MW115_220721	HDPE (no PTFE)	20 mL	00350821042932	Grey	No	
014	0356_MW115_220721	HDPE (no PTFE)	20 mL	00350821042953	Grey	No	
015	0356_MW118_220721	HDPE (no PTFE)	20 mL	00350821042936	Grey	No	
015	0356_MW118_220721	HDPE (no PTFE)	20 mL	00350821042715	Grey	No	
015	0356_MW118_220721	HDPE (no PTFE)	20 mL	00350821042938	Grey	No	
016	0356_MW121_220722	HDPE (no PTFE)	20 mL	00350821042807	Grey	No	
016	0356_MW121_220722	HDPE (no PTFE)	20 mL	00350821042798	Grey	No	
016	0356_MW121_220722	HDPE (no PTFE)	20 mL	00350821042879	Grey	No	
017	0356_MW124_220720	HDPE (no PTFE)	20 mL	00350821042841	Grey	No	
017	0356_MW124_220720	HDPE (no PTFE)	20 mL	00350821042839	Grey	No	
017	0356_MW124_220720	HDPE (no PTFE)	20 mL	00350821042912	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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	0356_MW167_220721	HDPE (no PTFE)	20 mL	00350821042698	Grey	No	
018	0356_MW167_220721	HDPE (no PTFE)	20 mL	00350821042803	Grey	No	
018	0356_MW167_220721	HDPE (no PTFE)	20 mL	00350821042758	Grey	No	
019	0356_MW187D_220720	HDPE (no PTFE)	20 mL	00350821042892	Grey	No	
019	0356_MW187D_220720	HDPE (no PTFE)	20 mL	00350821042829	Grey	No	
019	0356_MW187D_220720	HDPE (no PTFE)	20 mL	00350821042719	Grey	No	
020	0356_MW187S_220720	HDPE (no PTFE)	20 mL	00350821042868	Grey	No	
020	0356_MW187S_220720	HDPE (no PTFE)	20 mL	00350821042685	Grey	No	
020	0356_MW187S_220720	HDPE (no PTFE)	20 mL	00350821042858	Grey	No	
021	0356_MW188D_220722	HDPE (no PTFE)	20 mL	00350821042957	Grey	No	
021	0356_MW188D_220722	HDPE (no PTFE)	20 mL	00350821042860	Grey	No	
021	0356_MW188D_220722	HDPE (no PTFE)	20 mL	00350821042850	Grey	No	
022	0356_MW188S_220722	HDPE (no PTFE)	20 mL	00350821042796	Grey	No	
022	0356_MW188S_220722	HDPE (no PTFE)	20 mL	00350821042734	Grey	No	
022	0356_MW188S_220722	HDPE (no PTFE)	20 mL	00350821042683	Grey	No	
023	0356_OTH006_220720	HDPE (no PTFE)	20 mL	00350821042944	Grey	No	
023	0356_OTH006_220720	HDPE (no PTFE)	20 mL	00350821018879	Grey	No	
023	0356_OTH006_220720	HDPE (no PTFE)	20 mL	00350821018949	Grey	No	
024	0356_SD002_220721	HDPE Soil Jar	200 mL	00620322018653	Grey	No	
025	0356_SD003_220721	HDPE Soil Jar	200 mL	00620322018601	Grey	No	
026	0356_SD004_220719	HDPE Soil Jar	200 mL	00621121021128	Grey	No	
027	0356_SD005_220719	HDPE Soil Jar	200 mL	00621121021191	Grey	No	
028	0356_SD032_220721	HDPE Soil Jar	200 mL	00620322018662	Grey	No	
029	0356_SD040_220721	HDPE Soil Jar	200 mL	00620322018640	Grey	No	
030	0356_SD046_220720	HDPE Soil Jar	200 mL	00620322051393	Grey	No	
031	0356_SD047_220720	HDPE Soil Jar	200 mL	00621121021108	Grey	No	
032	0356_SD053_220721	HDPE Soil Jar	200 mL	00620322018629	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU003 0

EMAIL REPORTS TO:

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:

033	0356_SD055_220721	HDPE Soil Jar	200 mL	00620322052093	Grey	No	
034	0356_SD065_220721	HDPE Soil Jar	200 mL	00621121021170	Grey	No	
035	0356_SD113_220721	HDPE Soil Jar	200 mL	00621121021178	Grey	No	
036	0356_SD114_220721	HDPE Soil Jar	200 mL	00620322018655	Grey	No	
037	0356_SD115_220721	HDPE Soil Jar	200 mL	00620322052102	Grey	No	
038	0356_SD539_220720	HDPE Soil Jar	200 mL	00620322018596	Grey	No	
039	0356_SD540_220720	HDPE Soil Jar	200 mL	00620322018635	Grey	No	
040	0356_SD555_220721	HDPE Soil Jar	200 mL	00620322018621	Grey	No	
041	0356_SW002_220721	HDPE (no PTFE)	20 mL	00350821042875	Grey	No	
041	0356_SW002_220721	HDPE (no PTFE)	20 mL	00350821042752	Grey	No	
041	0356_SW002_220721	HDPE (no PTFE)	20 mL	00350821042890	Grey	No	
042	0356_SW003_220721	HDPE (no PTFE)	20 mL	00350821042765	Grey	No	
042	0356_SW003_220721	HDPE (no PTFE)	20 mL	00350821042908	Grey	No	
042	0356_SW003_220721	HDPE (no PTFE)	20 mL	00350821042916	Grey	No	
043	0356_SW004_220719	HDPE (no PTFE)	20 mL	00350821019094	Grey	No	
043	0356_SW004_220719	HDPE (no PTFE)	20 mL	00350821018829	Grey	No	
043	0356_SW004_220719	HDPE (no PTFE)	20 mL	00350821018931	Grey	No	
044	0356_SW005_220719	HDPE (no PTFE)	20 mL	00350821018941	Grey	No	
044	0356_SW005_220719	HDPE (no PTFE)	20 mL	00350821019063	Grey	No	
044	0356_SW005_220719	HDPE (no PTFE)	20 mL	00350821018989	Grey	No	
045	0356_SW026_220721	HDPE (no PTFE)	20 mL	00350821042823	Grey	No	
045	0356_SW026_220721	HDPE (no PTFE)	20 mL	00350821042899	Grey	No	
045	0356_SW026_220721	HDPE (no PTFE)	20 mL	00350821042820	Grey	No	
046	0356_SW028_220721	HDPE (no PTFE)	20 mL	00350821042745	Grey	No	
046	0356_SW028_220721	HDPE (no PTFE)	20 mL	00350821042713	Grey	No	
046	0356_SW028_220721	HDPE (no PTFE)	20 mL	00350821042832	Grey	No	
047	0356_SW032_220721	HDPE (no PTFE)	20 mL	00350821042843	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU003 0

EMAIL REPORTS TO:

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:

047	0356_SW032_220721	HDPE (no PTFE)	20 mL	00350821042795	Grey	No	
047	0356_SW032_220721	HDPE (no PTFE)	20 mL	00350821042806	Grey	No	
048	0356_SW034_220721	HDPE (no PTFE)	20 mL	00350821042799	Grey	No	
048	0356_SW034_220721	HDPE (no PTFE)	20 mL	00350821042952	Grey	No	
048	0356_SW034_220721	HDPE (no PTFE)	20 mL	00350821042763	Grey	No	
049	0356_SW040_220721	HDPE (no PTFE)	20 mL	00350821042818	Grey	No	
049	0356_SW040_220721	HDPE (no PTFE)	20 mL	00350821042907	Grey	No	
049	0356_SW040_220721	HDPE (no PTFE)	20 mL	00350821042718	Grey	No	
050	0356_SW064_220720	HDPE (no PTFE)	20 mL	00350821042828	Grey	No	
050	0356_SW064_220720	HDPE (no PTFE)	20 mL	00350821042848	Grey	No	
050	0356_SW064_220720	HDPE (no PTFE)	20 mL	00350821042854	Grey	No	
051	0356_SW065_220720	HDPE (no PTFE)	20 mL	00350821042951	Grey	No	
051	0356_SW065_220720	HDPE (no PTFE)	20 mL	00350821042720	Grey	No	
051	0356_SW065_220720	HDPE (no PTFE)	20 mL	00350821042784	Grey	No	
052	0356_SW113_220721	HDPE (no PTFE)	20 mL	00350821042976	Grey	No	
052	0356_SW113_220721	HDPE (no PTFE)	20 mL	00350821042739	Grey	No	
052	0356_SW113_220721	HDPE (no PTFE)	20 mL	00350821042935	Grey	No	
053	0356_SW114_220721	HDPE (no PTFE)	20 mL	00350821042968	Grey	No	
053	0356_SW114_220721	HDPE (no PTFE)	20 mL	00350821042922	Grey	No	
053	0356_SW114_220721	HDPE (no PTFE)	20 mL	00350821042748	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042853	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042872	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042906	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042764	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042960	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042746	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042811	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/7/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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:			

055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821019085	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042937	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042888	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042733	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042773	Grey	No	
056	0356_SW554_220720	HDPE (no PTFE)	20 mL	00350821042723	Grey	No	
056	0356_SW554_220720	HDPE (no PTFE)	20 mL	00350821042770	Grey	No	
056	0356_SW554_220720	HDPE (no PTFE)	20 mL	00350821042842	Grey	No	
057	0356_SW555_220721	HDPE (no PTFE)	20 mL	00350821042817	Grey	No	
057	0356_SW555_220721	HDPE (no PTFE)	20 mL	00350821042776	Grey	No	
057	0356_SW555_220721	HDPE (no PTFE)	20 mL	00350821042891	Grey	No	
058	0356_QC300_220719	HDPE (no PTFE)	20 mL	00350821019075	Grey	No	
058	0356_QC300_220719	HDPE (no PTFE)	20 mL	00350821018986	Grey	No	
058	0356_QC300_220719	HDPE (no PTFE)	20 mL	00350821019066	Grey	No	
059	0356_QC100_220720	HDPE Soil Jar	200 mL	00621121021149	Grey	No	
060	0356_QC101_220720	HDPE (no PTFE)	20 mL	00350821042691	Grey	No	
060	0356_QC101_220720	HDPE (no PTFE)	20 mL	00350821042929	Grey	No	
060	0356_QC101_220720	HDPE (no PTFE)	20 mL	00350821042824	Grey	No	
061	0356_QC102_220720	HDPE (no PTFE)	20 mL	00350821042964	Grey	No	
061	0356_QC102_220720	HDPE (no PTFE)	20 mL	00350821042866	Grey	No	
061	0356_QC102_220720	HDPE (no PTFE)	20 mL	00350821042732	Grey	No	
062	0356_QC103_220721	HDPE (no PTFE)	20 mL	00350821042730	Grey	No	
062	0356_QC103_220721	HDPE (no PTFE)	20 mL	00350821042767	Grey	No	
062	0356_QC103_220721	HDPE (no PTFE)	20 mL	00350821042808	Grey	No	
063	0356_QC105_220721	HDPE Soil Jar	200 mL	00620322018619	Grey	No	
064	0356_QC104_220721	HDPE (no PTFE)	20 mL	00350821042780	Grey	No	
064	0356_QC104_220721	HDPE (no PTFE)	20 mL	00350821042787	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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:

064	0356_QC104_220721	HDPE (no PTFE)	20 mL	00350821042729	Grey	No	
065	0356_QC302_220721	HDPE (no PTFE)	20 mL	00350821042942	Grey	No	
065	0356_QC302_220721	HDPE (no PTFE)	20 mL	00350821042945	Grey	No	
065	0356_QC302_220721	HDPE (no PTFE)	20 mL	00350821042791	Grey	No	
066	0356_QC303_220722	HDPE (no PTFE)	20 mL	00350821042744	Grey	No	
066	0356_QC303_220722	HDPE (no PTFE)	20 mL	00350821042943	Grey	No	
066	0356_QC303_220722	HDPE (no PTFE)	20 mL	00350821042825	Grey	No	
067	0356_QC106_220722	HDPE (no PTFE)	20 mL	00350821042870	Grey	No	
067	0356_QC106_220722	HDPE (no PTFE)	20 mL	00350821042826	Grey	No	
067	0356_QC106_220722	HDPE (no PTFE)	20 mL	00350821042979	Grey	No	

Total Bottle Count: ALS: 171, Non ALS: 0

[redacted]

From: [redacted]
Sent: Monday, 25 July 2022 10:50 AM
To: [redacted]
Subject: AECOM Samples splitting work order: ALS Compass COC#40257

Importance: High

[redacted]

Can you please split these samples into a separate workorder as per the instructions below?

Kind regards,

[redacted]
Client Services Coordinator, Environmental
Sydney, NSW

[redacted]
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

alsglobal.com

From: [redacted]
Sent: Monday, 25 July 2022 10:42 AM
[redacted]
Subject: [EXTERNAL] - splitting work order: ALS Compass COC#40257

CAUTION: This email originated from outside of ALS. Do not click links or open attachments unless you recognize the sender and are sure content is relevant to you.

Hi ALS team,

I have just approved an ALS Compass COC (#40257), for the project NSW_0356_PFASOMP, but have now realised that some samples should have been listed under a separate COC as they need to be reported to a private entity.

Can you please split the work order into 2 separate work orders? One with the following samples:

	Field ID
16	0356_MW121_220722
17	0356_MW124_220720

19	0356_MW187D_220720
20	0356_MW187S_220720
21	0356_MW188D_220722
22	0356_MW188S_220722
23	0356_OTH006_220720
30	0356_SD046_220720
31	0356_SD047_220720
50	0356_SW064_220720
51	0356_SW065_220720
38	0356_SD539_220720
39	0356_SD540_220720
55	0356_SW553_220720
56	0356_SW554_220720

Ideally, I would like a proper lab report # for each (not just an A and B version). Let me know if this can be done & if I need to provide more detail/ information.

The samples are being delivered this morning so they would have not been processed by sample receipt yet.

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ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2226191**	Page	: 1 of 25
Amendment	: **3**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_22	Date Samples Received	: 25-Jul-2022 16:30
Order number	: 60612562_8.1	Date Analysis Commenced	: 27-Jul-2022
C-O-C number	: 40257	Issue Date	: 02-Nov-2022 14:43
Sampler	: [redacted]		
Site	: 0356		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 53		
No. of samples analysed	: 53		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (02/11/2022): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [redacted] for samples 35 and 52. All analysis results are as per the previous report.
- Amendment (02/11/2022): This report has been amended to allow the distribution of updated SRN denoting sample ID changes not previously provided. All analysis results are as per the previous report.
- Amendment (03/08/2022): This report has been amended to alter the project name. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. 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: **GROUNDWATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0356_MW008_220721	0356_MW011_220721	0356_MW048_220721	0356_MW050_220721	0356_MW052_220721
				Sampling date / time	21-Jul-2022 08:09	21-Jul-2022 08:10	21-Jul-2022 08:38	21-Jul-2022 09:30	21-Jul-2022 08:58
					ES2226191-001	ES2226191-002	ES2226191-003	ES2226191-004	ES2226191-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.15**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.31**	<0.02	**0.02**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.02**	**2.26**	<0.01	**0.28**
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	**0.02**	**0.02**	<0.01	**0.38**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	**0.03**	<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	**0.04**	<0.02	**0.02**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	**0.27**	<0.02	**0.07**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	**0.04**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	**0.05**	<0.01	**0.02**
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: **GROUNDWATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0356_MW008_220721	0356_MW011_220721	0356_MW048_220721	0356_MW050_220721	0356_MW052_220721
				Sampling date / time	21-Jul-2022 08:09	21-Jul-2022 08:10	21-Jul-2022 08:38	21-Jul-2022 09:30	21-Jul-2022 08:58
					ES2226191-001	ES2226191-002	ES2226191-003	ES2226191-004	ES2226191-005
					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		<0.01	**0.07**	**3.14**	<0.01	**0.79**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.04**	**2.28**	<0.01	**0.66**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.04**	**2.83**	<0.01	**0.77**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**91.7**	**101**	**93.4**	**95.2**	**91.8**
13C8-PFOA	----	0.02	%		**109**	**106**	**107**	**106**	**107**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0356_MW059_220721	0356_MW063_220719	0356_MW071_220719	0356_MW073_220719	0356_MW102_220721
				Sampling date / time	21-Jul-2022 07:42	19-Jul-2022 12:45	19-Jul-2022 12:15	19-Jul-2022 12:10	21-Jul-2022 10:05
					ES2226191-006	ES2226191-007	ES2226191-008	ES2226191-009	ES2226191-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.04**	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	**0.05**	<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	**0.05**	<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: GROUNDWATER (Matrix: WATER)				Sample ID	0356_MW059_220721	0356_MW063_220719	0356_MW071_220719	0356_MW073_220719	0356_MW102_220721
				Sampling date / time	21-Jul-2022 07:42	19-Jul-2022 12:45	19-Jul-2022 12:15	19-Jul-2022 12:10	21-Jul-2022 10:05
Compound	CAS Number	LOR	Unit		ES2226191-006	ES2226191-007	ES2226191-008	ES2226191-009	ES2226191-010
					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		**0.04**	**0.34**	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.04**	**0.05**	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.04**	**0.34**	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**97.1**	**96.5**	**99.9**	**89.5**	**98.5**
13C8-PFOA	----	0.02	%		**106**	**108**	**106**	**104**	**105**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0356_MW109_220721	0356_MW110_220721	0356_MW114_220721	0356_MW115_220721	0356_MW118_220721
				Sampling date / time	21-Jul-2022 11:13	21-Jul-2022 10:32	21-Jul-2022 10:45	21-Jul-2022 11:11	21-Jul-2022 10:50
					ES2226191-011	ES2226191-012	ES2226191-013	ES2226191-014	ES2226191-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
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: GROUNDWATER (Matrix: WATER)				Sample ID	0356_MW109_220721	0356_MW110_220721	0356_MW114_220721	0356_MW115_220721	0356_MW118_220721
				Sampling date / time	21-Jul-2022 11:13	21-Jul-2022 10:32	21-Jul-2022 10:45	21-Jul-2022 11:11	21-Jul-2022 10:50
Compound	CAS Number	LOR	Unit		ES2226191-011	ES2226191-012	ES2226191-013	ES2226191-014	ES2226191-015
					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	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.9**	**87.3**	**100**	**97.3**	**94.8**
13C8-PFOA	----	0.02	%		**108**	**106**	**109**	**104**	**108**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0356_MW167_220721	0356_SW555_220721	0356_QC102_220720	0356_QC103_220721	0356_QC106_220722
				Sampling date / time	21-Jul-2022 08:18	21-Jul-2022 14:58	20-Jul-2022 13:27	21-Jul-2022 08:39	22-Jul-2022 14:12
Compound	CAS Number	LOR	Unit		ES2226191-018	ES2226191-057	ES2226191-061	ES2226191-062	ES2226191-067
					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	**0.19**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.31**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.01	**2.24**	<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	**0.02**	<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	**0.06**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.24**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	**0.04**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	**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: GROUNDWATER (Matrix: WATER)				Sample ID	0356_MW167_220721	0356_SW555_220721	0356_QC102_220720	0356_QC103_220721	0356_QC106_220722
				Sampling date / time	21-Jul-2022 08:18	21-Jul-2022 14:58	20-Jul-2022 13:27	21-Jul-2022 08:39	22-Jul-2022 14:12
Compound	CAS Number	LOR	Unit		ES2226191-018	ES2226191-057	ES2226191-061	ES2226191-062	ES2226191-067
					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	**3.15**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	**2.26**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	<0.01	**2.84**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.9**	**90.8**	**84.9**	**97.7**	**95.1**
13C8-PFOA	----	0.02	%		**108**	**99.1**	**93.1**	**93.7**	**93.7**

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0356_QC300_220719	0356_QC302_220721	0356_QC303_220722	0356_QC301_220720	----
				Sampling date / time	19-Jul-2022 15:41	21-Jul-2022 15:10	22-Jul-2022 14:12	20-Jul-2022 16:25	----
Compound	CAS Number	LOR	Unit		ES2226191-058	ES2226191-065	ES2226191-066	ES2226191-068	--------
					Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0356_QC300_220719	0356_QC302_220721	0356_QC303_220722	0356_QC301_220720	----
				Sampling date / time	19-Jul-2022 15:41	21-Jul-2022 15:10	22-Jul-2022 14:12	20-Jul-2022 16:25	----
Compound	CAS Number	LOR	Unit		ES2226191-058	ES2226191-065	ES2226191-066	ES2226191-068	--------
					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		<0.01	<0.01	<0.01	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.5**	**94.6**	**98.7**	**95.9**	----
13C8-PFOA	----	0.02	%		**96.3**	**88.9**	**94.5**	**91.0**	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0356_SD002_220721	0356_SD003_220721	0356_SD004_220719	0356_SD005_220719	0356_SD032_220721
			Sampling date / time	21-Jul-2022 09:32	21-Jul-2022 12:36	19-Jul-2022 13:15	19-Jul-2022 13:00	21-Jul-2022 12:50
Compound	CAS Number	LOR	Unit	ES2226191-024	ES2226191-025	ES2226191-026	ES2226191-027	ES2226191-028
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**39.5**	**48.4**	**27.7**	**35.4**	**51.0**
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	**0.0018**	<0.0002	<0.0002	<0.0002	**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	**0.0428**	**0.0026**	<0.0002	**0.0018**	**0.0044**
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	0356_SD002_220721	0356_SD003_220721	0356_SD004_220719	0356_SD005_220719	0356_SD032_220721
				Sampling date / time	21-Jul-2022 09:32	21-Jul-2022 12:36	19-Jul-2022 13:15	19-Jul-2022 13:00	21-Jul-2022 12:50
Compound	CAS Number	LOR	Unit		ES2226191-024	ES2226191-025	ES2226191-026	ES2226191-027	ES2226191-028
					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		**0.0448**	**0.0026**	<0.0002	**0.0018**	**0.0051**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0446**	**0.0026**	<0.0002	**0.0018**	**0.0051**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0448**	**0.0026**	<0.0002	**0.0018**	**0.0051**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**89.0**	**98.5**	**94.0**	**93.5**	**91.0**
13C8-PFOA	----	0.0002	%		**88.0**	**95.0**	**96.0**	**99.5**	**92.5**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0356_SD040_220721	0356_SD053_220721	0356_SD055_220721	0356_SD065_220721	0356_SD116_220721
			Sampling date / time	21-Jul-2022 13:30	21-Jul-2022 13:06	21-Jul-2022 07:44	21-Jul-2022 11:41	21-Jul-2022 14:02
Compound	CAS Number	LOR	Unit	ES2226191-029	ES2226191-032	ES2226191-033	ES2226191-034	ES2226191-035
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**26.7**	**25.5**	**45.3**	**20.9**	**43.6**
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**	**0.0003**	<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	**0.0004**	**0.0043**	**0.0026**	**0.0007**	**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	<0.0002	<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	0356_SD040_220721	0356_SD053_220721	0356_SD055_220721	0356_SD065_220721	0356_SD116_220721
				Sampling date / time	21-Jul-2022 13:30	21-Jul-2022 13:06	21-Jul-2022 07:44	21-Jul-2022 11:41	21-Jul-2022 14:02
Compound	CAS Number	LOR	Unit		ES2226191-029	ES2226191-032	ES2226191-033	ES2226191-034	ES2226191-035
					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		**0.0004**	**0.0045**	**0.0029**	**0.0007**	**0.0007**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0004**	**0.0045**	**0.0029**	**0.0007**	**0.0007**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0004**	**0.0045**	**0.0029**	**0.0007**	**0.0007**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**86.5**	**84.0**	**94.5**	**94.0**	**95.5**
13C8-PFOA	----	0.0002	%		**89.5**	**87.5**	**90.0**	**99.5**	**100**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0356_SD114_220721	0356_SD115_220721	0356_SD555_220721	0356_QC100_220720	0356_QC105_220721
			Sampling date / time	21-Jul-2022 14:45	21-Jul-2022 12:03	21-Jul-2022 14:31	20-Jul-2022 10:15	21-Jul-2022 09:33
Compound	CAS Number	LOR	Unit	ES2226191-036	ES2226191-037	ES2226191-040	ES2226191-059	ES2226191-063
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**53.0**	**63.2**	**25.4**	**41.2**	**37.3**
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	**0.0023**	<0.0002	**0.0002**	**0.0017**
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	**0.0029**	**0.0457**	**0.0003**	**0.0081**	**0.0345**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	**0.0010**	<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	**0.0004**	<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	**0.0003**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0005**
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	0356_SD114_220721	0356_SD115_220721	0356_SD555_220721	0356_QC100_220720	0356_QC105_220721
				Sampling date / time	21-Jul-2022 14:45	21-Jul-2022 12:03	21-Jul-2022 14:31	20-Jul-2022 10:15	21-Jul-2022 09:33
Compound	CAS Number	LOR	Unit		ES2226191-036	ES2226191-037	ES2226191-040	ES2226191-059	ES2226191-063
					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		**0.0029**	**0.0496**	**0.0003**	**0.0085**	**0.0372**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0029**	**0.0480**	**0.0003**	**0.0083**	**0.0362**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0029**	**0.0486**	**0.0003**	**0.0085**	**0.0364**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**86.5**	**99.0**	**83.0**	**85.0**	**84.0**
13C8-PFOA	----	0.0002	%		**96.0**	**90.5**	**96.0**	**98.5**	**97.5**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0356_SW002_220721	0356_SW003_220721	0356_SW004_220719	0356_SW005_220719	0356_SW026_220721
				Sampling date / time	21-Jul-2022 09:33	21-Jul-2022 12:37	19-Jul-2022 13:15	19-Jul-2022 13:00	21-Jul-2022 13:07
					ES2226191-041	ES2226191-042	ES2226191-043	ES2226191-044	ES2226191-045
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.03**	<0.02	<0.02	**0.03**	**0.06**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**0.03**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.24**	**0.02**	<0.01	<0.01	**0.44**
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		**0.33**	**0.01**	<0.01	<0.01	**0.76**
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	<0.1	<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		**0.04**	<0.02	<0.02	<0.02	**0.07**
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	**0.02**
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: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW002_220721	0356_SW003_220721	0356_SW004_220719	0356_SW005_220719	0356_SW026_220721
				Sampling date / time	21-Jul-2022 09:33	21-Jul-2022 12:37	19-Jul-2022 13:15	19-Jul-2022 13:00	21-Jul-2022 13:07
Compound	CAS Number	LOR	Unit		ES2226191-041	ES2226191-042	ES2226191-043	ES2226191-044	ES2226191-045
					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	<0.05	<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		**0.65**	**0.03**	<0.01	**0.03**	**1.38**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.57**	**0.03**	<0.01	<0.01	**1.20**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.65**	**0.03**	<0.01	**0.03**	**1.35**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**88.9**	**92.3**	**95.1**	**95.9**	**96.0**
13C8-PFOA	----	0.02	%		**98.8**	**96.9**	**97.8**	**97.0**	**94.4**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0356_SW028_220721	0356_SW032_220721	0356_SW034_220721	0356_SW040_220721	0356_SW116_220721
				Sampling date / time	21-Jul-2022 07:43	21-Jul-2022 12:49	21-Jul-2022 11:41	21-Jul-2022 13:30	21-Jul-2022 14:03
					ES2226191-046	ES2226191-047	ES2226191-048	ES2226191-049	ES2226191-052
					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	**0.06**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.02**	**0.71**	**0.24**	<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	**0.86**	**0.35**	<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	**0.11**	**0.04**	<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	**0.03**	**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: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW028_220721	0356_SW032_220721	0356_SW034_220721	0356_SW040_220721	0356_SW116_220721
				Sampling date / time	21-Jul-2022 07:43	21-Jul-2022 12:49	21-Jul-2022 11:41	21-Jul-2022 13:30	21-Jul-2022 14:03
Compound	CAS Number	LOR	Unit		ES2226191-046	ES2226191-047	ES2226191-048	ES2226191-049	ES2226191-052
					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		**0.02**	**1.81**	**0.64**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.02**	**1.57**	**0.59**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.02**	**1.75**	**0.64**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.9**	**92.1**	**96.2**	**98.8**	**100**
13C8-PFOA	----	0.02	%		**103**	**94.0**	**100**	**95.1**	**96.7**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW114_220721	0356_SW115_220721	0356_QC101_220720	0356_QC104_220721	----
				Sampling date / time	21-Jul-2022 15:00	21-Jul-2022 12:17	20-Jul-2022 10:18	21-Jul-2022 09:34	----
Compound	CAS Number	LOR	Unit		ES2226191-053	ES2226191-054	ES2226191-060	ES2226191-064	--------
					Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.33**	**0.01**	**0.21**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.02**	<0.02	<0.02	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.01**	**0.49**	**0.02**	**0.34**	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.03**	<0.02	**0.04**	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.01**	<0.01	**0.01**	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW114_220721	0356_SW115_220721	0356_QC101_220720	0356_QC104_220721	----
				Sampling date / time	21-Jul-2022 15:00	21-Jul-2022 12:17	20-Jul-2022 10:18	21-Jul-2022 09:34	----
Compound	CAS Number	LOR	Unit		ES2226191-053	ES2226191-054	ES2226191-060	ES2226191-064	--------
					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		**0.03**	**0.86**	**0.03**	**0.60**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.01**	**0.82**	**0.03**	**0.55**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.01**	**0.86**	**0.03**	**0.60**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**102**	**93.5**	**84.9**	**95.8**	----
13C8-PFOA	----	0.02	%		**94.1**	**98.0**	**106**	**93.4**	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2226191**	Page	: 1 of 19
Amendment	: **3**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_22	Date Samples Received	: 25-Jul-2022
Order number	: 60612562_8.1	Date Analysis Commenced	: 27-Jul-2022
C-O-C number	: 40257	Issue Date	: 02-Nov-2022
Sampler	: [redacted]		
Site	: 0356		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 53		
No. of samples analysed	: 53		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
[redacted]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

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: 4486221)									
ES2225843-012	Anonymous	EA055: Moisture Content	----	0.1	%	21.8	20.3	7.0	0% - 20%
ES2226191-033	0356_SD055_220721	EA055: Moisture Content	----	0.1	%	45.3	44.5	1.8	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4486222)									
ES2226451-002	Anonymous	EA055: Moisture Content	----	0.1	%	4.0	4.2	5.0	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4484889)									
ES2225826-013	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	0.0010	0.0010	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	0.0015	0.0015	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0235	0.0233	0.9	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0036	0.0036	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.436	0.421	3.6	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0009	0.0010	0.0	No Limit
ES2226191-025	0356_SD003_220721	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	0.0026	0.0019	30.7	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4484899)									
EP2209135-002	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

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 (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4484899) - continued									
EP2209135-002	Anonymous	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2226191-063	0356_QC105_220721	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	0.0017	0.0019	11.2	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	0.0345	0.0362	4.9	0% - 20%
		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: 4484889)									
ES2225826-013	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0012	0.0012	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0005	0.0005	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0055	0.0052	5.1	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.002	<0.002	0.0	No Limit
ES2226191-025	0356_SD003_220721	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
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4484899)									
EP2209135-002	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: 4484899) - continued									
EP2209135-002	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
ES2226191-063	0356_QC105_220721	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	0.0003	0.0004	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0005	0.0004	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: 4484889)									
ES2225826-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	0.0006	0.0007	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0012	<0.0012	0.0	No Limit
ES2226191-025	0356_SD003_220721	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
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4484899)									

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: 4484899) - continued									
EP2209135-002	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
ES2226191-063	0356_QC105_220721	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: 4484889)									
ES2225826-013	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
ES2226191-025	0356_SD003_220721	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

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: 4484889) - continued									
ES2226191-025	0356_SD003_220721	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4484899)									
EP2209135-002	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
ES2226191-063	0356_QC105_220721	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: 4485407)									
ES2226191-006	0356_MW059_220721	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.04	0.03	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: 4486257)									
ES2226191-054	0356_SW115_220721	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.33	0.33	0.0	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.49	0.43	12.5	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4488883)									
ES2226474-055	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.07	0.07	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.08	0.09	13.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory 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: 4488883) - continued									
ES2226474-055	Anonymous	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4485407)									
ES2226191-006	0356_MW059_220721	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: 4486257)									
ES2226191-054	0356_SW115_220721	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	42.3	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: 4488883)									
ES2226474-055	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4485407)									

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: 4485407) - continued									
ES2226191-006	0356_MW059_220721	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: 4486257)									
ES2226191-054	0356_SW115_220721	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: 4488883)									
ES2226474-055	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4485407)									
ES2226191-006	0356_MW059_220721	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: 4486257)									
ES2226191-054	0356_SW115_220721	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: 4488883)									
ES2226474-055	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4485407)									
ES2226191-006	0356_MW059_220721	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.03	28.6	No Limit
EP231P: PFAS Sums (QC Lot: 4486257)									
ES2226191-054	0356_SW115_220721	EP231X: Sum of PFAS	----	0.01	µg/L	0.86	0.81	6.0	0% - 20%
EP231P: PFAS Sums (QC Lot: 4488883)									
ES2226474-055	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.15	0.16	6.5	0% - 50%

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: 4484889)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.8	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4484899)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.0	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.0	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4484889)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	82.1	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.0	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.0	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.6	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.5	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4484899)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	73.2	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.4	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.8	64.0	136

Sub-Matrix: **SOIL**

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: 4484899) - continued								
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.9	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4484889)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.1	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	81.7	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.5	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.0	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4484899)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.3	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	80.1	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	80.0	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	82.0	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4484889)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	77.2	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	78.8	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	90.0	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	85.6	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4484899)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	79.6	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	74.0	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	88.4	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.0	69.2	143

Sub-Matrix: **WATER**

	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
		Spike	Spike Recovery (%)	Acceptable Limits (%)

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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4485407)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	88.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	82.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	76.8	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	84.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	89.0	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4486257)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	94.2	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	102	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	87.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	90.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	112	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4488883)								
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	85.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	79.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	92.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4485407)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	78.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	79.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	93.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	80.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	78.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	101	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	96.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	94.5	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4486257)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	76.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.0	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	90.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	102	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: 4486257) - continued								
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	97.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	91.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	95.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	93.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4488883)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	76.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	86.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.8	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	101	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	99.8	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4485407)								
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	90.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	87.8	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	87.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	101	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.0	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	85.2	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4486257)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	105	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	88.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	78.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	80.9	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	85.6	57.6	145

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4486257) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	89.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4488883)								
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	101	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.8	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	89.8	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	108	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	89.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4485407)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	78.8	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	82.2	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	82.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	74.6	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4486257)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	92.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	84.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	108	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	95.8	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4488883)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	80.4	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	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	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	76.0	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**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High

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: 4484889)							
ES2225826-013	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	100	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	76.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	# Not Determined	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	76.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	92.0	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4484899)							
EP2209135-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	75.2	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	81.6	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	76.4	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	73.2	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	73.2	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	82.4	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4484889)							
ES2225826-013	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	72.0	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	84.0	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	72.0	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	92.0	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	# Not Determined	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	80.0	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	72.0	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	72.0	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	80.0	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	92.9	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4484899)							
EP2209135-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	74.6	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	76.4	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	94.4	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	78.8	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	84.4	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	74.8	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	74.8	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	80.8	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	78.8	69.0	135

Sub-Matrix: **SOIL**

				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: 4484899) - continued							
EP2209135-002	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	78.0	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	85.6	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4484889)							
ES2225826-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	96.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	80.1	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	81.7	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	92.9	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	84.9	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	80.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	68.0	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4484899)							
EP2209135-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	89.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	93.4	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	79.6	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	88.0	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	83.2	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	88.8	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	77.2	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4484889)							
ES2225826-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	92.0	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	72.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	84.0	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	104	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4484899)							
EP2209135-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	79.6	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	74.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	78.4	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	79.2	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: 4485407)							
ES2226120-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	79.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	90.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	87.0	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	80.0	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	88.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	93.0	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4486257)							
ES2226191-054	0356_SW115_220721	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	82.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	93.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	99.0	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	87.2	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	77.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	95.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4488883)							
ES2226474-055	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	100	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	85.2	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	77.2	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	77.4	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	84.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	77.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4485407)							
ES2226120-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	77.3	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	84.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	97.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	83.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	95.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	77.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	77.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.8	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.2	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	86.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	98.4	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4486257)							
ES2226191-054	0356_SW115_220721	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	75.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	84.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	82.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	95.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	103	71.0	133

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: 4486257) - continued							
ES2226191-054	0356_SW115_220721	EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	102	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	81.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	88.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	76.2	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	76.0	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	81.4	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4488883)							
ES2226474-055	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	77.0	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	84.8	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	90.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	81.0	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	98.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	99.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	106	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	88.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	97.8	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4485407)							
ES2226120-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	104	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	107	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	85.9	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.6	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	95.7	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	101	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	94.2	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4486257)							
ES2226191-054	0356_SW115_220721	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	106	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	104	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	84.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	81.0	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4486257) - continued							
ES2226191-054	0356_SW115_220721	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	89.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	105	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	65.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4488883)							
ES2226474-055	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	111	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	100	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	97.6	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.4	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	112	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	104	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	113	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4485407)							
ES2226120-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	77.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	84.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	90.8	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	83.0	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4486257)							
ES2226191-054	0356_SW115_220721	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	87.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	103	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	109	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	93.0	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4488883)							
ES2226474-055	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	84.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	91.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	95.4	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	72.6	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2226191**	Page	: 1 of 11
Amendment	: **3**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_22	Date Samples Received	: 25-Jul-2022
Site	: 0356	Issue Date	: 02-Nov-2022
Sampler	: [redacted]	No. of samples received	: 53
Order number	: 60612562_8.1	No. of samples analysed	: 53

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: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2225826--013	Anonymous	**Perfluorohexane sulfonic acid (PFHxS)**	355-46-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2225826--013	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	ES2225826--013	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	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	59	5.08	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **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)							
0356_SD004_220719, 0356_SD005_220719	**19-Jul-2022**	**----**	----	----	**28-Jul-2022**	02-Aug-2022	✓
HDPE Soil Jar (EA055)							
0356_QC100_220720	**20-Jul-2022**	**----**	----	----	**28-Jul-2022**	03-Aug-2022	✓
HDPE Soil Jar (EA055)							
0356_SD002_220721, 0356_SD003_220721, 0356_SD032_220721, 0356_SD040_220721, 0356_SD053_220721, 0356_SD055_220721, 0356_SD065_220721, 0356_SD116_220721, 0356_SD114_220721, 0356_SD115_220721, 0356_SD555_220721, 0356_QC105_220721	**21-Jul-2022**	**----**	----	----	**28-Jul-2022**	04-Aug-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)								
0356_SD004_220719,	0356_SD005_220719	**19-Jul-2022**	**28-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
HDPE Soil Jar (EP231X)								
0356_QC100_220720		**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
HDPE Soil Jar (EP231X)								
0356_SD002_220721,	0356_SD003_220721,	**21-Jul-2022**	**28-Jul-2022**	17-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
0356_SD032_220721,	0356_SD040_220721,							
0356_SD053_220721,	0356_SD055_220721,							
0356_SD065_220721,	0356_SD116_220721,							
0356_SD114_220721,	0356_SD115_220721,							
0356_SD555_220721,	0356_QC105_220721							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
0356_SD004_220719,	0356_SD005_220719	**19-Jul-2022**	**28-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
HDPE Soil Jar (EP231X)								
0356_QC100_220720		**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
HDPE Soil Jar (EP231X)								
0356_SD002_220721,	0356_SD003_220721,	**21-Jul-2022**	**28-Jul-2022**	17-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
0356_SD032_220721,	0356_SD040_220721,							
0356_SD053_220721,	0356_SD055_220721,							
0356_SD065_220721,	0356_SD116_220721,							
0356_SD114_220721,	0356_SD115_220721,							
0356_SD555_220721,	0356_QC105_220721							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
0356_SD004_220719,	0356_SD005_220719	**19-Jul-2022**	**28-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
HDPE Soil Jar (EP231X)								
0356_QC100_220720		**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
HDPE Soil Jar (EP231X)								
0356_SD002_220721,	0356_SD003_220721,	**21-Jul-2022**	**28-Jul-2022**	17-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
0356_SD032_220721,	0356_SD040_220721,							
0356_SD053_220721,	0356_SD055_220721,							
0356_SD065_220721,	0356_SD116_220721,							
0356_SD114_220721,	0356_SD115_220721,							
0356_SD555_220721,	0356_QC105_220721							

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)							
0356_SD004_220719, 0356_SD005_220719	**19-Jul-2022**	**28-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
HDPE Soil Jar (EP231X)							
0356_QC100_220720	**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
HDPE Soil Jar (EP231X)							
0356_SD002_220721, 0356_SD003_220721, 0356_SD032_220721, 0356_SD040_220721, 0356_SD053_220721, 0356_SD055_220721, 0356_SD065_220721, 0356_SD116_220721, 0356_SD114_220721, 0356_SD115_220721, 0356_SD555_220721, 0356_QC105_220721	**21-Jul-2022**	**28-Jul-2022**	17-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
0356_SD004_220719, 0356_SD005_220719	**19-Jul-2022**	**28-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
HDPE Soil Jar (EP231X)							
0356_QC100_220720	**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
HDPE Soil Jar (EP231X)							
0356_SD002_220721, 0356_SD003_220721, 0356_SD032_220721, 0356_SD040_220721, 0356_SD053_220721, 0356_SD055_220721, 0356_SD065_220721, 0356_SD116_220721, 0356_SD114_220721, 0356_SD115_220721, 0356_SD555_220721, 0356_QC105_220721	**21-Jul-2022**	**28-Jul-2022**	17-Jan-2023	✓	**29-Jul-2022**	06-Sep-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)								
0356_MW063_220719,	0356_MW071_220719,	**19-Jul-2022**	**29-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	15-Jan-2023	✓
0356_MW073_220719								
HDPE (no PTFE) (EP231X)								
0356_SW004_220719,	0356_SW005_220719,	**19-Jul-2022**	**30-Jul-2022**	15-Jan-2023	✓	**30-Jul-2022**	15-Jan-2023	✓
0356_QC300_220719								
HDPE (no PTFE) (EP231X)								
0356_QC101_220720,	0356_QC102_220720,	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
0356_QC301_220720								
HDPE (no PTFE) (EP231X)								
0356_MW008_220721,	0356_MW011_220721,	**21-Jul-2022**	**29-Jul-2022**	17-Jan-2023	✓	**29-Jul-2022**	17-Jan-2023	✓
0356_MW048_220721,	0356_MW050_220721,							
0356_MW052_220721,	0356_MW059_220721,							
0356_MW102_220721,	0356_MW109_220721,							
0356_MW110_220721,	0356_MW114_220721,							
0356_MW115_220721,	0356_MW118_220721,							
0356_MW167_220721								
HDPE (no PTFE) (EP231X)								
0356_SW002_220721,	0356_SW003_220721,	**21-Jul-2022**	**30-Jul-2022**	17-Jan-2023	✓	**30-Jul-2022**	17-Jan-2023	✓
0356_SW026_220721,	0356_SW028_220721,							
0356_SW032_220721,	0356_SW034_220721,							
0356_SW040_220721,	0356_SW116_220721,							
0356_SW114_220721,	0356_SW115_220721,							
0356_SW555_220721,	0356_QC103_220721,							
0356_QC104_220721,	0356_QC302_220721							
HDPE (no PTFE) (EP231X)								
0356_QC303_220722,	0356_QC106_220722	**22-Jul-2022**	**30-Jul-2022**	18-Jan-2023	✓	**30-Jul-2022**	18-Jan-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)								
0356_MW063_220719,	0356_MW071_220719,	**19-Jul-2022**	**29-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	15-Jan-2023	✓
0356_MW073_220719								
HDPE (no PTFE) (EP231X)								
0356_SW004_220719,	0356_SW005_220719,	**19-Jul-2022**	**30-Jul-2022**	15-Jan-2023	✓	**30-Jul-2022**	15-Jan-2023	✓
0356_QC300_220719								
HDPE (no PTFE) (EP231X)								
0356_QC101_220720,	0356_QC102_220720,	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
0356_QC301_220720								
HDPE (no PTFE) (EP231X)								
0356_MW008_220721,	0356_MW011_220721,	**21-Jul-2022**	**29-Jul-2022**	17-Jan-2023	✓	**29-Jul-2022**	17-Jan-2023	✓
0356_MW048_220721,	0356_MW050_220721,							
0356_MW052_220721,	0356_MW059_220721,							
0356_MW102_220721,	0356_MW109_220721,							
0356_MW110_220721,	0356_MW114_220721,							
0356_MW115_220721,	0356_MW118_220721,							
0356_MW167_220721								
HDPE (no PTFE) (EP231X)								
0356_SW002_220721,	0356_SW003_220721,	**21-Jul-2022**	**30-Jul-2022**	17-Jan-2023	✓	**30-Jul-2022**	17-Jan-2023	✓
0356_SW026_220721,	0356_SW028_220721,							
0356_SW032_220721,	0356_SW034_220721,							
0356_SW040_220721,	0356_SW116_220721,							
0356_SW114_220721,	0356_SW115_220721,							
0356_SW555_220721,	0356_QC103_220721,							
0356_QC104_220721,	0356_QC302_220721							
HDPE (no PTFE) (EP231X)								
0356_QC303_220722,	0356_QC106_220722	**22-Jul-2022**	**30-Jul-2022**	18-Jan-2023	✓	**30-Jul-2022**	18-Jan-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)								
0356_MW063_220719,	0356_MW071_220719,	**19-Jul-2022**	**29-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	15-Jan-2023	✓
0356_MW073_220719								
HDPE (no PTFE) (EP231X)								
0356_SW004_220719,	0356_SW005_220719,	**19-Jul-2022**	**30-Jul-2022**	15-Jan-2023	✓	**30-Jul-2022**	15-Jan-2023	✓
0356_QC300_220719								
HDPE (no PTFE) (EP231X)								
0356_QC101_220720,	0356_QC102_220720,	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
0356_QC301_220720								
HDPE (no PTFE) (EP231X)								
0356_MW008_220721,	0356_MW011_220721,	**21-Jul-2022**	**29-Jul-2022**	17-Jan-2023	✓	**29-Jul-2022**	17-Jan-2023	✓
0356_MW048_220721,	0356_MW050_220721,							
0356_MW052_220721,	0356_MW059_220721,							
0356_MW102_220721,	0356_MW109_220721,							
0356_MW110_220721,	0356_MW114_220721,							
0356_MW115_220721,	0356_MW118_220721,							
0356_MW167_220721								
HDPE (no PTFE) (EP231X)								
0356_SW002_220721,	0356_SW003_220721,	**21-Jul-2022**	**30-Jul-2022**	17-Jan-2023	✓	**30-Jul-2022**	17-Jan-2023	✓
0356_SW026_220721,	0356_SW028_220721,							
0356_SW032_220721,	0356_SW034_220721,							
0356_SW040_220721,	0356_SW116_220721,							
0356_SW114_220721,	0356_SW115_220721,							
0356_SW555_220721,	0356_QC103_220721,							
0356_QC104_220721,	0356_QC302_220721							
HDPE (no PTFE) (EP231X)								
0356_QC303_220722,	0356_QC106_220722	**22-Jul-2022**	**30-Jul-2022**	18-Jan-2023	✓	**30-Jul-2022**	18-Jan-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)								
0356_MW063_220719,	0356_MW071_220719,	**19-Jul-2022**	**29-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	15-Jan-2023	✓
0356_MW073_220719								
HDPE (no PTFE) (EP231X)								
0356_SW004_220719,	0356_SW005_220719,	**19-Jul-2022**	**30-Jul-2022**	15-Jan-2023	✓	**30-Jul-2022**	15-Jan-2023	✓
0356_QC300_220719								
HDPE (no PTFE) (EP231X)								
0356_QC101_220720,	0356_QC102_220720,	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
0356_QC301_220720								
HDPE (no PTFE) (EP231X)								
0356_MW008_220721,	0356_MW011_220721,	**21-Jul-2022**	**29-Jul-2022**	17-Jan-2023	✓	**29-Jul-2022**	17-Jan-2023	✓
0356_MW048_220721,	0356_MW050_220721,							
0356_MW052_220721,	0356_MW059_220721,							
0356_MW102_220721,	0356_MW109_220721,							
0356_MW110_220721,	0356_MW114_220721,							
0356_MW115_220721,	0356_MW118_220721,							
0356_MW167_220721								
HDPE (no PTFE) (EP231X)								
0356_SW002_220721,	0356_SW003_220721,	**21-Jul-2022**	**30-Jul-2022**	17-Jan-2023	✓	**30-Jul-2022**	17-Jan-2023	✓
0356_SW026_220721,	0356_SW028_220721,							
0356_SW032_220721,	0356_SW034_220721,							
0356_SW040_220721,	0356_SW116_220721,							
0356_SW114_220721,	0356_SW115_220721,							
0356_SW555_220721,	0356_QC103_220721,							
0356_QC104_220721,	0356_QC302_220721							
HDPE (no PTFE) (EP231X)								
0356_QC303_220722,	0356_QC106_220722	**22-Jul-2022**	**30-Jul-2022**	18-Jan-2023	✓	**30-Jul-2022**	18-Jan-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) 0356_MW063_220719, 0356_MW071_220719, 0356_MW073_220719	**19-Jul-2022**	**29-Jul-2022**	15-Jan-2023	✓	**29-Jul-2022**	15-Jan-2023	✓
HDPE (no PTFE) (EP231X) 0356_SW004_220719, 0356_SW005_220719, 0356_QC300_220719	**19-Jul-2022**	**30-Jul-2022**	15-Jan-2023	✓	**30-Jul-2022**	15-Jan-2023	✓
HDPE (no PTFE) (EP231X) 0356_QC101_220720, 0356_QC102_220720, 0356_QC301_220720	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
HDPE (no PTFE) (EP231X) 0356_MW008_220721, 0356_MW011_220721, 0356_MW048_220721, 0356_MW050_220721, 0356_MW052_220721, 0356_MW059_220721, 0356_MW102_220721, 0356_MW109_220721, 0356_MW110_220721, 0356_MW114_220721, 0356_MW115_220721, 0356_MW118_220721, 0356_MW167_220721	**21-Jul-2022**	**29-Jul-2022**	17-Jan-2023	✓	**29-Jul-2022**	17-Jan-2023	✓
HDPE (no PTFE) (EP231X) 0356_SW002_220721, 0356_SW003_220721, 0356_SW026_220721, 0356_SW028_220721, 0356_SW032_220721, 0356_SW034_220721, 0356_SW040_220721, 0356_SW116_220721, 0356_SW114_220721, 0356_SW115_220721, 0356_SW555_220721, 0356_QC103_220721, 0356_QC104_220721, 0356_QC302_220721	**21-Jul-2022**	**30-Jul-2022**	17-Jan-2023	✓	**30-Jul-2022**	17-Jan-2023	✓
HDPE (no PTFE) (EP231X) 0356_QC303_220722, 0356_QC106_220722	**22-Jul-2022**	**30-Jul-2022**	18-Jan-2023	✓	**30-Jul-2022**	18-Jan-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	3	27	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	40	**5.00**	**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	3	59	**5.08**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	59	**5.08**	**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 : **ES2226474**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: NSW_0356_PFASOMP	Page	: 1 of 3
Order number	: 60612562_8.1	Quote number	: ES2021AECOMAU0030 (SY/139/19 v4 60612562_8.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: 0356		
Sampler	: [redacted]		

Dates

Date Samples Received	: 25-Jul-2022 16:30	Issue Date	: 27-Jul-2022
Client Requested Due Date	: 01-Aug-2022	Scheduled Reporting Date	: **01-Aug-2022**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 15 / 15

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
- **Split batch from ES2226191.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2226474-030	20-Jul-2022 00:00	0356_SD046_220720	✓	✓
ES2226474-031	20-Jul-2022 00:00	0356_SD047_220720	✓	✓
ES2226474-038	20-Jul-2022 00:00	0356_SD539_220720	✓	✓
ES2226474-039	20-Jul-2022 00:00	0356_SD540_220720	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2226474-016	22-Jul-2022 00:00	0356_MW121_220722	✓
ES2226474-017	20-Jul-2022 00:00	0356_MW124_220720	✓
ES2226474-019	20-Jul-2022 00:00	0356_MW187D_220720	✓
ES2226474-020	20-Jul-2022 00:00	0356_MW187S_220720	✓
ES2226474-021	20-Jul-2022 00:00	0356_MW188D_220722	✓
ES2226474-022	22-Jul-2022 00:00	0356_MW188S_220722	✓
ES2226474-023	20-Jul-2022 00:00	0356_OTH006_220720	✓
ES2226474-050	20-Jul-2022 00:00	0356_SW064_220720	✓
ES2226474-051	20-Jul-2022 00:00	0356_SW065_220720	✓
ES2226474-055	20-Jul-2022 00:00	0356_SW553_220720	✓
ES2226474-056	20-Jul-2022 00:00	0356_SW554_220720	✓

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]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)	Email	[redacted]@esdat.com.au

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]
- Chain of Custody (CoC) (COC)	Email	[redacted]
- EDI Format - ENMRG (ENMRG)	Email	[redacted]
- EDI Format - ESDAT (ESDAT)	Email	[redacted]
- EDI Format - XTab (XTAB)	Email	[redacted]
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- EDI Format - XTab (XTAB)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0356_MW008_220721		21/07/2022 08:09 AM	Water	ALS: 3 Non ALS: 0	No		X		
002	0356_MW011_220721		21/07/2022 08:10 AM	Water	ALS: 3 Non ALS: 0	No		X		
003	0356_MW048_220721		21/07/2022 08:38 AM	Water	ALS: 3 Non ALS: 0	No		X		
004	0356_MW050_220721		21/07/2022 09:30 AM	Water	ALS: 3 Non ALS: 0	No		X		
005	0356_MW052_220721		21/07/2022 08:58 AM	Water	ALS: 3 Non ALS: 0	No		X		
006	0356_MW059_220721		21/07/2022 07:42 AM	Water	ALS: 5 Non ALS: 0	No		X		Extra volume for lab qc's
007	0356_MW063_220719		19/07/2022 12:45 PM	Water	ALS: 3 Non ALS: 0	No		X		
008	0356_MW071_220719		19/07/2022 12:15 PM	Water	ALS: 3 Non ALS: 0	No		X		
009	0356_MW073_220719		19/07/2022 12:10 PM	Water	ALS: 3 Non ALS: 0	No		X		

Environmental Division
Sydney
Work Order Reference
ES2226474

Telephone : +61-2-8784 8555

Subcon - Forward Lab: Split WO

Lab / Analysis: ES 2226191

Organised By / Date:

Relinquished By / Date:

Connote - Courier:

WO No:

Attach By PO - Internal Sheet:

CHAIN OF CUSTODY

COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0003 0

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0356_MW102_220721		21/07/2022 10:05 AM	Water	ALS: 3 Non ALS: 0	No		X		
011	0356_MW109_220721		21/07/2022 11:13 AM	Water	ALS: 3 Non ALS: 0	No		X		
012	0356_MW110_220721		21/07/2022 10:32 AM	Water	ALS: 3 Non ALS: 0	No		X		
013	0356_MW114_220721		21/07/2022 10:45 AM	Water	ALS: 3 Non ALS: 0	No		X		
014	0356_MW115_220721		21/07/2022 11:11 AM	Water	ALS: 3 Non ALS: 0	No		X		
015	0356_MW118_220721		21/07/2022 10:50 AM	Water	ALS: 3 Non ALS: 0	No		X		
016	0356_MW121_220722		22/07/2022 02:11 PM	Water	ALS: 3 Non ALS: 0	No		X		
017	0356_MW124_220720		20/07/2022 03:18 PM	Water	ALS: 3 Non ALS: 0	No		X		
018	0356_MW167_220721		21/07/2022 08:18 AM	Water	ALS: 3 Non ALS: 0	No		X		

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU003 0

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0356_MW187D_220720		20/07/2022 01:50 PM	Water	ALS: 3 Non ALS: 0	No		X		
020	0356_MW187S_220720		20/07/2022 01:28 PM	Water	ALS: 3 Non ALS: 0	No		X		
021	0356_MW188D_220722		20/07/2022 02:01 PM	Water	ALS: 3 Non ALS: 0	No		X		
022	0356_MW188S_220722		22/07/2022 01:16 PM	Water	ALS: 3 Non ALS: 0	No		X		
023	0356_OTH006_220720		20/07/2022 11:30 AM	Water	ALS: 3 Non ALS: 0	No		X		
024	0356_SD002_220721		21/07/2022 09:32 AM	Soil	ALS: 1 Non ALS: 0	No	X			
025	0356_SD003_220721		21/07/2022 12:36 PM	Soil	ALS: 1 Non ALS: 0	No	X			
026	0356_SD004_220719		20/07/2022 07:43 AM	Soil	ALS: 1 Non ALS: 0	No	X			
027	0356_SD005_220719		19/07/2022 01:00 PM	Soil	ALS: 1 Non ALS: 0	No	X			

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0356_SD032_220721		21/07/2022 12:50 PM	Soil	ALS: 1 Non ALS: 0	No	X			
029	0356_SD040_220721		21/07/2022 01:30 PM	Soil	ALS: 1 Non ALS: 0	No	X			
030	0356_SD046_220720		20/07/2022 02:21 PM	Soil	ALS: 1 Non ALS: 0	No	X			
031	0356_SD047_220720		20/07/2022 10:14 AM	Soil	ALS: 1 Non ALS: 0	No	X			
032	0356_SD053_220721		21/07/2022 01:06 PM	Soil	ALS: 1 Non ALS: 0	No	X			
033	0356_SD055_220721		21/07/2022 07:44 AM	Soil	ALS: 1 Non ALS: 0	No	X			
034	0356_SD065_220721		21/07/2022 11:41 AM	Soil	ALS: 1 Non ALS: 0	No	X			
035	0356_SD113_220721		21/07/2022 02:02 PM	Soil	ALS: 1 Non ALS: 0	No	X			
036	0356_SD114_220721		21/07/2022 02:45 PM	Soil	ALS: 1 Non ALS: 0	No	X			

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0356_SD115_220721		21/07/2022 12:03 PM	Soil	ALS: 1 Non ALS: 0	No	X			
038	0356_SD539_220720		20/07/2022 10:47 AM	Soil	ALS: 1 Non ALS: 0	No	X			
039	0356_SD540_220720		20/07/2022 12:26 PM	Soil	ALS: 1 Non ALS: 0	No	X			
040	0356_SD555_220721		21/07/2022 02:31 PM	Soil	ALS: 1 Non ALS: 0	No	X			
041	0356_SW002_220721		21/07/2022 09:33 AM	Water	ALS: 3 Non ALS: 0	No		X		
042	0356_SW003_220721		21/07/2022 12:37 PM	Water	ALS: 3 Non ALS: 0	No		X		
043	0356_SW004_220719		20/07/2022 08:38 AM	Water	ALS: 3 Non ALS: 0	No		X		
044	0356_SW005_220719		19/07/2022 01:00 PM	Water	ALS: 3 Non ALS: 0	No		X		
045	0356_SW026_220721		21/07/2022 01:07 PM	Water	ALS: 3 Non ALS: 0	No		X		

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU003 0

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0356_SW028_220721		21/07/2022 07:43 AM	Water	ALS: 3 Non ALS: 0	No		X		
047	0356_SW032_220721		21/07/2022 12:49 PM	Water	ALS: 3 Non ALS: 0	No		X		
048	0356_SW034_220721		21/07/2022 11:41 AM	Water	ALS: 3 Non ALS: 0	No		X		
049	0356_SW040_220721		21/07/2022 01:30 PM	Water	ALS: 3 Non ALS: 0	No		X		
050	0356_SW064_220720		20/07/2022 02:21 PM	Water	ALS: 3 Non ALS: 0	No		X		
051	0356_SW065_220720		20/07/2022 10:16 AM	Water	ALS: 3 Non ALS: 0	No		X		
052	0356_SW113_220721		21/07/2022 02:03 PM	Water	ALS: 3 Non ALS: 0	No		X		
053	0356_SW114_220721		21/07/2022 03:00 PM	Water	ALS: 3 Non ALS: 0	No		X		
054	0356_SW115_220721		21/07/2022 12:17 PM	Water	ALS: 6 Non ALS: 0	No		X		Extra volume for lab QC's

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0356_SW553_220720		20/07/2022 10:48 AM	Water	ALS: 6 Non ALS: 0	No		X		Extra volume for lab QC
056	0356_SW554_220720		20/07/2022 12:27 PM	Water	ALS: 3 Non ALS: 0	No		X		
057	0356_SW555_220721		21/07/2022 02:58 PM	Water	ALS: 3 Non ALS: 0	No		X		
058	0356_QC300_220719		19/07/2022 03:41 PM	Water	ALS: 3 Non ALS: 0	No		X		
059	0356_QC100_220720		20/07/2022 10:15 AM	Soil	ALS: 1 Non ALS: 0	No	X			
060	0356_QC101_220720		20/07/2022 10:18 AM	Water	ALS: 3 Non ALS: 0	No		X		
061	0356_QC102_220720		20/07/2022 01:27 PM	Water	ALS: 3 Non ALS: 0	No		X		
062	0356_QC103_220721		21/07/2022 08:39 AM	Water	ALS: 3 Non ALS: 0	No		X		
063	0356_QC105_220721		21/07/2022 09:33 AM	Soil	ALS: 1 Non ALS: 0	No	X			

CHAIN OF CUSTODY

(ALS) COC#: **40257** *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER [redacted]
PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
064	0356_QC104_220721		21/07/2022 09:34 AM	Water	ALS: 3 Non ALS: 0	No		X		
065	0356_QC302_220721		21/07/2022 03:10 PM	Water	ALS: 3 Non ALS: 0	No		X		
066	0356_QC303_220722		22/07/2022 02:12 PM	Water	ALS: 3 Non ALS: 0	No		X		
067	0356_QC106_220722		22/07/2022 02:12 PM	Water	ALS: 3 Non ALS: 0	No		X		
068	0356_QC301_220720		20/07/2022 04:25 PM	Water	ALS: 0 Non ALS: 0	No		X		Sample bottles are in esky - bottles not scanned up.

CHAIN OF CUSTODY

ALS COC#: 40257 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0356_MW008_220721	HDPE (no PTFE)	20 mL	00350821042926	Grey	No	
001	0356_MW008_220721	HDPE (no PTFE)	20 mL	00350821042740	Grey	No	
001	0356_MW008_220721	HDPE (no PTFE)	20 mL	00350821042965	Grey	No	
002	0356_MW011_220721	HDPE (no PTFE)	20 mL	00350821042813	Grey	No	
002	0356_MW011_220721	HDPE (no PTFE)	20 mL	00350821042955	Grey	No	
002	0356_MW011_220721	HDPE (no PTFE)	20 mL	00350821042814	Grey	No	
003	0356_MW048_220721	HDPE (no PTFE)	20 mL	00350821042856	Grey	No	
003	0356_MW048_220721	HDPE (no PTFE)	20 mL	00350821042867	Grey	No	
003	0356_MW048_220721	HDPE (no PTFE)	20 mL	00350821042735	Grey	No	
004	0356_MW050_220721	HDPE (no PTFE)	20 mL	00350821042835	Grey	No	
004	0356_MW050_220721	HDPE (no PTFE)	20 mL	00350821042884	Grey	No	
004	0356_MW050_220721	HDPE (no PTFE)	20 mL	00350821042876	Grey	No	
005	0356_MW052_220721	HDPE (no PTFE)	20 mL	00350821042948	Grey	No	
005	0356_MW052_220721	HDPE (no PTFE)	20 mL	00350821042786	Grey	No	
005	0356_MW052_220721	HDPE (no PTFE)	20 mL	00350821042769	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042847	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042865	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042905	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042861	Grey	No	
006	0356_MW059_220721	HDPE (no PTFE)	20 mL	00350821042859	Grey	No	
007	0356_MW063_220719	HDPE (no PTFE)	20 mL	00350821019088	Grey	No	
007	0356_MW063_220719	HDPE (no PTFE)	20 mL	00350821018880	Grey	No	
007	0356_MW063_220719	HDPE (no PTFE)	20 mL	00350821018881	Grey	No	
008	0356_MW071_220719	HDPE (no PTFE)	20 mL	00350821018882	Grey	No	
008	0356_MW071_220719	HDPE (no PTFE)	20 mL	00350821019024	Grey	No	
008	0356_MW071_220719	HDPE (no PTFE)	20 mL	00350821018943	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU003 0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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:

009	0356_MW073_220719	HDPE (no PTFE)	20 mL	00350821018896	Grey	No	
009	0356_MW073_220719	HDPE (no PTFE)	20 mL	00350821018852	Grey	No	
009	0356_MW073_220719	HDPE (no PTFE)	20 mL	00350821018953	Grey	No	
010	0356_MW102_220721	HDPE (no PTFE)	20 mL	00350821042696	Grey	No	
010	0356_MW102_220721	HDPE (no PTFE)	20 mL	00350821042802	Grey	No	
010	0356_MW102_220721	HDPE (no PTFE)	20 mL	00350821042714	Grey	No	
011	0356_MW109_220721	HDPE (no PTFE)	20 mL	00350821042949	Grey	No	
011	0356_MW109_220721	HDPE (no PTFE)	20 mL	00350821042762	Grey	No	
011	0356_MW109_220721	HDPE (no PTFE)	20 mL	00350821019057	Grey	No	
012	0356_MW110_220721	HDPE (no PTFE)	20 mL	00350821042702	Grey	No	
012	0356_MW110_220721	HDPE (no PTFE)	20 mL	00350821042827	Grey	No	
012	0356_MW110_220721	HDPE (no PTFE)	20 mL	00350821042749	Grey	No	
013	0356_MW114_220721	HDPE (no PTFE)	20 mL	00350821042846	Grey	No	
013	0356_MW114_220721	HDPE (no PTFE)	20 mL	00350821042852	Grey	No	
013	0356_MW114_220721	HDPE (no PTFE)	20 mL	00350821042705	Grey	No	
014	0356_MW115_220721	HDPE (no PTFE)	20 mL	00350821018845	Grey	No	
014	0356_MW115_220721	HDPE (no PTFE)	20 mL	00350821042932	Grey	No	
014	0356_MW115_220721	HDPE (no PTFE)	20 mL	00350821042953	Grey	No	
015	0356_MW118_220721	HDPE (no PTFE)	20 mL	00350821042936	Grey	No	
015	0356_MW118_220721	HDPE (no PTFE)	20 mL	00350821042715	Grey	No	
015	0356_MW118_220721	HDPE (no PTFE)	20 mL	00350821042938	Grey	No	
016	0356_MW121_220722	HDPE (no PTFE)	20 mL	00350821042807	Grey	No	
016	0356_MW121_220722	HDPE (no PTFE)	20 mL	00350821042798	Grey	No	
016	0356_MW121_220722	HDPE (no PTFE)	20 mL	00350821042879	Grey	No	
017	0356_MW124_220720	HDPE (no PTFE)	20 mL	00350821042841	Grey	No	
017	0356_MW124_220720	HDPE (no PTFE)	20 mL	00350821042839	Grey	No	
017	0356_MW124_220720	HDPE (no PTFE)	20 mL	00350821042912	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME: .	DATE TIME: 25/07/22 1630	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	0356_MW167_220721	HDPE (no PTFE)	20 mL	00350821042698	Grey	No	
018	0356_MW167_220721	HDPE (no PTFE)	20 mL	00350821042803	Grey	No	
018	0356_MW167_220721	HDPE (no PTFE)	20 mL	00350821042758	Grey	No	
019	0356_MW187D_220720	HDPE (no PTFE)	20 mL	00350821042892	Grey	No	
019	0356_MW187D_220720	HDPE (no PTFE)	20 mL	00350821042829	Grey	No	
019	0356_MW187D_220720	HDPE (no PTFE)	20 mL	00350821042719	Grey	No	
020	0356_MW187S_220720	HDPE (no PTFE)	20 mL	00350821042868	Grey	No	
020	0356_MW187S_220720	HDPE (no PTFE)	20 mL	00350821042685	Grey	No	
020	0356_MW187S_220720	HDPE (no PTFE)	20 mL	00350821042858	Grey	No	
021	0356_MW188D_220722	HDPE (no PTFE)	20 mL	00350821042957	Grey	No	
021	0356_MW188D_220722	HDPE (no PTFE)	20 mL	00350821042860	Grey	No	
021	0356_MW188D_220722	HDPE (no PTFE)	20 mL	00350821042850	Grey	No	
022	0356_MW188S_220722	HDPE (no PTFE)	20 mL	00350821042796	Grey	No	
022	0356_MW188S_220722	HDPE (no PTFE)	20 mL	00350821042734	Grey	No	
022	0356_MW188S_220722	HDPE (no PTFE)	20 mL	00350821042683	Grey	No	
023	0356_OTH006_220720	HDPE (no PTFE)	20 mL	00350821042944	Grey	No	
023	0356_OTH006_220720	HDPE (no PTFE)	20 mL	00350821018879	Grey	No	
023	0356_OTH006_220720	HDPE (no PTFE)	20 mL	00350821018949	Grey	No	
024	0356_SD002_220721	HDPE Soil Jar	200 mL	00620322018653	Grey	No	
025	0356_SD003_220721	HDPE Soil Jar	200 mL	00620322018601	Grey	No	
026	0356_SD004_220719	HDPE Soil Jar	200 mL	00621121021128	Grey	No	
027	0356_SD005_220719	HDPE Soil Jar	200 mL	00621121021191	Grey	No	
028	0356_SD032_220721	HDPE Soil Jar	200 mL	00620322018662	Grey	No	
029	0356_SD040_220721	HDPE Soil Jar	200 mL	00620322018640	Grey	No	
030	0356_SD046_220720	HDPE Soil Jar	200 mL	00620322051393	Grey	No	
031	0356_SD047_220720	HDPE Soil Jar	200 mL	00621121021108	Grey	No	
032	0356_SD053_220721	HDPE Soil Jar	200 mL	00620322018629	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 40257 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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:

033	0356_SD055_220721	HDPE Soil Jar	200 mL	00620322052093	Grey	No	
034	0356_SD065_220721	HDPE Soil Jar	200 mL	00621121021170	Grey	No	
035	0356_SD113_220721	HDPE Soil Jar	200 mL	00621121021178	Grey	No	
036	0356_SD114_220721	HDPE Soil Jar	200 mL	00620322018655	Grey	No	
037	0356_SD115_220721	HDPE Soil Jar	200 mL	00620322052102	Grey	No	
038	0356_SD539_220720	HDPE Soil Jar	200 mL	00620322018596	Grey	No	
039	0356_SD540_220720	HDPE Soil Jar	200 mL	00620322018635	Grey	No	
040	0356_SD555_220721	HDPE Soil Jar	200 mL	00620322018621	Grey	No	
041	0356_SW002_220721	HDPE (no PTFE)	20 mL	00350821042875	Grey	No	
041	0356_SW002_220721	HDPE (no PTFE)	20 mL	00350821042752	Grey	No	
041	0356_SW002_220721	HDPE (no PTFE)	20 mL	00350821042890	Grey	No	
042	0356_SW003_220721	HDPE (no PTFE)	20 mL	00350821042765	Grey	No	
042	0356_SW003_220721	HDPE (no PTFE)	20 mL	00350821042908	Grey	No	
042	0356_SW003_220721	HDPE (no PTFE)	20 mL	00350821042916	Grey	No	
043	0356_SW004_220719	HDPE (no PTFE)	20 mL	00350821019094	Grey	No	
043	0356_SW004_220719	HDPE (no PTFE)	20 mL	00350821018829	Grey	No	
043	0356_SW004_220719	HDPE (no PTFE)	20 mL	00350821018931	Grey	No	
044	0356_SW005_220719	HDPE (no PTFE)	20 mL	00350821018941	Grey	No	
044	0356_SW005_220719	HDPE (no PTFE)	20 mL	00350821019063	Grey	No	
044	0356_SW005_220719	HDPE (no PTFE)	20 mL	00350821018989	Grey	No	
045	0356_SW026_220721	HDPE (no PTFE)	20 mL	00350821042823	Grey	No	
045	0356_SW026_220721	HDPE (no PTFE)	20 mL	00350821042899	Grey	No	
045	0356_SW026_220721	HDPE (no PTFE)	20 mL	00350821042820	Grey	No	
046	0356_SW028_220721	HDPE (no PTFE)	20 mL	00350821042745	Grey	No	
046	0356_SW028_220721	HDPE (no PTFE)	20 mL	00350821042713	Grey	No	
046	0356_SW028_220721	HDPE (no PTFE)	20 mL	00350821042832	Grey	No	
047	0356_SW032_220721	HDPE (no PTFE)	20 mL	00350821042843	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]
PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]
QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	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:

047	0356_SW032_220721	HDPE (no PTFE)	20 mL	00350821042795	Grey	No	
047	0356_SW032_220721	HDPE (no PTFE)	20 mL	00350821042806	Grey	No	
048	0356_SW034_220721	HDPE (no PTFE)	20 mL	00350821042799	Grey	No	
048	0356_SW034_220721	HDPE (no PTFE)	20 mL	00350821042952	Grey	No	
048	0356_SW034_220721	HDPE (no PTFE)	20 mL	00350821042763	Grey	No	
049	0356_SW040_220721	HDPE (no PTFE)	20 mL	00350821042818	Grey	No	
049	0356_SW040_220721	HDPE (no PTFE)	20 mL	00350821042907	Grey	No	
049	0356_SW040_220721	HDPE (no PTFE)	20 mL	00350821042718	Grey	No	
050	0356_SW064_220720	HDPE (no PTFE)	20 mL	00350821042828	Grey	No	
050	0356_SW064_220720	HDPE (no PTFE)	20 mL	00350821042848	Grey	No	
050	0356_SW064_220720	HDPE (no PTFE)	20 mL	00350821042854	Grey	No	
051	0356_SW065_220720	HDPE (no PTFE)	20 mL	00350821042951	Grey	No	
051	0356_SW065_220720	HDPE (no PTFE)	20 mL	00350821042720	Grey	No	
051	0356_SW065_220720	HDPE (no PTFE)	20 mL	00350821042784	Grey	No	
052	0356_SW113_220721	HDPE (no PTFE)	20 mL	00350821042976	Grey	No	
052	0356_SW113_220721	HDPE (no PTFE)	20 mL	00350821042739	Grey	No	
052	0356_SW113_220721	HDPE (no PTFE)	20 mL	00350821042935	Grey	No	
053	0356_SW114_220721	HDPE (no PTFE)	20 mL	00350821042968	Grey	No	
053	0356_SW114_220721	HDPE (no PTFE)	20 mL	00350821042922	Grey	No	
053	0356_SW114_220721	HDPE (no PTFE)	20 mL	00350821042748	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042853	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042872	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042906	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042764	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042960	Grey	No	
054	0356_SW115_220721	HDPE (no PTFE)	20 mL	00350821042746	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042811	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 40257 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/7/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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:

055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821019085	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042937	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042888	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042733	Grey	No	
055	0356_SW553_220720	HDPE (no PTFE)	20 mL	00350821042773	Grey	No	
056	0356_SW554_220720	HDPE (no PTFE)	20 mL	00350821042723	Grey	No	
056	0356_SW554_220720	HDPE (no PTFE)	20 mL	00350821042770	Grey	No	
056	0356_SW554_220720	HDPE (no PTFE)	20 mL	00350821042842	Grey	No	
057	0356_SW555_220721	HDPE (no PTFE)	20 mL	00350821042817	Grey	No	
057	0356_SW555_220721	HDPE (no PTFE)	20 mL	00350821042776	Grey	No	
057	0356_SW555_220721	HDPE (no PTFE)	20 mL	00350821042891	Grey	No	
058	0356_QC300_220719	HDPE (no PTFE)	20 mL	00350821019075	Grey	No	
058	0356_QC300_220719	HDPE (no PTFE)	20 mL	00350821018986	Grey	No	
058	0356_QC300_220719	HDPE (no PTFE)	20 mL	00350821019066	Grey	No	
059	0356_QC100_220720	HDPE Soil Jar	200 mL	00621121021149	Grey	No	
060	0356_QC101_220720	HDPE (no PTFE)	20 mL	00350821042691	Grey	No	
060	0356_QC101_220720	HDPE (no PTFE)	20 mL	00350821042929	Grey	No	
060	0356_QC101_220720	HDPE (no PTFE)	20 mL	00350821042824	Grey	No	
061	0356_QC102_220720	HDPE (no PTFE)	20 mL	00350821042964	Grey	No	
061	0356_QC102_220720	HDPE (no PTFE)	20 mL	00350821042866	Grey	No	
061	0356_QC102_220720	HDPE (no PTFE)	20 mL	00350821042732	Grey	No	
062	0356_QC103_220721	HDPE (no PTFE)	20 mL	00350821042730	Grey	No	
062	0356_QC103_220721	HDPE (no PTFE)	20 mL	00350821042767	Grey	No	
062	0356_QC103_220721	HDPE (no PTFE)	20 mL	00350821042808	Grey	No	
063	0356_QC105_220721	HDPE Soil Jar	200 mL	00620322018619	Grey	No	
064	0356_QC104_220721	HDPE (no PTFE)	20 mL	00350821042780	Grey	No	
064	0356_QC104_220721	HDPE (no PTFE)	20 mL	00350821042787	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 40257 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 25/07/22 1630	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP

SITE: 0356

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]
PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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:			

064	0356_QC104_220721	HDPE (no PTFE)	20 mL	00350821042729	Grey	No	
065	0356_QC302_220721	HDPE (no PTFE)	20 mL	00350821042942	Grey	No	
065	0356_QC302_220721	HDPE (no PTFE)	20 mL	00350821042945	Grey	No	
065	0356_QC302_220721	HDPE (no PTFE)	20 mL	00350821042791	Grey	No	
066	0356_QC303_220722	HDPE (no PTFE)	20 mL	00350821042744	Grey	No	
066	0356_QC303_220722	HDPE (no PTFE)	20 mL	00350821042943	Grey	No	
066	0356_QC303_220722	HDPE (no PTFE)	20 mL	00350821042825	Grey	No	
067	0356_QC106_220722	HDPE (no PTFE)	20 mL	00350821042870	Grey	No	
067	0356_QC106_220722	HDPE (no PTFE)	20 mL	00350821042826	Grey	No	
067	0356_QC106_220722	HDPE (no PTFE)	20 mL	00350821042979	Grey	No	

Total Bottle Count: ALS: 171, Non ALS: 0

[redacted]

From: [redacted]
Sent: Monday, 25 July 2022 10:50 AM
To: [redacted]
Subject: AECOM Samples splitting work order: ALS Compass COC#40257

Importance: High

[redacted]

Can you please split these samples into a separate workorder as per the instructions below?

Kind regards,

[redacted]
Client Services Coordinator, Environmental
Sydney, NSW

[redacted]
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

alsglobal.com

From: [redacted]
Sent: Monday, 25 July 2022 10:42 AM
[redacted]
Subject: [EXTERNAL] - splitting work order: ALS Compass COC#40257

Hi ALS team,

I have just approved an ALS Compass COC (#40257), for the project NSW_0356_PFASOMP, but have now realised that some samples should have been listed under a separate COC as they need to be reported to a private entity.

Can you please split the work order into 2 separate work orders? One with the following samples:

	Field ID
16	0356_MW121_220722
17	0356_MW124_220720

19	0356_MW187D_220720
20	0356_MW187S_220720
21	0356_MW188D_220722
22	0356_MW188S_220722
23	0356_OTH006_220720
30	0356_SD046_220720
31	0356_SD047_220720
50	0356_SW064_220720
51	0356_SW065_220720
38	0356_SD539_220720
39	0356_SD540_220720
55	0356_SW553_220720
56	0356_SW554_220720

Ideally, I would like a proper lab report # for each (not just an A and B version). Let me know if this can be done & if I need to provide more detail/ information.

The samples are being delivered this morning so they would have not been processed by sample receipt yet.

AECOM
aecom.com

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ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2226474**	Page	: 1 of 13
Amendment	: **2**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_22	Date Samples Received	: 25-Jul-2022 16:30
Order number	: 60612562_8.1	Date Analysis Commenced	: 27-Jul-2022
C-O-C number	: ----	Issue Date	: 10-Aug-2022 13:15
Sampler	: [redacted]		
Site	: 0356		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 15		
No. of samples analysed	: 15		

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

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.
- Amendment (03/08/2022): This report has been amended to alter the project name. All analysis results are as per the previous report.
- Amendment (10/08/2022): This report has been amended following a change to the EP231 results reported for samples #017 & #021 as per client request.
- 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: **GROUNDWATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0356_MW121_220722	0356_MW124_220720	0356_MW187D_220720	0356_MW187S_220720	0356_MW188D_220722
				Sampling date / time	22-Jul-2022 00:00	20-Jul-2022 00:00	20-Jul-2022 00:00	20-Jul-2022 00:00	22-Jul-2022 13:00
					ES2226474-016	ES2226474-017	ES2226474-019	ES2226474-020	ES2226474-021
					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	**0.07**	<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: **GROUNDWATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0356_MW121_220722	0356_MW124_220720	0356_MW187D_220720	0356_MW187S_220720	0356_MW188D_220722
				Sampling date / time	22-Jul-2022 00:00	20-Jul-2022 00:00	20-Jul-2022 00:00	20-Jul-2022 00:00	22-Jul-2022 13:00
					ES2226474-016	ES2226474-017	ES2226474-019	ES2226474-020	ES2226474-021
					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	**0.32**
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	**0.07**	<0.01	<0.01	**0.34**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.07**	<0.01	<0.01	**0.02**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.07**	<0.01	<0.01	**0.34**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**98.1**	**94.6**	**91.0**	**95.7**	**92.0**
13C8-PFOA	----	0.02	%		**92.4**	**94.9**	**94.9**	**96.2**	**101**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0356_MW188S_220722	----	----	----	----
				Sampling date / time	22-Jul-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2226474-022	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0356_MW188S_220722	----	----	----	----
				Sampling date / time	22-Jul-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2226474-022	--------	--------	--------	--------
					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	%		**95.1**	----	----	----	----
13C8-PFOA	----	0.02	%		**90.1**	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0356_SD046_220720	0356_SD047_220720	0356_SD539_220720	0356_SD540_220720	----
			Sampling date / time	20-Jul-2022 00:00	20-Jul-2022 00:00	20-Jul-2022 00:00	20-Jul-2022 00:00	----
Compound	CAS Number	LOR	Unit	ES2226474-030	ES2226474-031	ES2226474-038	ES2226474-039	--------
				Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**56.9**	**41.3**	**21.1**	**29.9**	----
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	**0.0003**	----
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	**0.0034**	**0.0075**	**0.0016**	**0.0120**	----
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: SEDIMENT (Matrix: SOIL)				Sample ID	0356_SD046_220720	0356_SD047_220720	0356_SD539_220720	0356_SD540_220720	----
				Sampling date / time	20-Jul-2022 00:00	20-Jul-2022 00:00	20-Jul-2022 00:00	20-Jul-2022 00:00	----
Compound	CAS Number	LOR	Unit		ES2226474-030	ES2226474-031	ES2226474-038	ES2226474-039	--------
					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	<0.0005	----
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		**0.0036**	**0.0075**	**0.0016**	**0.0125**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0036**	**0.0075**	**0.0016**	**0.0123**	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0036**	**0.0075**	**0.0016**	**0.0125**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**82.5**	**85.0**	**83.0**	**93.5**	----
13C8-PFOA	----	0.0002	%		**93.5**	**84.5**	**89.5**	**89.0**	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW064_220720	0356_SW065_220720	0356_SW553_220720	0356_SW554_220720	----
				Sampling date / time	20-Jul-2022 00:00	20-Jul-2022 00:00	20-Jul-2022 00:00	20-Jul-2022 00:00	----
Compound	CAS Number	LOR	Unit		ES2226474-050	ES2226474-051	ES2226474-055	ES2226474-056	--------
					Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.02**	**0.01**	**0.07**	**0.04**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.02**	**0.01**	**0.08**	**0.05**	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW064_220720	0356_SW065_220720	0356_SW553_220720	0356_SW554_220720	----
				Sampling date / time	20-Jul-2022 00:00	20-Jul-2022 00:00	20-Jul-2022 00:00	20-Jul-2022 00:00	----
Compound	CAS Number	LOR	Unit		ES2226474-050	ES2226474-051	ES2226474-055	ES2226474-056	--------
					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		**0.04**	**0.02**	**0.15**	**0.09**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.04**	**0.02**	**0.15**	**0.09**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.04**	**0.02**	**0.15**	**0.09**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**87.1**	**89.2**	**89.1**	**93.8**	----
13C8-PFOA	----	0.02	%		**95.1**	**101**	**106**	**95.8**	----

Analytical Results

Sub-Matrix: WASTEWATER (Matrix: WATER)				Sample ID	0356_OTH006_220720	----	----	----	----
				Sampling date / time	20-Jul-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2226474-023	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.11**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.12**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.03**	----	----	----	----
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: WASTEWATER (Matrix: WATER)				Sample ID	0356_OTH006_220720	----	----	----	----
				Sampling date / time	20-Jul-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2226474-023	--------	--------	--------	--------
					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		**0.27**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.23**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.27**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.3**	----	----	----	----
13C8-PFOA	----	0.02	%		**101**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: WASTEWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2226474**	Page	: 1 of 10
Amendment	: **2**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_22	Date Samples Received	: 25-Jul-2022
Order number	: 60612562_8.1	Date Analysis Commenced	: 27-Jul-2022
C-O-C number	: ----	Issue Date	: 10-Aug-2022
Sampler	: [redacted]		
Site	: 0356		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 15		
No. of samples analysed	: 15		

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
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 4486222)									
ES2226451-002	Anonymous	EA055: Moisture Content	----	0.1	%	4.0	4.2	5.0	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4484899)									
EP2209135-002	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
ES2226191-063	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	0.0017	0.0019	11.2	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	0.0345	0.0362	4.9	0% - 20%
		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: 4484899)									
EP2209135-002	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: 4484899) - continued									
EP2209135-002	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
ES2226191-063	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	0.0003	0.0004	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0005	0.0004	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: 4484899)									
EP2209135-002	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
ES2226191-063	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: 4484899)									

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: 4484899) - continued									
EP2209135-002	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
ES2226191-063	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 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: 4488883)									
ES2226474-055	0356_SW553_220720	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.07	0.07	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.08	0.09	13.0	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: 4488883)									
ES2226474-055	0356_SW553_220720	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: 4488883)									
ES2226474-055	0356_SW553_220720	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: 4488883) - continued									
ES2226474-055	0356_SW553_220720	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: 4488883)									
ES2226474-055	0356_SW553_220720	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: 4488883)									
ES2226474-055	0356_SW553_220720	EP231X: Sum of PFAS	----	0.01	µg/L	0.15	0.16	6.5	0% - 50%

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: 4484899)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.0	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.0	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4484899)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	73.2	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.4	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.8	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.9	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4484899)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.3	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	80.1	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	80.0	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	82.0	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4484899)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	79.6	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	74.0	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	88.4	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: 4484899) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.0	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: 4488883)								
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	85.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	79.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	92.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4488883)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	76.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	86.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.8	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	101	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	99.8	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4488883)								
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	101	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.8	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	89.8	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	108	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	89.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4488883)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	80.4	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	89.2	64.0	140

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4488883) - continued								
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	76.0	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**

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: 4484899)							
EP2209135-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	75.2	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	81.6	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	76.4	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	73.2	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	73.2	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	82.4	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4484899)							
EP2209135-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	74.6	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	76.4	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	94.4	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	78.8	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	84.4	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	74.8	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	74.8	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	80.8	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	78.8	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	78.0	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	85.6	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4484899)							
EP2209135-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	89.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	93.4	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	79.6	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	88.0	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	83.2	65.1	134

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: 4484899) - continued							
EP2209135-002	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	88.8	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	77.2	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4484899)							
EP2209135-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	79.6	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	74.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	78.4	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	79.2	69.2	143

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: 4488883)							
ES2226474-055	0356_SW553_220720	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	100	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	85.2	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	77.2	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	77.4	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	84.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	77.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4488883)							
ES2226474-055	0356_SW553_220720	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	77.0	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	84.8	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	90.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	81.0	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	98.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	99.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	106	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	88.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	97.8	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4488883)							
ES2226474-055	0356_SW553_220720	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	111	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	100	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	97.6	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.4	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4488883) - continued							
ES2226474-055	0356_SW553_220720	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	112	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	104	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	113	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4488883)							
ES2226474-055	0356_SW553_220720	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	84.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	91.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	95.4	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	72.6	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2226474**	Page	: 1 of 6
Amendment	: **2**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_22	Date Samples Received	: 25-Jul-2022
Site	: 0356	Issue Date	: 10-Aug-2022
Sampler	: [redacted]	No. of samples received	: 15
Order number	: 60612562_8.1	No. of samples analysed	: 15

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	
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **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)							
0356_SD046_220720, 0356_SD047_220720, 0356_SD539_220720, 0356_SD540_220720	**20-Jul-2022**	**----**	----	----	**28-Jul-2022**	03-Aug-2022	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0356_SD046_220720, 0356_SD047_220720, 0356_SD539_220720, 0356_SD540_220720	**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
0356_SD046_220720, 0356_SD047_220720, 0356_SD539_220720, 0356_SD540_220720	**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
0356_SD046_220720, 0356_SD047_220720, 0356_SD539_220720, 0356_SD540_220720	**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0356_SD046_220720, 0356_SD047_220720, 0356_SD539_220720, 0356_SD540_220720	**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
0356_SD046_220720, 0356_SD047_220720, 0356_SD539_220720, 0356_SD540_220720	**20-Jul-2022**	**28-Jul-2022**	16-Jan-2023	✓	**29-Jul-2022**	06-Sep-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

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)								
0356_MW124_220720, 0356_MW187S_220720, 0356_SW064_220720, 0356_SW553_220720,	0356_MW187D_220720, 0356_OTH006_220720, 0356_SW065_220720, 0356_SW554_220720	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
HDPE (no PTFE) (EP231X)								
0356_MW121_220722, 0356_MW188S_220722	0356_MW188D_220722,	**22-Jul-2022**	**30-Jul-2022**	18-Jan-2023	✓	**30-Jul-2022**	18-Jan-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0356_MW124_220720, 0356_MW187S_220720, 0356_SW064_220720, 0356_SW553_220720,	0356_MW187D_220720, 0356_OTH006_220720, 0356_SW065_220720, 0356_SW554_220720	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
HDPE (no PTFE) (EP231X)								
0356_MW121_220722, 0356_MW188S_220722	0356_MW188D_220722,	**22-Jul-2022**	**30-Jul-2022**	18-Jan-2023	✓	**30-Jul-2022**	18-Jan-2023	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0356_MW124_220720, 0356_MW187S_220720, 0356_SW064_220720, 0356_SW553_220720,	0356_MW187D_220720, 0356_OTH006_220720, 0356_SW065_220720, 0356_SW554_220720	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
HDPE (no PTFE) (EP231X)								
0356_MW121_220722, 0356_MW188S_220722	0356_MW188D_220722,	**22-Jul-2022**	**30-Jul-2022**	18-Jan-2023	✓	**30-Jul-2022**	18-Jan-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0356_MW124_220720, 0356_MW187S_220720, 0356_SW064_220720, 0356_SW553_220720,	0356_MW187D_220720, 0356_OTH006_220720, 0356_SW065_220720, 0356_SW554_220720	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
HDPE (no PTFE) (EP231X)								
0356_MW121_220722, 0356_MW188S_220722	0356_MW188D_220722,	**22-Jul-2022**	**30-Jul-2022**	18-Jan-2023	✓	**30-Jul-2022**	18-Jan-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) 0356_MW124_220720, 0356_MW187D_220720, 0356_MW187S_220720, 0356_OTH006_220720, 0356_SW064_220720, 0356_SW065_220720, 0356_SW553_220720, 0356_SW554_220720	**20-Jul-2022**	**30-Jul-2022**	16-Jan-2023	✓	**30-Jul-2022**	16-Jan-2023	✓
HDPE (no PTFE) (EP231X) 0356_MW121_220722, 0356_MW188D_220722, 0356_MW188S_220722	**22-Jul-2022**	**30-Jul-2022**	18-Jan-2023	✓	**30-Jul-2022**	18-Jan-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	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**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	1	20	**5.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**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.

AECOM

Chain of Custody

AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney, NSW, 2000
PO Box Q410, QVB PO, Sydney, NSW, 1230
T +61 2 8934 1000
F +61 2 8934 0001
[redacted]

Laboratory Details
Lab. Name: Envirolab Services
Lab. Address: 12 Ashley St, Chatswood NSW 2067, Australia
Contact Name:
Lab. Ref:
Tel: 02 9449 0181
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No:

Sampled By: [redacted]
Project Name: NSW_0356_PFASOMP
AECOM Project #: 60612562_8.1
Purchase Order No:

Specifications: Please report in ESdat format

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days) Standard turn around time	
2. Fast TAT Guarantee Required? No	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	

6. Report Format: ESdat
7. Project Manager: Geoff Tredinnick

Analysis Request: PFAS Extended Suite

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	sed	Preservation: filt'ed	acid	ice	other	Container (No. & type)	PFAS Extended Suite
1	0356_QC200_220720	20/7/22			X			X		1x Jar	X
2	0356_QC201_220720	20/7/22		X				X		3x bottles	X
3	0356_QC202_220720	20/7/22		X				X		3x bottles	X
4	0356_QC203_220721	21/7/22		X				X		3x bottles	X
5	0356_QC204_220721	21/7/22		X				X		3x bottles	X
6	0356_QC205_220721	21/7/22			X			X		1x Jar	X
7	0356_QC206_220722	22/7/22		X				X		3x bottles	X
GB 8	0365_QC101_220720										

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 301227

Date Received: 25.07.22
Time Received: 11:30
Received by: G Burnett
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Comments: Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME

Temp. received: °C

Report & Invoice: [redacted]

Lab Report No: Esky ID:

Relinquished by: [redacted]	Signed:	Date: 22/7/22	Relinquished by:	Signed:	Date:
Received by:	Signed:	Date:	Received by:	Signed:	Date:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	AECOM Australia Pty Ltd (Sydney)
Attention	[redacted]

Sample Login Details

Your reference	60612562_8.1, NSW_0356_PFASOMP
Envirolab Reference	301227
Date Sample Received	25/07/2022
Date Instructions Received	25/07/2022
Date Results Expected to be Reported	01/08/2022

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	2 Sediment, 5 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

[redacted]

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	PFAS in Waters Extended	PFAS in Soils Extended
0356_QC200_220720		✓
0356_QC201_220720	✓	
0356_QC202_220720	✓	
0356_QC203_220721	✓	
0356_QC204_220721	✓	
0356_QC205_220721		✓
0356_QC206_220722	✓	

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Envirolab Services Pty Ltd
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12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 301227

Client Details

Client	AECOM Australia Pty Ltd (Sydney)
Attention	[redacted]
Address	PO Box Q410, QVB Post Office, Sydney, NSW, 1230

Sample Details

Your Reference	**60612562_8.1, NSW_0356_PFASOMP**
Number of Samples	2 Sediment, 5 Water
Date samples received	25/07/2022
Date completed instructions received	25/07/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	01/08/2022
Date of Issue	28/07/2022

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By

[redacted]

Authorised By

[redacted]

PFAS in Waters Extended						
Our Reference		301227-2	301227-3	301227-4	301227-5	301227-7
Your Reference	UNITS	0356_QC201_220720	0356_QC202_220720	0356_QC203_220721	0356_QC204_220721	0356_QC206_220722
Date Sampled		20/07/2022	20/07/2022	21/07/2022	21/07/2022	22/07/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022
Date analysed	-	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	0.21	0.02	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	0.31	0.02	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.02	<0.01	2.6	0.24	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	0.02	0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.02	<0.01	0.02	0.42	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	0.04	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	0.05	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	0.23	0.04	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	0.05	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	0.06	0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	101	100	98	101	101
Surrogate $^{13}C_2$ *PFOA*	%	113	120	117	111	114
Extracted ISTD $^{13}C_3$ *PFBS*	%	97	85	95	93	88
Extracted ISTD $^{18}O_2$ *PFHxS*	%	94	96	95	99	104
Extracted ISTD $^{13}C_4$ *PFOS*	%	98	94	103	99	98

PFAS in Waters Extended						
Our Reference		301227-2	301227-3	301227-4	301227-5	301227-7
Your Reference	UNITS	0356_QC201_220720	0356_QC202_220720	0356_QC203_220721	0356_QC204_220721	0356_QC206_220722
Date Sampled		20/07/2022	20/07/2022	21/07/2022	21/07/2022	22/07/2022
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_4$ *PFBA*	%	100	79	121	89	95
Extracted ISTD $^{13}C_3$ *PFPeA*	%	97	68	97	96	93
Extracted ISTD $^{13}C_2$ *PFHxA*	%	105	77	94	104	108
Extracted ISTD $^{13}C_4$ *PFHpA*	%	111	78	106	108	110
Extracted ISTD $^{13}C_4$ *PFOA*	%	106	72	102	106	105
Extracted ISTD $^{13}C_5$ *PFNA*	%	126	91	131	123	121
Extracted ISTD $^{13}C_2$ *PFDA*	%	119	93	125	122	123
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	128	92	125	126	129
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	109	83	118	105	104
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	89	79	90	82	79
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	115	51	97	121	120
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	111	37	89	103	112
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	119	48	105	116	119
Extracted ISTD $^{13}C_8$ *FOSA*	%	103	77	96	103	105
Extracted ISTD d_3 *N MeFOSA*	%	111	98	102	108	109
Extracted ISTD d_5 *N EtFOSA*	%	113	107	105	109	112
Extracted ISTD d_7 *N MeFOSE*	%	102	94	96	105	104
Extracted ISTD d_9 *N EtFOSE*	%	98	96	97	101	102
Extracted ISTD d_3 *N MeFOSAA*	%	113	60	108	111	113
Extracted ISTD d_5 *N EtFOSAA*	%	118	56	117	109	104
Total Positive PFHxS & PFOS	µg/L	0.05	<0.01	2.7	0.66	<0.01
Total Positive PFOA & PFOS	µg/L	0.02	<0.01	0.08	0.43	<0.01
Total Positive PFAS	µg/L	0.05	<0.01	3.6	0.76	<0.01

PFAS in Soils Extended			
Our Reference		301227-1	301227-6
Your Reference	UNITS	0356_QC200_220720	0356_QC205_220721
Date Sampled		20/07/2022	21/07/2022
Type of sample		Sediment	Sediment
Date prepared	-	27/07/2022	27/07/2022
Date analysed	-	27/07/2022	27/07/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.2	1.7
Perfluoroheptanesulfonic acid	µg/kg	<0.1	0.2
Perfluorooctanesulfonic acid PFOS	µg/kg	9.4	37
Perfluorodecanesulfonic acid	µg/kg	<0.2	0.3
Perfluorobutanoic acid	µg/kg	<0.2	0.2
Perfluoropentanoic acid	µg/kg	<0.2	0.2
Perfluorohexanoic acid	µg/kg	<0.1	0.2
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.2	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	102	97
Surrogate $^{13}C_2$ *PFOA*	%	103	104
Extracted ISTD $^{13}C_3$ *PFBS*	%	81	82
Extracted ISTD $^{18}O_2$ *PFHxS*	%	92	86
Extracted ISTD $^{13}C_4$ *PFOS*	%	81	81

PFAS in Soils Extended			
Our Reference		301227-1	301227-6
Your Reference	UNITS	0356_QC200_220720	0356_QC205_220721
Date Sampled		20/07/2022	21/07/2022
Type of sample		Sediment	Sediment
Extracted ISTD $^{13}C_4$ *PFBA*	%	83	88
Extracted ISTD $^{13}C_3$ *PFPeA*	%	88	81
Extracted ISTD $^{13}C_2$ *PFHxA*	%	95	96
Extracted ISTD $^{13}C_4$ *PFHpA*	%	93	91
Extracted ISTD $^{13}C_4$ *PFOA*	%	97	96
Extracted ISTD $^{13}C_5$ *PFNA*	%	101	95
Extracted ISTD $^{13}C_2$ *PFDA*	%	108	96
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	104	66
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	98	67
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	86	71
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	143	108
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	149	173
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	173	134
Extracted ISTD $^{13}C_8$ *FOSA*	%	94	66
Extracted ISTD d_3 *N MeFOSA*	%	88	66
Extracted ISTD d_5 *N EtFOSA*	%	86	60
Extracted ISTD d_7 *N MeFOSE*	%	83	55
Extracted ISTD d_9 *N EtFOSE*	%	74	52
Extracted ISTD d_3 *N MeFOSAA*	%	108	94
Extracted ISTD d_5 *N EtFOSAA*	%	101	57
Total Positive PFHxS & PFOS	µg/kg	9.6	39
Total Positive PFOS & PFOA	µg/kg	9.6	37
Total Positive PFAS	µg/kg	9.9	40

Moisture			
Our Reference		301227-1	301227-6
Your Reference	UNITS	0356_QC200_220720	0356_QC205_220721
Date Sampled		20/07/2022	21/07/2022
Type of sample		Sediment	Sediment
Date prepared	-	26/07/2022	26/07/2022
Date analysed	-	27/07/2022	27/07/2022
Moisture	%	38	36

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			25/07/2022	2	25/07/2022	25/07/2022		25/07/2022	[NT]
Date analysed	-			25/07/2022	2	25/07/2022	25/07/2022		25/07/2022	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	109	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	103	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	2	0.02	0.02	0	104	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	103	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	2	0.02	0.02	0	102	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	88	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	104	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	103	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	100	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	100	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	100	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	97	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	100	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	100	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	2	<0.05	<0.05	0	107	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	2	<0.1	<0.1	0	94	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	2	<0.5	<0.5	0	96	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	102	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	101	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	91	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	98	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	2	<0.1	<0.1	0	103	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	2	<0.05	<0.05	0	107	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	2	<0.1	<0.1	0	97	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	2	<0.05	<0.05	0	98	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	2	<0.5	<0.5	0	118	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	104	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	102	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	102	2	101	102	1	98	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	108	2	113	114	1	106	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	102	2	97	95	2	100	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	98	2	94	98	4	100	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	104	2	98	100	2	101	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	116	2	100	102	2	110	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	108	2	97	97	0	102	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	111	2	105	104	1	107	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	117	2	111	113	2	113	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	107	2	106	106	0	107	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	128	2	126	124	2	121	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	127	2	119	127	7	121	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	134	2	128	130	2	131	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	121	2	109	110	1	114	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	82	2	89	86	3	79	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	123	2	115	120	4	119	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	123	2	111	105	6	127	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	142	2	119	119	0	142	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	118	2	103	104	1	114	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	110	2	111	108	3	107	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	113	2	113	113	0	111	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	112	2	102	99	3	110	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	104	2	98	104	6	106	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	138	2	113	113	0	136	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	133	2	118	113	4	131	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			27/07/2022	[NT]	[NT]	[NT]	[NT]	27/07/2022	[NT]
Date analysed	-			27/07/2022	[NT]	[NT]	[NT]	[NT]	27/07/2022	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	93	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	102	[NT]
4:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
6:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
8:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	116	[NT]
10:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	117	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	116	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	108	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	111	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	119	[NT]	[NT]	[NT]	[NT]	113	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	119	[NT]	[NT]	[NT]	[NT]	117	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	126	[NT]	[NT]	[NT]	[NT]	126	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	131	[NT]	[NT]	[NT]	[NT]	129	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	138	[NT]	[NT]	[NT]	[NT]	133	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	116	[NT]	[NT]	[NT]	[NT]	113	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	112	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	108	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Prepared for
Department of Defence
ABN: 68706814312

AECOM

Sampling Event Factual Report, January 2023

PFAS OMP - Singleton Lone Pine Barracks (Site ID 0356)

19-Apr-2023
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Sampling Event Factual Report, January 2023

PFAS OMP - Singleton Lone Pine Barracks (Site ID 0356)

Client: Department of Defence

ABN: 68706814312

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List of Acronyms

Acronym	Term
ADWG	Australian Drinking Water Guidelines
AECOM	AECOM Australia Pty Ltd
AFFF	Aqueous Film Forming Foam
AHD	Australian Height Datum
AIR	Annual Interpretive Report
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure
BOM	Bureau of Meteorology
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DO	Dissolved Oxygen
DoH	Department of Health
DQI	Data Quality Indicator
DQO	Data Quality Objective
EC	Electrical Conductivity
EPA	Environment Protection Authority
FSANZ	Food Standards Australia New Zealand
HEPA	Heads of Environment Protection Authority
HHERA	Human Health and Ecological Risk Assessment
JBT	Jervis Bay Territory
LOR	Limit of Reporting
MW	Monitoring Well
NATA	National Analytical Testing Authority
NEMP	National Environmental Management Plan
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
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 sulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control

Acronym	Term
RPD	Relative Percentage Difference
SAQP	Sample and Analysis Quality Plan
SD	Sediment
STP	Sewage Treatment Plant
SW	Surface Water
SWL	Standing Water Level
TOC	Top of Casing
WQM	Water Quality Meter

List of Units

Units	Term
µg/L	Micrograms per Litre
µS/cm	Micro Siemens per centimetre
g	Grams
km	Kilometre
L	Litre
m	Metre
mAHD	Metres Australian Height Datum
mbgl	Metres below ground level
mbTOC	Metres below Top of Casing
mg/kg	Milligrams per kilogram
mg/L	Milligrams per Litre
mV	Millivolts

1.0 Introduction

1.1 General

AECOM Australia Pty Ltd (AECOM) has been engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan (OMP) at the Singleton Military Area (SMA) (the 'Site') in the New South Wales (NSW) and Jervis Bay Territory (JBT) Region. The location of the Site and surrounding areas is shown in **Figure F1** in **Appendix A**.

The OMP (Defence, 2021c) outlines the sampling requirements for the Site and off-Site areas within the Management Area.

Following each sampling event, factual sampling event reports will be prepared. Annual interpretive 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 January 2023 biannual sampling event, specifically highlighting first-time detections and/or new exceedances of human health or ecological screening criteria for the sum of Perfluorooctane sulfonic acid (PFOS) and Perfluorohexane sulfonic acid (PFHxS) (herein referred to as PFOS+PFHxS), PFOS and/or Perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the Defence *PFAS OMP Factual Report Guidance (Version 0.2)* issued in May 2021 (Defence, 2021a).

1.2 Objectives

The objectives were to:

- implement the OMP (Defence, 2021c) prepared as part of the Detailed Environmental Investigations; and
- collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration, transport, and transformation of 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 PFAS Management Area Plan (PMAP) (Defence, 2021b).

The objective of this phase of works was to implement the scope of works for the January 2023 biannual sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2023).

2.0 Scope of Work

The scope of works was completed generally in accordance with the SAQP (AECOM, 2023), as follows:

- obtain permission (where required) to conduct works at the Site, off-Site publicly accessible areas and at private properties
- gauging of groundwater level in monitoring wells prior to collection of samples
- groundwater sampling and collection of water quality parameters at 3 of 4 scheduled monitoring wells (refer to **Table 1** below and **Figure F2** in **Appendix A** for specific locations)
- surface water sampling and collection of water quality parameters at 14 of 20 scheduled surface water locations (refer to **Table 2** below and **Figure F3** in **Appendix A** for specific locations)
- sediment sampling at 19 of 20 scheduled sediment locations (refer to **Table 3** below and **Figure F4** in **Appendix A** for specific locations)
- wastewater effluent sampling at one scheduled location (refer to **Table 3** below and **Figure F3** in **Appendix A** for specific locations)
- collection of field intra-laboratory duplicate samples at a rate of 1 in 10 primary samples
- collection of field inter-laboratory duplicate samples at a rate of 1 in 10 primary samples
- analysis of samples for PFAS full suite (28 analytes) at the standard limit of reporting (LOR)
- data management of the OMP field and laboratory data in Defence ESdat database
- preparation of this Sampling Event Factual Report.

Note: due to privacy considerations, selected monitoring locations are unable to be shown on the figures in **Appendix A**.

Table 1 Groundwater Sampling Locations

Area	Description	Sampling Location	Total
On-Site	Northern Cantonment Boundary	MW102, MW104*, MW109, MW110	4
Total			**4**
* Location not sampled			

Table 2 Surface Water and Wastewater Effluent Sampling Locations

Area	Description	Sampling Location	Total
On-Site	Northern Cantonment Boundary (Sub-catchment A)	SW002, SW003, SW026, SW032, SW034	5
	Central Cantonment (Sub-catchment B)	SW028, SW555*	2
	Northern Cantonment Boundary	SW115*	1
	Southern Cantonment (Sub-catchment C)	SW040, SW114*, SW116*	3
	Dochra Airfield	SW004, SW005*	2
Off-Site	North of Site (Doughboy Hollow Creek Catchment)	**OTH006^, SW036, SW064, SW065, SW553, SW554***	6
	East of Site (Doughboy Hollow Creek Catchment)	**SW039**	1
	West of Site (Doughboy Hollow Creek Catchment)	**SW035**	1
Total			**21**
* Location not sampled ^wastewater effluent location			

Area	Description	Sampling Location	Total
Bold text denotes private property location			

Table 3 Sediment Sampling Locations

Area	Description	Sampling Location	Total
On-Site	Northern Cantonment (Sub-Catchment A)	SD002, SD003, SD032, SD053, SD065	5
	Northern Cantonment Boundary	SD115	1
	Central Cantonment (Sub-catchment B)	SD055, SD555	2
	Southern Cantonment (Sub-catchment C)	SD040, SD116, SD114	3
	Dochra Airfield	SD004, SD005	2
Off-Site	North of Site	**SD046, SD047, SD080, SD539, SD540***	5
	East of Site	**SD039**	1
	West of Site	**SD052**	1
Total			**20**
* Location not sampled **Bold** text denotes private property location			

3.0 Deviations from the SAQP

The January 2023 biannual sampling event was completed in general accordance with the SAQP (AECOM, 2023) with the exception of the deviations outlined in **Table 4** below.

Table 4 Deviations from SAQP (AECOM, 2023)

SAQP Deviation	Comment / Justification	Impact on Dataset
Samples, and associated field parameters, were not collected from 1 of the 4 scheduled groundwater sampling locations.	Groundwater monitoring well MW104 was dry during the sampling event.	The lack of sampling data is not considered to have a significant impact on the dataset, or present a significant data gap, as a nearby well was sampled (MW110), targeting the same shallow aquifer, and located along the Northern Cantonment Boundary.
Field geochemical parameters were not collected from 1 of the three groundwater locations sampled.	Geochemical parameters were not collected from groundwater monitoring well MW110 due to insufficient water in the Hydrasleeve™	The lack of geochemical parameters at this location for an individual sampling event is not considered to have a significant impact on the outcomes of the monitoring program.
Samples, and associated field parameters, were not collected from 6 of the 20 scheduled surface water locations.	Surface water location SW005 was identified as dry and could not be sampled during this sampling event.	The lack of sampling data may represent a potential data gap as there are no other surface water sample locations along Mudies Creek. It is noted, however, that both sampling locations at Mudies Creek (SW005) and Emigrant Creek (SW004) assess for potential run-off from the Dochra Airfield into the off-Site environment. SW004 was able to be sampled during this sampling event.
	Surface water locations SW114, SW115, SW116 and SW555 were dry and could not be sampled during this sampling event.	The lack of sampling data at these locations is not considered to have a significant impact on the dataset, or present a significant data gap, given that it confirms that the source>receptor>pathway linkages for PFAS in surface water were incomplete at the time of sampling. AECOM will attempt to sample these locations again during the next sampling event in July 2023.
	Surface water location SW554 was unable to be accessed and could not be sampled during this sampling event.	The lack of sampling data is not considered to have a significant impact on the dataset, or present a significant data gap, as a nearby surface water location (SW553) was sampled downstream of this location, targeting the Doughboy Hollow Creek Catchment / Whittingham floodplains north of the Site, in the vicinity of the Singleton Sewage Treatment Plan.

SAQP Deviation	Comment / Justification	Impact on Dataset
Samples were not collected from 1 of the 20 scheduled sediment locations.	Sediment location SD540 was unable to be accessed and could not be sampled during this sampling event.	The lack of sampling data is not considered to have a significant impact on the dataset, or present a significant data gap, as a nearby sediment location (SD539) was sampled downstream of this location, targeting the Doughboy Hollow Creek Catchment / Whittingham floodplains north of the Site, in the vicinity of the Singleton Sewage Treatment Plan.

4.0 Methodology

4.1 Sampling Methodology

The methodology used for the January 2023 biannual sampling event was in general accordance with the SAQP (AECOM, 2023) and is summarised in **Table 5** below.

Table 5 Sampling Methodology

Item	Details
Groundwater gauging	The depth to groundwater was measured in each monitoring well immediately prior to collection of groundwater samples using an interface probe on 18 January 2023.
Field parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality were recorded for groundwater and surface water samples. Field parameters were collected ex-situ using a calibrated water quality meter (WQM). The equipment supplier and field calibration records are provided in **Appendix C**.
Sampling methodology	**Groundwater Monitoring Wells** Groundwater samples were generally collected from each monitoring well using HydraSleeves™, a no-purge sampling methodology. HydraSleeves™ were installed within the screened interval of the wells for a minimum of 24 hours prior to the sampling round, based on a review of the well construction log. For this event, all the HydraSleeves™ were installed during the previous sampling round in July 2022. Once sampling was completed, new HydraSleeves™ were deployed in each of the monitoring wells, within the screened interval depth in preparation for the next sampling round. **Surface Water** Surface water samples were collected from immediately below the water surface (approximately 10 centimetres [cm] below the surface water level, where depth permitted) to minimise collection of sediment, surface film or floating materials in the samples. At each location, a new, laboratory supplied container was lowered into the water (either by hand or using a sampling pole) with the cap immediately applied once the container was full. **Sediment** Sediment samples representative of potentially deposited sediments were collected from within the water body, using a hand trowel to a maximum depth of 0.3 metres below ground level (mbgl). A new laboratory supplied container was used at each location for collection of samples. **Wastewater Effluent Sample** Sample OTH006 was collected from the in-flow effluent wastewater pipe beneath the Sewage Treatment Plant (STP) pump house. The sample was collected using a dedicated disposable bailer lowered through an access hatch in the base of the pump house. The sample was decanted directly into a new, laboratory supplied container with the cap immediately applied once the container was full.

Item	Details
QA/QC Samples	A QA/QC program was implemented for the sampling and analysis program in order to obtain representative data and assess the reliability of the data obtained. To facilitate the QA/QC program the following sample types were obtained during the sampling program: • *Intra-laboratory duplicates* collected at a rate of 1 in 10 primary samples. The relative percentage difference (RPD) should be less than 30%, or less than 50% if results are less than 20 times the limit of reporting (LOR). Higher RPDs may also be acceptable if results are less than 10 times the LOR. • *Inter-laboratory duplicates* collected at a rate of 1 in 10 primary samples. The relative percentage difference (RPD) should be less than 30%, or less than 50% if results are less than 20 times the limit of reporting (LOR). Higher RPDs may also be acceptable if results are less than 10 times the LOR. • *Rinsate blanks* collected at a frequency of one per set of sampling equipment per day where equipment was reused between locations. Analytical results should be below the laboratory limit of reporting (LOR). For this January 2023 biannual sampling event, the QA/QC samples included: • 5 x intra-laboratory duplicates (1 groundwater, 2 surface water and 2 sediment) which met the target frequency • 5 x inter-laboratory duplicates (1 groundwater, 2 surface water and 2 sediment) which met the target frequency • 3 x rinsate blanks, which met the target frequency. The data validation assessment is presented in **Appendix D**.
Sample analysis	Samples were submitted to the primary and secondary laboratories for PFAS full suite (28 analytes) at the standard limit of reporting (LOR). ALS Environmental (ALS) Sydney, NSW was used as the primary laboratory. Envirolab Services (Envirolab) Sydney, NSW was used as the secondary laboratory. ALS and Envirolab methods for analyses were certified by the National Association of Testing Authorities (NATA). A summary of the laboratory results is presented in **Section 5.3** and the laboratory certificates are presented in **Appendix E**.

4.2 Adopted Screening Criteria

Guidance documents used to assess the dataset include the following:

- Heads of EPAs Australia and New Zealand (HEPA) 2020. *PFAS National Environmental Management Plan 2.0*. January 2020.
- Department of Health, 2017. *Health Based Guidance Values for PFAS for use in site investigations in Australia*. April 2017.
- FSANZ, 2017. *Supporting Document 1: Hazard assessment report – Perfluorooctane Sulfonate (PFOS), Perfluorooctanoic Acid (PFOA), Perfluorohexane Sulfonate (PFHxS).*
- National Health and Medical Research Council (NHMRC), 2019. *Guidance on PFAS in Recreational Water.* August 2019.
- National Environment Protection Council (NEPC), 2013. *Schedule B1. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B1 Guideline on Investigation Levels For Soil and Groundwater.*

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in **Table 6** below.

Table 6 Summary of Adopted Screening Criteria: Water

Media	Pathway	Compound	Criteria	Comment/Reference
Human Health Receptors				
Water – Groundwater	Drinking water	PFOS + PFHxS	0.07 µg/L	The values presented in the PFAS NEMP 2.0, 2020 are from DoH 2019 which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the TDI for PFOS and PFOA from FSANZ, 2017 and the methodology described in Chapter 6.3.3 of the NHMRC's Australian Drinking Water Guidelines (ADWG), 2011 (updated in January 2022) to determine drinking water values. For PFHxS, DoH 2019 noted that '*FSANZ concluded that there was not enough toxicological and epidemiological information to justify establishing a tolerable daily intake. However, as a precaution, and for the purposes of site investigations, the PFOS tolerable daily intake should apply to PFHxS. In practice, this means that the level of PFHxS exposure should be added to the level of PFOS exposure; and this combined level be compared to the tolerable daily intake for PFOS*'. *All groundwater results were compared to these criteria.*
		PFOA	0.56 µg/L	

Media	Pathway	Compound	Criteria	Comment/Reference
Water – Surface Water	Recreational use	PFOS + PFHxS	2 µg/L	In August 2019, NHMRC released guidance on the assessment of PFAS in surface water. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events/year) to calculate an annual ingestion rate of 30 L per year. These values were adopted in the PFAS NEMP, 2020. *All surface water results were compared to these criteria.*
		PFOA	10 µg/L	
Ecological Receptors				
Water – Groundwater and Surface Water	Freshwater	PFOS	0.00023 µg/L	The values are from the PFAS NEMP, 2020 which endorsed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality. The 99% species protection level (for freshwater and interim marine) has been applied for high value conservation systems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. It is proposed that the laboratory LOR is adopted for the purposes of preliminary screening of analytical water results, rather than sole use of the criteria value. *All groundwater and surface water results were compared to these criteria.*
		PFOA	19 µg/L	

4.3 Data Quality Objectives and Data Validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2023). Data validation assessment is provided in **Appendix D**.

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, 2021) requirements.

5.0 Field Observations and Results

5.1 General Observations

The weather conditions and general observations (including activities that may impact the monitoring program) recorded during the January 2023 biannual sampling event completed between 17 and 19 January 2023 are summarised in **Table 7** below.

Table 7 General Observations

Items	Observations
Weather Conditions	During the sampling event, the weather was observed to be mostly dry and warm, with maximum daily temperatures between 22.3 ˚C (19 January 2023) and 34.5 ˚C (17 January 2023). A cumulative 9 mm of rainfall was recorded at Singleton (Singleton Defence AWS, Station 061430) (Bureau of Meteorology, 2023) during the sampling event.
Estate Management Works, Training Activities and/or Construction Works.	No estate management works, training activities or construction works were observed during the sampling event, that would impact the sampling program.

5.2 Field Observations and Measurements

The observations and measurements recorded during the field activities for the January 2023 biannual sampling event are summarised in **Table 8**, below.

Table 8 Field Observations and Measurements

Item	Description
Monitoring Well Network Condition	All wells sampled were observed to be in good condition.
Water Observations	No visible signs of contamination were observed in groundwater and surface water at the locations sampled. Organic odours were observed at five surface water locations (SW034, SW035, SW036, SW039 and SW065) and at the wastewater effluent location (OTH006).
Depth to Groundwater and Flow Direction	Depth to groundwater ranged from 12.920 (MW102) and 13.610 (MW110) metres below top of casing (mbTOC). Groundwater elevation ranged between 31.79 (MW110) and 33.90 (MW102) metres Australian Height Datum (mAHD). Groundwater gauging data is presented in **Table T1** in **Appendix B**. The inferred groundwater flow direction at the site has historically been inferred to be to the north-north-east of the site (AECOM, 2019 and 2021). Given the limited groundwater gauging data, no groundwater contours were developed for the current event, with the anticipated flow to the north-north-east has been based on historical groundwater flow direction, as shown on **Figure F5** in **Appendix A**.
Geochemical Parameters	Groundwater and surface water geochemical parameters were measured during the collection of water samples. The readings are presented in **Table T2** and **Table T3** in **Appendix B** and are summarised below: **Groundwater Geochemical Parameters** • Dissolved oxygen readings were 0.00 mg/L (MW102) and 0.23 mg/L (MW109) indicating poorly oxygenated conditions. • Electrical conductivity readings were 15,851 µS/cm (MW109) and 21,250 µS/cm (MW102) indicating saline conditions.

Item	Description
	• pH readings were 6.53 (MW109) and 6.73 (MW102) indicating near-neutral conditions. • Redox (corrected) readings were 171.4 mV (MW102) and 243.5.0 mV (MW109) indicating moderately reducing to oxidising conditions. **Surface Water Geochemical Parameters** • Dissolved oxygen ranged from 0.06 mg/L (SW039) to 5.56 mg/L (SW034) indicating poor to moderately oxygenated conditions. • Electrical conductivity ranged from 10.2 µS/cm (SW064) to 29,252 µS/cm (SW040) indicating fresh to saline conditions. • pH ranged from 4.85 (SW028) to 7.86 (SW064) indicating moderately acidic to neutral conditions. • Redox (corrected) readings ranged from 217.2 mV (SW035) to 437.8 mV (SW004) indicating oxidising conditions.
Sediment Observations	Sediment sampled and logged during this monitoring event comprised sand, clay and gravel materials with minor inclusions of organic materials (mostly rootlets). No anthropogenic inclusions or staining were observed. Organic odours were observed at two sediment locations (SD052 and SD080). Refer to in **Table T4** in **Appendix B** for a summary of sediment classifications and observations.

5.3 Summary of Analytical Results

5.3.1 Groundwater Analytical Results

The PFAS groundwater analytical results from this sampling event are presented in **Table T5** in **Appendix B**. In summary, 3 primary groundwater samples were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in one primary groundwater sample
- PFOS+PFHxS and/or PFOA exceeded the adopted drinking water human health screening criteria in one primary groundwater sample
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in one primary groundwater sample.

There were no first-time detections or exceedances of adopted screening criteria for PFOS+PFHxS, PFOS and/or PFOA in the groundwater samples analysed.

5.3.2 Surface Water Analytical Results

The PFAS surface water analytical results from this sampling event are presented in **Table T6** in **Appendix B**. In summary, 14 primary surface water samples and one wastewater effluent sample were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 13 primary surface water samples and one wastewater effluent sample
- PFOS+PFHxS and/or PFOA exceeded the adopted recreational use human health screening criteria in one primary surface water sample
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in 13 primary surface water samples and one wastewater effluent sample.

Deviations from the historical dataset are provided in **Table 9** and on **Figure F6** in **Appendix A**.

Table 9 Deviations from Historical Dataset - Surface Water

Deviation Type	Surface water sampling location	Sum of PFOS+PFHxS (µg/L)		PFOA (µg/L)		PFOS (µg/L)	
		Jan 2023	Previous maximum	Jan 2023	Previous maximum	Jan 2023	Previous maximum
First-time detections of PFOS+PFHxS PFOS and/or PFOA in surface water	SW035	0.01	<LOR	No first-time detections of PFOA		0.01	<LOR
	SW036	There were no first-time detections in the data set		0.03	<LOR	There were no first-time detections in the data set	
New exceedance of the NEMP (HEPA, 2020) recreational guidelines in surface water	SW032	3.82	1.57	There were no new exceedances of the NEMP Human Health Screening Criteria (Recreational) in the dataset.		There are no applicable NEMP Human Health Screening Criteria (Recreational).	
New exceedance of the NEMP (HEPA, 2020) Freshwater 99% guidelines in surface water	SW035	There are no applicable NEMP Ecological Screening Criteria (99%).		There were no new exceedances of the NEMP Ecological Screening Criteria in the dataset (99%).		0.01	<LOR

Legend	
Blue Shading	Blue shading indicates sampling location with first-time detection of PFOS+PFHxS, PFOS and/or PFOA
Yellow Shading	Yellow shading indicates sampling location with new exceedance of NEMP Human Health and/or Ecological Screening Criteria

5.3.3 Sediment Analytical Results

The PFAS sediment analytical results from this sampling event are presented in **Table T7** in **Appendix B**. In summary, 19 primary sediment samples were analysed for PFAS compounds, with concentrations of PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 17 primary samples.

There were no first-time detections for PFOS+PFHxS, PFOS and/or PFOA in the sediment samples analysed.

5.4 Historical Sampling Data

Historical groundwater, surface water (inclusive of wastewater), and sediment sampling data are presented in **Tables T8**, **T9** and **T10** in **Appendix B**.

6.0 Summary and Next Sampling Events

6.1 Summary of Monitoring Event

The January 2023 biannual sampling event was completed between 17 and 19 January 2023. The findings and the recommended actions are summarised in **Table 10** below.

Table 10 Summary of Sampling Event

Item	Comment	Recommended Action
Access to sampling locations	The following were accessed and able to be sampled: • 3 groundwater locations • 14 surface water locations • 1 wastewater effluent location • 19 sediment locations	Nil.
Location unable to be located, inaccessible or dry	A groundwater sample from one location (MW104) was unable to be collected as the location was observed to be dry during the sampling event. Samples from five surface water locations (SW005, SW114, SW115, SW116 and SW555) were unable to be collected as the locations were dry during sampling. Samples from one co-located surface water/sediment location (SW554/SD540) were not sampled as access was unable to be obtained. Current ownership of the Lot in which the locations are present is unknown.	AECOM will attempt to access and sample locations MW104, SW005, SW114, SW115, SW116 and SW555 during the next scheduled sampling event. AECOM will attempt to find new alternative locations to replace SW554/SD540 within the same waterbody (dam), to be accessed from the adjacent Lot owned by Singleton Council, ahead of the next scheduled sampling event.
Monitoring well network condition	All monitoring wells that were able to be accessed were noted to be in good condition.	Nil
Analytical Results	3 groundwater primary samples, 14 surface water primary samples, 1 wastewater effluent sample and 19 sediment primary samples were analysed.	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.
First-time detections of PFOS+PFHxS, PFOS and/or PFOA	Two of 14 surface water locations sampled (SW035 and SW036) reported first-time detections of PFOS+PFHxS, PFOS and/or PFOA. No groundwater or sediment locations sampled reported first-time detections of PFOS+PFHxS, PFOS and/or PFOA.	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.

Item	Comment	Recommended Action
New exceedance of adopted human health screening criteria	One of 14 surface water locations sampled (SW032) reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA. No groundwater locations sampled reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA.	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.
New exceedance of adopted ecological screening criteria	One of 13 surface water locations sampled (SW035) reported new exceedances of the adopted ecological screening criteria for PFOS and/or PFOA. No groundwater locations sampled reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA.	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.

6.2 Upcoming Sampling Events

The next OMP sampling event is scheduled for July 2023.

6.3 Upcoming Annual Interpretive Report

The next annual interpretive report is scheduled to be delivered in Q3 2023, covering data that is collected within the 12-month sampling period between July 2022 and June 2023.

7.0 References

AECOM, 2019. *Detailed Site Investigation – Singleton Military Area – PFAS Investigation*. November 2019.

AECOM, 2021. *Detailed Site Investigation Addendum – Singleton Military Area – PFAS Investigation*. March 2021.

AECOM, 2022. *Sampling Analysis and Quality Plan, Singleton Military Area (Lone Pine Barracks)*. Rev 3, 11 January 2023

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

ASC NEPM, 2013. *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedules B2, B4 and B7*.

Department of Defence, 2018. *Contamination Management Manual.* August 2018, Amended June 2021.

Department of Defence, 2021a. *PFAS OMP Factual Report Guidance (Version 0.2)*. May 2021

Department of Defence, 2021b. *PFAS Management Area Plan - Singleton Military Area.* December 2021.

Department of Defence, 2021c. *PFAS Ongoing Monitoring Plan - Singleton Military Area.* December 2021.

FSANZ, 2017. *Supporting Document 1: Hazard assessment report – Perfluorooctane Sulfonate (PFOS), Perfluorooctanoic Acid (PFOA), Perfluorohexane Sulfonate (PFHxS).*

Heads of EPAs Australia and New Zealand (HEPA) 2020. *PFAS National Environmental Management Plan 2.0*. January 2020.

National Health and Medical Research Council (NHMRC), 2011. *Australian Drinking Water Guidelines 6, 2011. Version 3.7 Updated January 2022*. January 2022.

National Health and Medical Research Council (NHMRC), 2019. *Guidance on PFAS in Recreational Water.* August 2019.

National Environment Protection Council (NEPC), 2013. *Schedule B1. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B1 Guideline on Investigation Levels For Soil and Groundwater.*

NEPC, 2013. *Schedule B2. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B2 Guideline on Site Characterisation*.

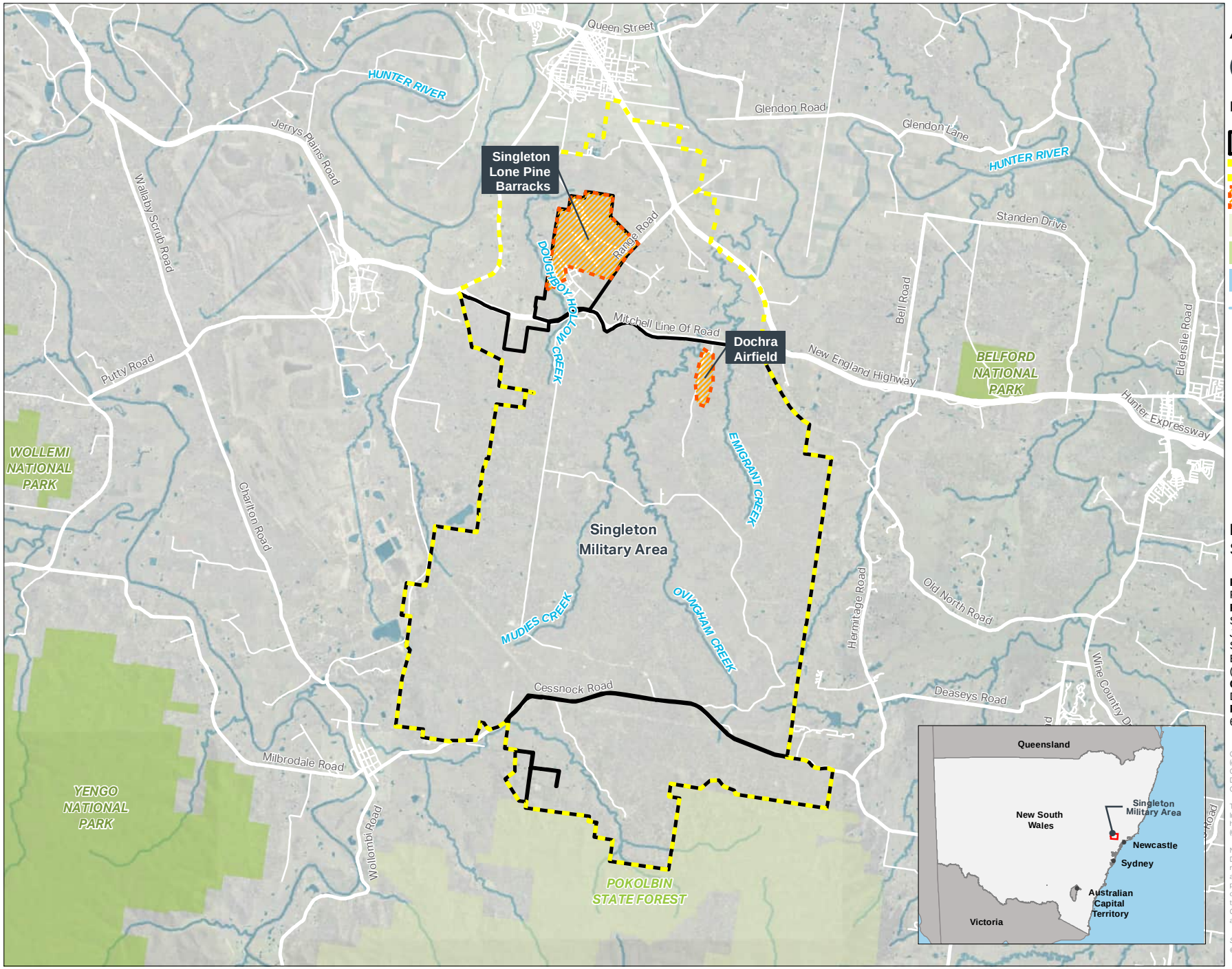
NEPC, 2013. *Schedule B4. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B4 Guideline on Site-Specific Health Risk Assessment Methodology*.

NEPC, 2013. *Schedule B7. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B7 Guideline on Derivation of Health-Based Investigation Levels*.

Standards Australia 1998. AS/NZ 5667:1998 *Water quality – sampling*

Appendix A

Figures



AECOM

FIGURE F1:
SITE LAYOUT

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
January 2023
Singleton Military Area Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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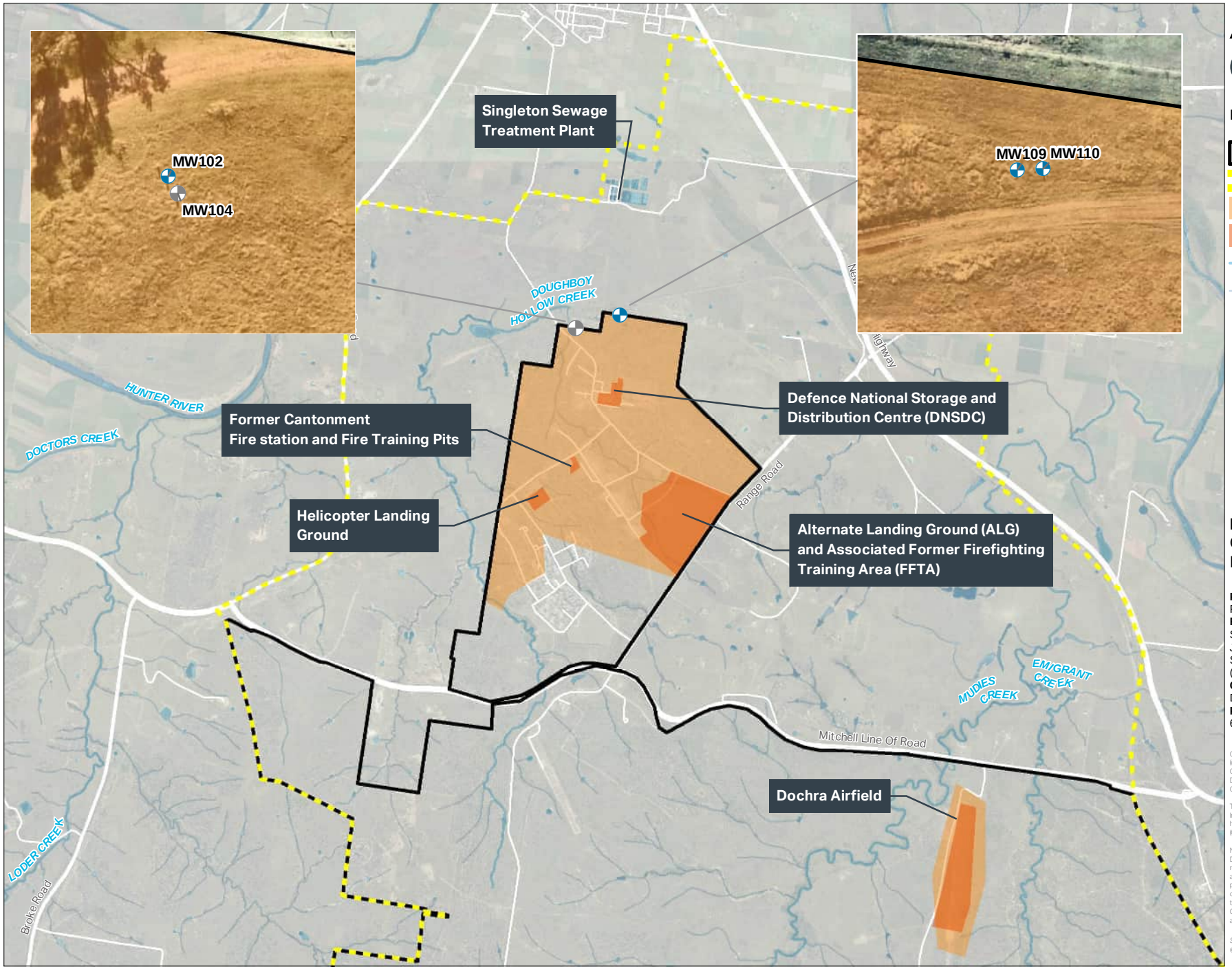


AECOM

N

0 0.5 1 km

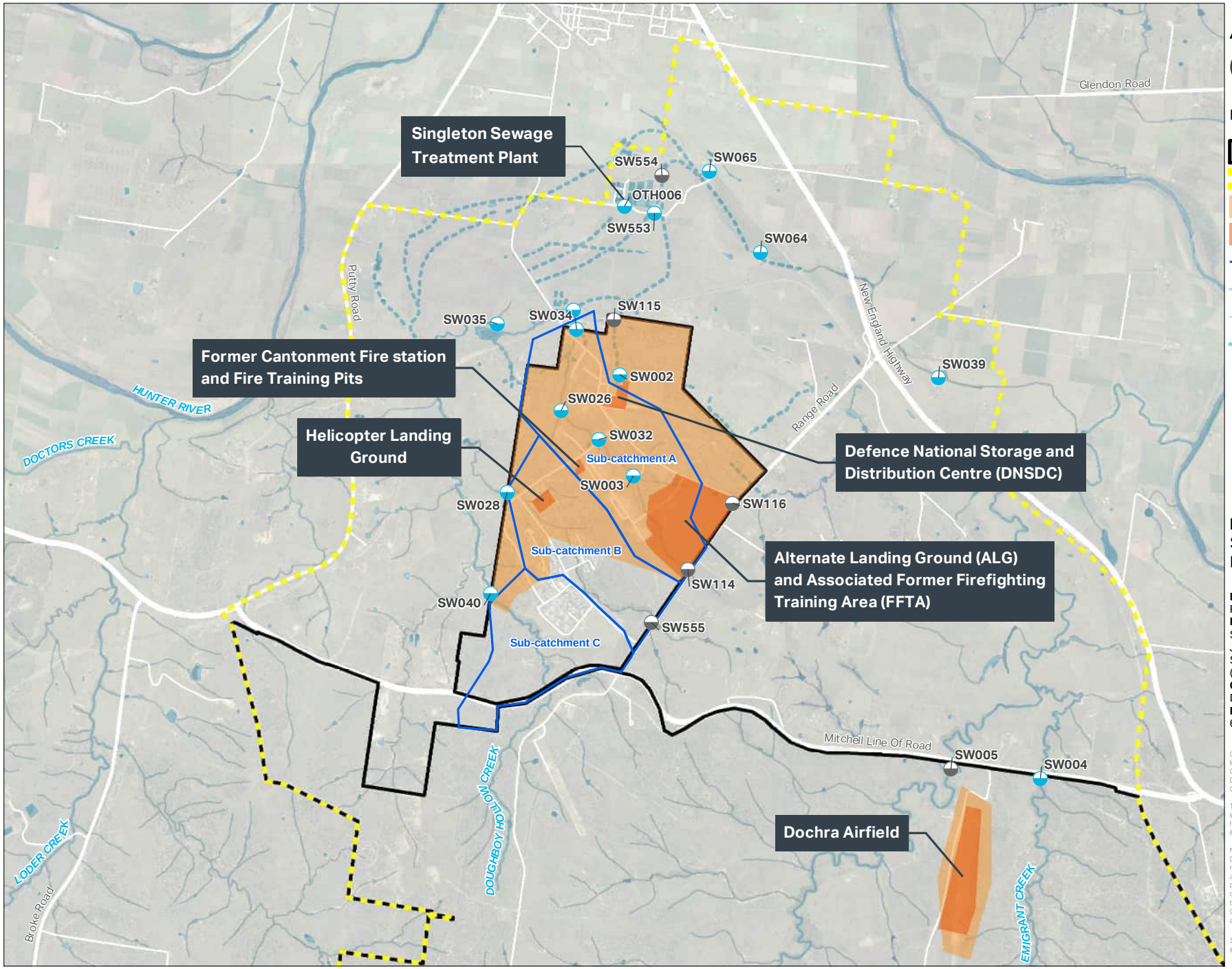
Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage line
- Groundwater Location (sampled)
- Groundwater Location (not sampled)

FIGURE F2:
GROUNDWATER SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
January 2023
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
© Department of Customer Service 2020



AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Catchment Boundaries
- Watercourse
- Drainage line
- Undefined Drainage Lines
- Surface Water Location (sampled)
- Surface Water Location (not sampled)

FIGURE F3:
SURFACE WATER SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
January 2023
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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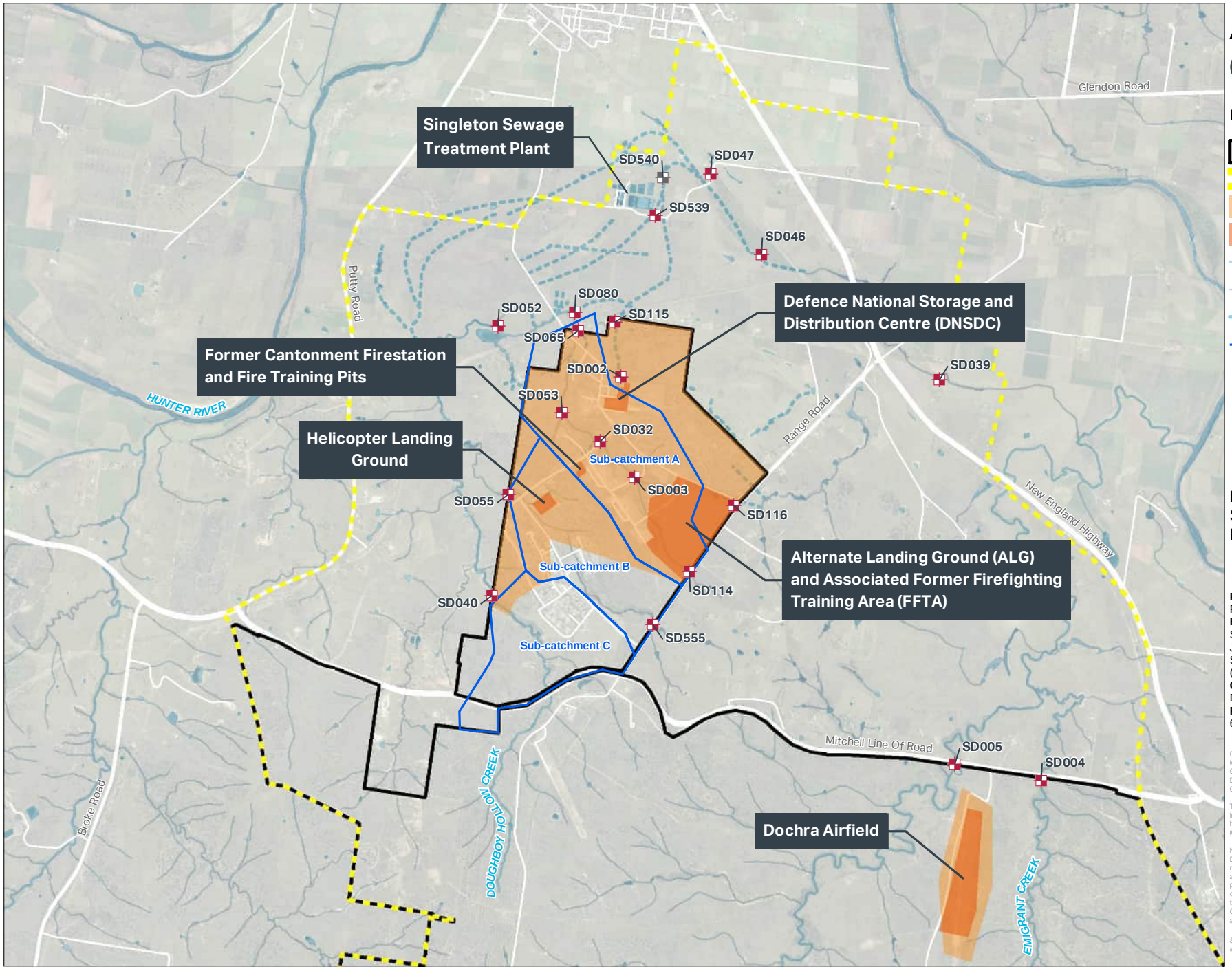

AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage line
- Undefined Drainage Lines
- Catchment Boundaries
- Sediment Location (sampled)
- Sediment Location (not sampled)

FIGURE F4:
SEDIMENT SAMPLE LOCATIONS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
January 2023
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

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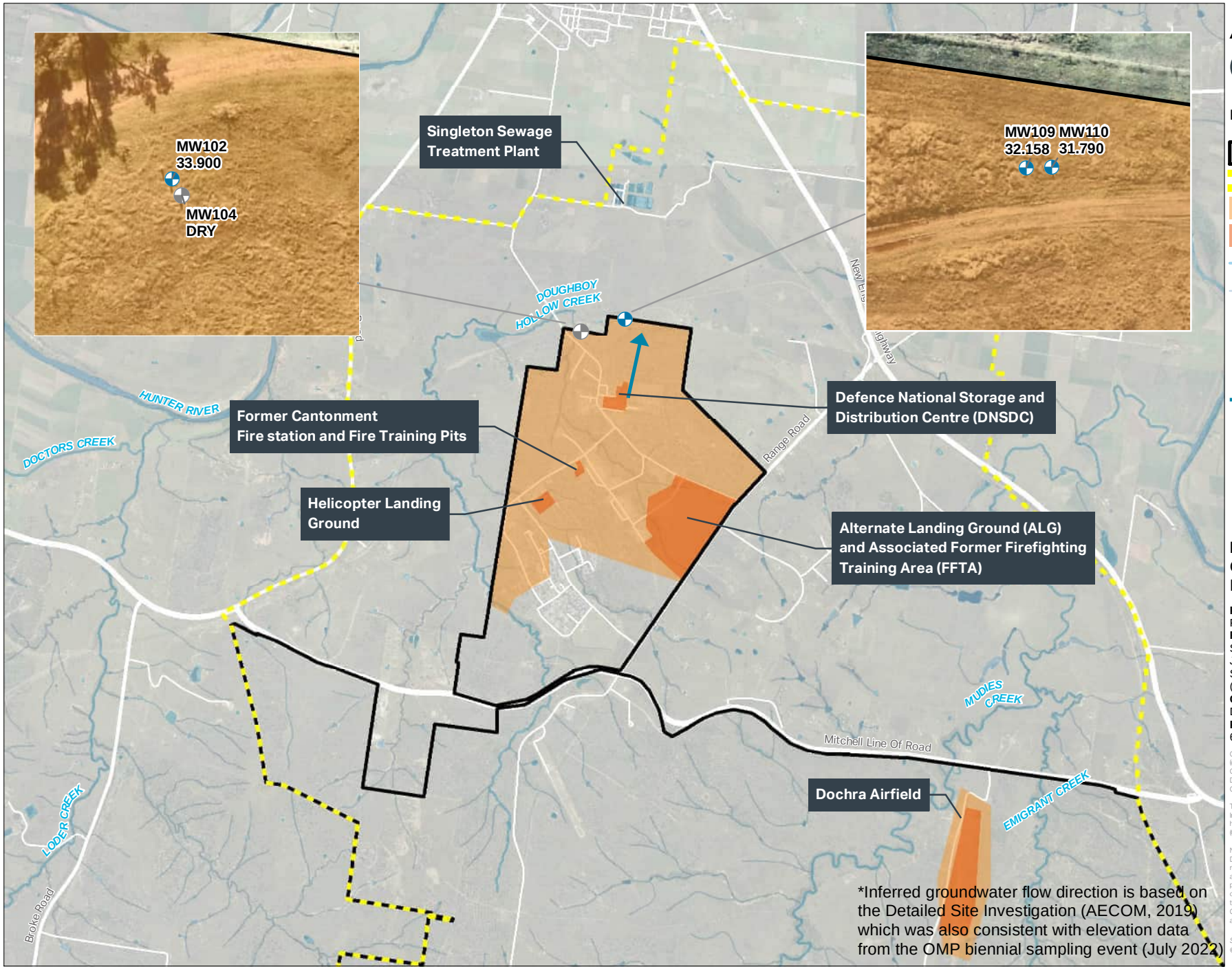


AECOM

N

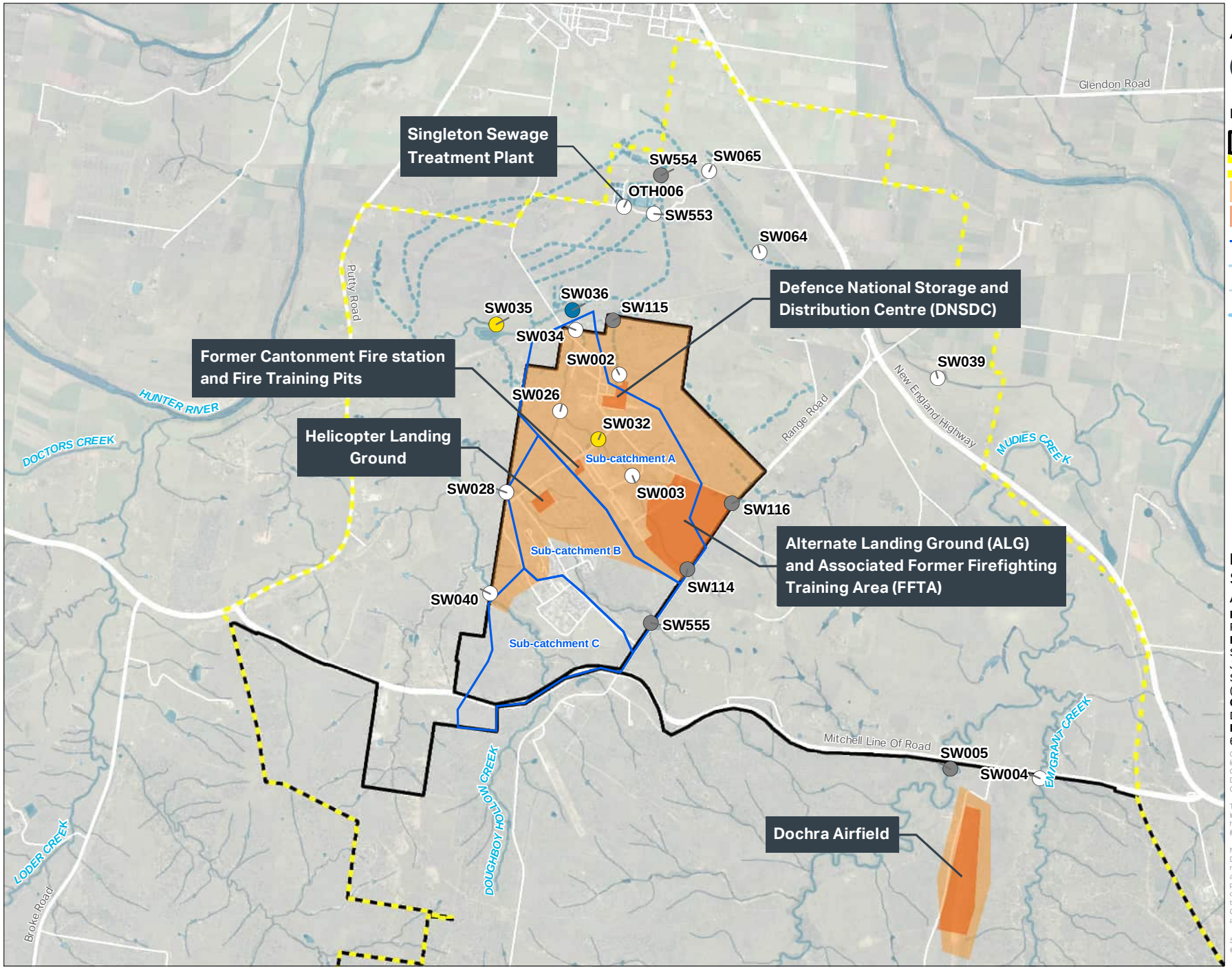
0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Watercourse
- Drainage line
- Groundwater Location (sampled)
- Groundwater Location (not sampled)
- Inferred Groundwater Flow*

FIGURE F5:
GROUNDWATER ELEVATION PLAN

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
January 2023
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562



AECOM

N

0 0.5 1 km

Legend

- Site Boundary
- Former Investigation Area
- On-site Management Area
- PFAS Source Areas
- Catchment Boundaries
- Watercourse
- Drainage line
- Undefined Drainage Lines
- First-time detection of PFOS+PFHxS, PFOS and/or PFOA
- New Exceedance of Human Health and/or Ecological Screening Criteria for PFOS+PFHxS, PFOS and/or PFOA
- Sampled, no first-time detection or Exceedance
- Location not accessed and/or sampled

FIGURE F6:
SURFACE WATER ANALYTICAL RESULTS

PROJECT NAME:
PFAS OMP
REPORT NAME:
Sampling Event Factual Report
January 2023
Singleton Lone Pine Barracks
(Site ID 0356)
CLIENT NAME:
Department of Defence
PROJECT NUMBER:
60612562

Source:
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Appendix B

Tables

Table T1 - Groundwater Gauging Results

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit/Gauging Comment
MW102	GW02D	46.82	12.50	15.5	13.5	18/01/2023 08:36	12.92	33.9	16.66	Good condition
MW104	GW02S	46.72	10.00	13	11	18/01/2023 08:31	-	-	12.445	Good condition, well dry
MW109	GW03D	45.1	24.50	30	26	18/01/2023 14:12	12.942	32.158	30	Good condition
MW110	GW03S	45.4	11.50	14	12.5	18/01/2023 14:22	13.61	31.79	14.73	Good condition

Notes:

mbTOC	meters below Top of Casing
mAHD	meters Australian Height Datum
-	Not measured

AECOM

Table T2 - Groundwater Geochemical Parameters and Observations

				Field Measurements					
				Dissolved Oxygen	Temperature	Electrical Conductivity	pH	Redox Potential Er	Redox Potential Eh (Corrected)
Location Code	**Alternative Name**	**Sampled Date Time**	**Sample Comment**	mg/L	°C	µS/cm	pH Units	mV	mV
MW102	GW02D	18/01/2023	Light grey, medium turbidity, no odour or sheen. Grey sediment at base of hydrasleeve.	0	22.6	21250	6.73	-37.1	168.7
MW104	GW02S	18/01/2023	Location dry, no sample collected.	-	-	-	-	-	-
MW109	GW03D	18/01/2023	Light grey colour, low turbidity, no odour or sheen.	0.23	26.2	15851	6.53	35	240.8
MW110	GW03S	18/01/2023	Light grey, low turbidity, no odour or sheen. Insufficient water in Hydrasleeve, field parameters not collected.	-	-	-	-	-	-

Notes

mV	milliVolts
mg/L	milligrams per Litre
°C	degrees Celsius
µS/cm	microSiemens per centremetre
Corrected field Redox measurement Eh = Er + 205.8	
-	Not measured
n/a	Not applicable
*	pH value reported incorrectly due to field error. Value has been excluded for reporting purposes.

Table T3 - Surface Water Field Geochemical Parameters and Observations

AECOM

					Field Measurements					
					DO (Field)	Redox Potential Er	Redox Potential Eh (Corrected)	Temp (Field)	EC (field)	pH (Field)
Location Code	**Alternative Name**	**Sampled_Date**	**Location Comments**	**Sample Comment**	mg/L	mV	mV	oC	µS/cm	pH_Units
SW002	SW002	17/01/2023	Agricultural dam. Waterbody approx.10m wide, 10cm deep. Algal bloom. Water flow not observed.	Black, high turbidity, no odour, no sheen.	1.18	24.7	230.5	26.8	251.6	6.15
SW003	SW003	17/01/2023	Creek with culvert. Waterbody approx. 3m wide, 10cm deep. Water flow not observed.	Yellow, low turbidity, no odour, no sheen.	3,14	138.2	344	27.0	634	6.04
SW004	SW004	19/01/2023	Emigrant Creek. Waterbody approx. 10m wide, 10cm deep. Water flow not observed.	Light yellow, low turbidity, no odour, no sheen.	2.65	229.3	435.1	23.4	462.1	4.98
SW005	SW005	19/01/2023	Mudies Creek. Waterbody approx. 8m wide. Location dry, not sampled.	-	-	-	-	-	-	-
SW026	SMA13_SW	17/01/2023	Creek. Waterbody approx. 3m wide, 0.5m deep. Water flow not observed.	Light brown, medium turbidity, no odour, no sheen.	3.64	130.1	335.9	26.4	577	5.44
SW028	SMA7_SW	17/01/2023	Creek. Waterbody approx. 2m wide, 0.5-1m deep. Biosheen on water's surface. Water flow not observed.	Light yellow, low turbidity, no odour, biosheen.	0.85	112.5	318.3	24.9	732	4.85
SW032	SW032	17/01/2023	Creek with culvert. Waterbody approx. 3m wide, 0.5m deep. Water flow not observed.	Yellow, low turbidity, no odour, no sheen.	3.61	164.9	370.7	26.8	248.2	6.82
SW034	SMA8_SW	17/01/2023	Creek with culvert. Waterbody approx. 1.5m wide, 0.3m deep. Biosheen on water's surface. Water flow not observed.	Yellow, low turbidity, organic odour, biosheen.	5.56	136.7	342.5	28.8	324.8	6.15
SW035	RESI_SW035	18/01/2023	Agricultural dam. Waterbody approx. 40m wide, unknown depth. Algal bloom. Water flow not observed.	Black/grey, high turbidity, organic odour, no sheen.	4.95	8.7	214.5	29.7	1154	7.25
SW036	RESI_SW036	18/01/2023	Agricultural dam. Waterbody approx. 30m wide, unknown depth. Highly vegetated on banks. Water flow not observed.	Black/grey, high turbidity, organic odour, no sheen.	2.92	89.2	295	28.1	444.9	6.6
SW039	RESI_SW039	18/01/2023	Agricultrual dam. Waterbody approx. 30m wide, unknown depth. Water flow not observed.	Black/grey, high turbidity, organic odour, no sheen.	0.06	36.9	242.7	23.4	1638	7.07
SW040	SW040	17/01/2023	Creek. Waterbody approx. 1m wide, 0.5m deep. Water flow not observed.	Yellow, low turbidity, no odour, no sheen.	5.21	94.9	300.7	28.3	29252	7.09
SW064	RESI_SW041	18/01/2023	Creek with culvert. Waterbody approx. 3m wide, unknown depth. Biosheen on water's surface. Water flow not observed.	Dark brown, high turbidity, no odour, no sheen.	3.86	90.3	296.1	24	10.2	7.86
SW065	RESI_SW042	18/01/2023	Agricultural dam. Waterbody approx.15m wide, unknown depth. Water flow not observed.	Light green, medium turbidity, organic odour, no sheen.	2.22	114.1	319.9	28.2	675	5.92
SW114	-	17/01/2023	Creek from culvert. Waterbody approx. 1m wide. Location dry, not sampled.	-	-	-	-	-	-	-
SW115	-	17/01/2023	Waterway. Waterbody approx. 10m wide. Location dry, not sampled.	-	-	-	-	-	-	-
SW116	-	17/01/2023	Creek from culvert. Waterbody approx. 1m wide. Location dry, not sampled.	-	-	-	-	-	-	-
SW553	-	18/01/2023	Creek with culvert. Waterbody approx. 3m wide, unknown depth. Water flow not observed.	Dark green, medium turbidity, no odour, no sheen.	4.72	100	305.8	27.7	432.1	7.13
SW554	-	18/01/2023	Dam. Location unable to be accessed (to confirm private stakeholder). Not visited/sampled.	-	-	-	-	-	-	-
SW555	-	17/01/2023	Creek from culvert. Waterbody approx. 3m wide. Location dry, not sampled.	-	-	-	-	-	-	-
OTH006	-	18/01/2023	Effluent wastewater pit. Waterbody approx. 1m wide, 2m deep. Water flow observed.	Dark yellow, medium turbidity, organic odour, no sheen. Geochemical parameters not required.	-	-	-	-	-	-

Notes

mV	milliVolts
mg/L	milligrams per Litre
°C	degrees Celsius
µS/cm	microSiemens per centremetre
Corrected field Redox measurement Eh = Er + 205.8	
-	Not measured

Table T4 - Sediment Observations

Location Code	Alt. Name	Sampled Date	Sample Depth	Sample Comments
SD002	SD002	17/01/2023	0.1 - 0.3	SAND: brown/black, fine grained, with organic material. No odour or staining.
SD003	SD003	17/01/2023	0.1 - 0.3	Clayey GRAVEL: red-orange-brown <5mm sub-angular gravel, dark grey clay. No odour or staining.
SD004	SD004	19/01/2023	0.1 - 0.3	Silty CLAY: brown, high plasticity, with rootlets, saturated. No odour or staining.
SD005	SD005	19/01/2023	0.1 - 0.3	Silty CLAY: brown with orange and white mottling, low plasticity, with rootlets, dry. No odour or staining.
SD032	SD032	17/01/2023	0.1 - 0.3	Sandy GRAVEL: brown, medium to coarse sub-rounded to sub-angular gravels. No odour or staining.
SD039	RESI_SD039	18/01/2023	0.1 - 0.3	Silty CLAY: brown, with rootlets, saturated. No odour or staining.
SD040	SD040	17/01/2023	0.1 - 0.3	CLAY: brown/grey, high plasticity, with rootlets, saturated. No odour or staining.
SD046	RESI_SD041	18/01/2023	0.1 - 0.3	Sandy CLAY: grey-brown, medium plasticity, fine to coarse sand, saturated. No odour or staining.
SD047	RESI_SD042	18/01/2023	0.1 - 0.3	Gravelly CLAY: brown, low plasticity, red-orange-brown gravels <5mm sub-angular to sub-rounded. No odour or staining.
SD052	RESI_SD035	18/01/2023	0.1 - 0.3	CLAY: brown/black, low plasticity, saturated. Organic odour, no staining.
SD053	SMA13_SD	17/01/2023	0.1 - 0.3	Silty SAND: brown/grey, fine-medium sand, with rootlets. No odour or staining.
SD055	SMA7_SD	17/01/2023	0.1 - 0.3	Silty CLAY: brown, high plasticity, with rootlets, saturated. No odour or staining.
SD065	SMA8_SD	17/01/2023	0.1 - 0.3	Sandy GRAVELS: brown-red, fine to coarse, angular to sub-angular gravel, brown sand. No odour or staining.
SD080	RESI_SD013	18/01/2023	0.1 - 0.3	Silty CLAY: brown, with rootlets, saturated. Slight organic odour, no staining.
SD114	-	17/01/2023	0.1 - 0.3	CLAY: brown, low plasticity, with rootlets, dry. No odour or staining.
SD115	-	17/01/2023	0.1 - 0.3	Sandy CLAY: brown, low plasticity, dry. No odour or staining.
SD116	-	17/01/2023	0.1 - 0.3	CLAY: brown, low plasticity, with rootlets, dry. No odour or staining.
SD539	-	18/01/2023	0.1 - 0.3	Silty CLAY: grey, low plasticity, with rootlets, saturated. No odour or staining.
SD540	-	n/a	n/a	Location unable to be accessed (to confirm private stakeholder). Not visited/sampled.
SD555	-	17/01/2023	0.1 - 0.3	Silty CLAY: dark brown with orange and black mottling, high plasticity, with rootlets. No odour or staining.

Notes:

n/a Not applicable

Table T5 - Groundwater Analytical Results

						PFAS Full Suite																													
						Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	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)	Sum of PFAS
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	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
PFAS NEMP 2020 Drinking Water						**0.56**			**0.07**																										
PFAS NEMP 2020 Freshwater 99%						*19*	*0.00023*																												
Location_Code	**Alt. Name**	**Date**	**Field_ID**	**Sample_Type**	**Lab_Report #**																														
MW102	GW02D	18/01/2023	0356_MW102_230118	Normal	ES2301936	<0.01	*<0.01*	<0.01	<0.01	<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
MW102	GW02D	18/01/2023	0356_QC104_230118	Field_D	ES2301936	<0.01	*<0.01*	<0.01	<0.01	<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
MW102	GW02D	18/01/2023	0356_QC204_230118	Interlab_D	314827	<0.01	*<0.01*	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.02	<0.5	<0.1	<0.02	<0.01
MW109	GW03D	18/01/2023	0356_MW109_230118	Normal	ES2301936	<0.01	*0.06*	0.06	**0.12**	<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	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.16
MW110	GW03S	18/01/2023	0356_MW110_230118	Normal	ES2301936	<0.01	*<0.01*	<0.01	<0.01	<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

Notes:

LOR Limit of Reporting
Normal Primary sample
Field_D Intra-laboratory duplicate sample
Interlab_D Inter-laboratory duplicate sample
(blue) Denotes first time detection above LOR
(yellow) Denotes new exceedence of human health or ecological screening criteria

T6 - Surface Water Analytical Results

AECOM

						PFAS Full Suite																																		
						Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	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)	Sum of PFAS	Sum of PFAS (WA DER List)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.05	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
PFAS NEMP 2020 Freshwater 99%						*19*	*0.00023*																															
PFAS NEMP 2020 Recreational Water						**10**			**2**																													
Location_Code	**Alt. name**	**Date**	**Field_ID**	**Sample_Type**	**Lab_Report #**																																	
OTH006	-	18/01/2023	0356_OTH006_230118	Normal	ES2301793	<0.01	*0.16*	0.04	0.2	<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	0.2	0.2
SW002	SW002	17/01/2023	0356_SW002_230117	Normal	ES2301936	0.05	*0.85*	0.81	1.66	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	0.04	0.02	0.2	<0.02	<0.02	0.07	0.04	<0.05	<0.02	<0.02	2.13	2.02
SW003	SW003	17/01/2023	0356_SW003_230117	Normal	ES2301936	<0.01	*0.02*	0.02	0.04	<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	0.04
SW004	SW004	19/01/2023	0356_SW004_230119	Normal	ES2301936	<0.01	*<0.01*	<0.01	<0.01	<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
SW026	SMA13_SW	17/01/2023	0356_SW026_230117	Normal	ES2301936	0.02	*0.63*	0.28	0.91	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	1.08	1.05
SW028	SMA7_SW	17/01/2023	0356_SW028_230117	Normal	ES2301936	<0.01	*0.01*	<0.01	0.01	<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
SW028	SMA7_SW	17/01/2023	0356_QC101_230117	Field_D	ES2301936	<0.01	*0.01*	<0.01	0.01	<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
SW028	SMA7_SW	17/01/2023	0356_QC201_230117	Interlab_D	314827	<0.01	*0.01*	<0.01	0.01	<0.02	<0.01	<0.01	<0.02	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.02	<0.5	<0.1	<0.02	0.01	-
SW032	SW032	17/01/2023	0356_SW032_230117	Normal	ES2301936	0.08	*2.13*	1.69	**3.82**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.17	<0.1	<0.02	<0.02	<0.02	0.07	0.04	0.4	<0.02	<0.02	0.21	0.06	<0.05	<0.02	<0.02	4.85	4.57
SW034	SMA8_SW	17/01/2023	0356_SW034_230117	Normal	ES2301936	0.04	*1.35*	0.55	1.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.18	<0.02	<0.02	0.05	0.04	<0.05	<0.02	<0.02	2.29	2.21
SW034	SMA8_SW	17/01/2023	0356_QC203_230117	Interlab_D	314827	0.03	*1.1*	0.73	1.8	<0.02	<0.01	<0.01	<0.02	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	0.07	<0.02	<0.02	<0.02	<0.05	0.03	0.02	0.12	<0.01	<0.1	0.05	0.04	<0.5	<0.1	<0.02	2.2	-
SW034	SMA8_SW	17/01/2023	0356_QC103_230117	Field_D	ES2301936	0.04	*1.33*	0.52	1.85	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.17	<0.02	<0.02	0.05	0.03	<0.05	<0.02	<0.02	2.21	2.13
SW035	RESI_SW035	18/01/2023	0356_SW035_230118	Normal	ES2301792	<0.01	*0.01*	<0.01	0.01	<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
SW036	RESI_SW036	18/01/2023	0356_SW036_230118	Normal	ES2301792	0.03	*0.94*	0.58	1.52	<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	0.11	<0.02	<0.02	0.04	0.03	<0.05	<0.02	<0.02	1.75	1.71
SW039	RESI_SW039	18/01/2023	0356_SW039_230118	Normal	ES2301794	<0.01	*0.03*	0.01	0.04	<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	0.03	<0.02	<0.02	<0.02	0.03	<0.05	<0.02	<0.02	0.1	0.1
SW040	SW040	17/01/2023	0356_SW040_230117	Normal	ES2301936	<0.01	*<0.01*	<0.01	<0.01	<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
SW064	RESI_SW041	18/01/2023	0356_SW064_230118	Normal	ES2301793	0.02	*0.06*	0.02	0.08	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.09	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	0.05	<0.05	<0.02	<0.02	0.33	0.33
SW065	RESI_SW042	18/01/2023	0356_SW065_230118	Normal	ES2301793	<0.01	*0.03*	<0.01	0.03	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.05	<0.02	<0.02	0.11	0.11
SW553	-	18/01/2023	0356_SW553_230118	Normal	ES2301793	0.01	*0.3*	0.2	0.5	<0.05	<0.05	0.18	<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	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.73	0.73

Notes

LOR	Limit of Reporting
Normal	Primary sample
Field_D	Intra-laboratory duplicate sample
Interlab_D	Inter-laboratory duplicate sample
	Denotes first time detection above LOR
	Denotes new exceedence of human health or ecological screening criteria

Table T7 - Sediment Analytical Results

AECOM

						PFAS Full Suite																												
						Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	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)	Sum of PFAS
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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						0.0002	0.0002	0.0002	0.0002	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	0.0005	0.0002	0.0002
Location_Code	**Alt. Name**	**Date**	**Field_ID**	**Sample_Type**	**Lab_Report #**																													
SD002	SD002	17/01/2023	0356_SD002_230117	Normal	ES2301936	<0.0002	0.006	0.0018	0.0078	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0088
SD003	SD003	17/01/2023	0356_SD003_230117	Normal	ES2301936	<0.0002	0.0003	<0.0002	0.0003	<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	<0.0005	<0.0002	<0.0002	0.0003
SD004	SD004	19/01/2023	0356_SD004_230119	Normal	ES2301936	<0.0002	<0.0002	<0.0002	<0.0002	<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	<0.0005	<0.0002	<0.0002	<0.0002
SD005	SD005	19/01/2023	0356_SD005_230119	Normal	ES2301936	<0.0002	0.0008	<0.0002	0.0008	<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	<0.0005	<0.0002	<0.0002	0.0008
SD032	SD032	17/01/2023	0356_SD032_230117	Normal	ES2301936	<0.0002	0.0009	<0.0002	0.0009	<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	<0.0005	<0.0002	<0.0002	0.0009
SD039	RESI_SD039	18/01/2023	0356_SD039_230118	Normal	ES2301794	<0.001	0.0029	<0.001	0.0029	<0.001	<0.001	<0.001	<0.001	<0.0025	<0.001	<0.0025	<0.0025	<0.001	<0.0025	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0025	<0.001	<0.001	0.0029
SD040	SD040	17/01/2023	0356_SD040_230117	Normal	ES2301936	<0.0002	<0.0002	<0.0002	<0.0002	<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	<0.0005	<0.0002	<0.0002	<0.0002
SD046	RESI_SD041	18/01/2023	0356_SD046_230118	Normal	ES2301793	<0.0002	0.0016	<0.0002	0.0016	<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	<0.0005	<0.0002	<0.0002	0.0016
SD047	RESI_SD042	18/01/2023	0356_SD047_230118	Normal	ES2301793	<0.0002	0.0048	0.0003	0.0051	<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	<0.0005	<0.0002	<0.0002	0.0051
SD052	RESI_SD035	18/01/2023	0356_SD052_230118	Normal	ES2301792	<0.0002	0.0007	<0.0002	0.0007	<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	<0.0005	<0.0002	<0.0002	0.0007
SD053	SMA13_SD	17/01/2023	0356_SD053_230117	Normal	ES2301936	<0.0002	0.0051	0.0004	0.0055	<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	<0.0005	<0.0002	<0.0002	0.0055
SD055	SMA7_SD	17/01/2023	0356_SD055_230117	Normal	ES2301936	<0.0002	0.002	<0.0002	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.0018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0038
SD055	SMA7_SD	17/01/2023	0356_QC100_230117	Field_D	ES2301936	<0.0002	0.0034	<0.0002	0.0034	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.0028	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0064
SD055	SMA7_SD	17/01/2023	0356_QC200_230117	Interlab_D	314827	<0.0001	0.002	<0.0001	0.002	<0.0002	<0.0001	<0.0001	<0.0002	<0.001	<0.0002	<0.005	<0.001	<0.0002	<0.001	<0.0002	<0.001	<0.0001	<0.0002	0.001	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0002	<0.005	<0.0005	<0.0005	0.003
SD065	SMA8_SD	17/01/2023	0356_SD065_230117	Normal	ES2301936	<0.0002	0.0006	<0.0002	0.0006	<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	<0.0005	<0.0002	<0.0002	0.0006
SD065	SMA8_SD	17/01/2023	0356_QC102_230117	Field_D	ES2301936	<0.0002	0.0007	<0.0002	0.0007	<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	<0.0005	<0.0002	<0.0002	0.0007
SD065	SMA8_SD	17/01/2023	0356_QC202_230117	Interlab_D	314827	<0.0001	0.0006	0.0001	0.0007	<0.0002	<0.0001	<0.0001	<0.0002	<0.001	<0.0002	<0.005	<0.001	<0.0002	<0.001	<0.0002	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0002	<0.005	<0.0005	<0.0005	0.0007
SD080	RESI_SD013	18/01/2023	0356_SD080_230118	Normal	ES2301792	<0.0002	0.0189	0.0021	0.021	<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	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0213
SD114	-	17/01/2023	0356_SD114_230117	Normal	ES2301936	<0.0002	0.0023	<0.0002	0.0023	<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	<0.0005	<0.0002	<0.0002	0.0023
SD115	-	17/01/2023	0356_SD115_230117	Normal	ES2301936	0.0003	0.0351	0.0023	0.0374	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	0.0002	<0.0005	<0.0002	<0.0002	0.0391
SD116	-	17/01/2023	0356_SD116_230117	Normal	ES2301936	<0.0002	0.0003	<0.0002	0.0003	<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	<0.0005	<0.0002	<0.0002	0.0003
SD539	-	18/01/2023	0356_SD539_230118	Normal	ES2301793	<0.0002	0.0112	0.0004	0.0116	<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	<0.0005	<0.0002	<0.0002	0.0116
SD555	-	17/01/2023	0356_SD555_230117	Normal	ES2301936	<0.0002	0.0011	0.0002	0.0013	<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	<0.0005	<0.0002	<0.0002	0.0013

Notes

LOR	Limit of Reporting
Normal	Primary sample
Field_D	Intra-laboratory duplicate sample
Interlab_D	Inter-laboratory duplicate sample

Table T8 - Historical Groundwater Analytical Results

AECOM

					PFAS Full Suite																													
					Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	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)	Sum of PFAS
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.005	0.002	0.005	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.002	0.002
PFAS NEMP 2020 Drinking Water						**0.56**		**0.07**																										
PFAS NEMP 2020 Freshwater 99%					*0.00023*	*19*																												
Location_Code	**Field_ID**	**Sample_Type**	**Date**	**Lab_Report #**																														
MW008	0356_CNN0018_GW08_190515	Normal	15/05/2019	ES1914836	*0.02*	<0.01	<0.02	0.02	<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	<0.02	<0.02	<0.02	0.02
MW008	0356_MW008_220721	Normal	21/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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	<0.02	<0.05	<0.02	<0.02	<0.01
MW011	CNN0018_GW02_181005	Normal	5/10/2018	ES1832291	*0.12*	<0.05	0.3	-	<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	0.48	<0.05	<0.05	0.08	<0.05	<0.12	<0.05	<0.05	-
MW011	0356_CNN0018_GW02_190515	Normal	15/05/2019	ES1914836	*0.03*	<0.01	0.06	**0.09**	<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	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.12
MW011	0356_MW011_220721	Normal	21/07/2022	ES2226191	*0.02*	<0.01	0.02	0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.07
MW048	0356_CNN0039_GW01_181003	Normal	3/10/2018	ES1832056	*0.03*	0.03	2.17	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.17	<0.1	<0.02	<0.02	<0.02	<0.02	0.04	0.21	<0.02	<0.02	0.24	0.04	<0.05	<0.02	<0.02	-
MW048	0356_CNN0039_GW01_190227	Normal	27/02/2019	ES1906166	*0.03*	0.042	2.68	**2.71**	<0.005	<0.005	0.016	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	0.293	<0.01	<0.002	<0.002	<0.002	0.017	0.051	0.299	<0.002	<0.002	0.461	0.067	<0.005	<0.002	<0.002	3.96
MW048	0356_CNN0039_GW01_190510	Normal	10/05/2019	ES1914221	*0.02*	0.03	2.26	**2.28**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.16	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.15	<0.02	<0.02	0.24	<0.02	<0.05	<0.02	<0.02	2.88
MW048	0356_QC203_220721	Interlab_D	21/07/2022	301227	*0.02*	0.06	2.6	**2.7**	<0.02	<0.01	<0.01	<0.02	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	0.21	0.04	<0.02	<0.02	<0.05	0.02	0.05	0.23	<0.01	<0.1	0.31	0.05	<0.5	<0.1	<0.02	3.6
MW048	0356_MW048_220721	Normal	21/07/2022	ES2226191	*0.02*	0.05	2.26	**2.28**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.15	<0.1	<0.02	<0.02	<0.02	<0.02	0.04	0.27	<0.02	<0.02	0.31	0.04	<0.05	<0.02	<0.02	3.14
MW048	0356_QC103_220721	Field_D	21/07/2022	ES2226191	*0.02*	0.05	2.24	**2.26**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.19	<0.1	<0.02	<0.02	<0.02	<0.02	0.04	0.24	<0.02	<0.02	0.31	0.06	<0.05	<0.02	<0.02	3.15
MW049	0356_CNN0039_GW02_181003	Normal	3/10/2018	ES1832056	*1.12*	0.06	1.26	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.07	<0.1	<0.02	<0.02	<0.02	0.1	0.02	0.1	<0.02	<0.02	0.09	0.03	<0.05	<0.02	<0.02	-
MW049	0356_CNN0039_GW02_190227	Normal	27/02/2019	ES1906166	*6.45*	0.169	3.97	**10.4**	<0.005	<0.005	0.03	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	0.204	<0.01	<0.002	<0.002	<0.002	0.339	0.048	0.36	<0.002	<0.002	0.316	0.057	<0.005	<0.002	<0.002	11.9
MW049	0356_CNN0039_GW02_190510	Normal	10/05/2019	ES1914221	*2.13*	0.09	3.16	**5.29**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.15	<0.1	<0.02	<0.02	<0.02	0.14	0.03	0.25	<0.02	<0.02	0.26	<0.02	<0.05	<0.02	<0.02	6.21
MW050	0356_CNN0039_GW03_190507	Normal	7/05/2019	ES1913966	*<0.01*	<0.01	<0.02	<0.01	<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
MW050	0356_MW050_220721	Normal	21/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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
MW051	0356_CNN0039_GW04_190508	Normal	8/05/2019	ES1913967	*<0.01*	<0.01	<0.02	<0.01	<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
MW052	0356_CNN0039_GW05_190510	Normal	10/05/2019	ES1914221	*0.42*	0.03	0.53	**0.95**	<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	0.05	<0.02	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	1.09
MW052	0356_MW052_220721	Normal	21/07/2022	ES2226191	*0.38*	0.02	0.28	**0.66**	<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	0.07	<0.02	<0.02	0.02	0.02	<0.05	<0.02	<0.02	0.79
MW059	0356_HLG_GW03_190508	Normal	8/05/2019	ES1913967	*0.04*	<0.01	0.04	**0.08**	<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
MW059	0356_MW059_220721	Normal	21/07/2022	ES2226191	*<0.01*	<0.01	0.04	0.04	<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
MW063	0356_MW063_220719	Normal	19/07/2022	ES2226191	*0.05*	<0.01	<0.01	0.05	<0.05	<0.05	0.24	<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	0.34
MW071	0356_NSW1164_MW03D_190206	Normal	6/02/2019	ES1903889	*0.08*	<0.05	<0.05	**0.08**	<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	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	0.15
MW071	0356_NSW1164_MW03D_190509	Normal	9/05/2019	ES1914221	*<0.01*	<0.01	<0.02	<0.01	<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
MW071	0356_MW071_220719	Normal	19/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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
MW073	0356_NSW1164_MW03S_190206	Normal	6/02/2019	ES1903889	*0.01*	<0.01	<0.02	0.01	<0.05	<0.05	1.48	<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	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	1.52
MW073	0356_NSW1164_MW03S_190509	Normal	9/05/2019	ES1914221	*<0.01*	<0.01	<0.02	<0.01	<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
MW073	0356_MW073_220719	Normal	19/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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
MW084	0356_QC230_181019	Interlab_D	19/10/2018	204852	*<0.01*	<0.01	<0.01	<0.01	<0.01	<0.01	1.1	<0.01	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.02	<0.5	<0.1	<0.02	1.1
MW084	0356_RESI_GW005_181019	Normal	19/10/2018	ES1832121	*<0.01*	<0.01	<0.02	-	<0.05	<0.05	1.06	<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	-
MW102	0356_GW02D_190506	Normal	6/05/2019	ES1913967	*<0.01*	<0.01	<0.02	<0.01	<0.05	<0.05	0.11	<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	0.11
MW102	0356_GW02D_190508	Normal	8/05/2019	ES1913967	*<0.01*	<0.01	<0.02	<0.01	<0.05	<0.05	0.1	<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	0.1
MW102	0356-GW-02D-201020	Normal	20/10/2020	ES2036949	*0.02*	<0.01	<0.02	0.02	<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
MW102	0356_MW102_220721	Normal	21/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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
MW102	0356_QC204_230118	Interlab_D	18/01/2023	314827	*<0.01*	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.02	<0.5	<0.1	<0.02	<0.01
MW102	0356_MW102_230118	Normal	18/01/2023	ES2301936	*<0.01*	<0.01	<0.01	<0.01	<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
MW102	0356_QC104_230118	Field_D	18/01/2023	ES2301936	*<0.01*	<0.01	<0.01	<0.01	<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
MW109	0356_GW03D_190510	Normal	10/05/2019	ES1914221	*0.28*	<0.01	<0.02	**0.28**	<0.05	<0.05	1.48	<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	1.76
MW109	0356_GW03D_190528	Normal	28/05/2019	ES1916262	*0.16*	<0.01	<0.02	**0.16**	<0.05	<0.05	0.07	<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	0.23
MW109	0356_QC254_201020	Interlab_D	19/10/2020	RN1292430	*<0.02*	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	-
MW109	0356-GW03D-201020	Normal	20/10/2020	ES2036949	*<0.01*	<0.01	<0.02	<0.01	<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
MW109	0356-QC154-201020	Field_D	20/10/2020	ES2036949	*<0.01*	<0.01	<0.02	<0.01	<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
MW109	0356_MW109_220721	Normal	21/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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
MW109	0356_MW109_230118	Normal	18/01/2023	ES2301936	*0.06*	<0.01	0.06	**0.12**	<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	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.16
MW110	0356_GW03S_190507	Normal	7/05/2019	ES1913967	*<0.01*	<0.01	<0.02	<0.01	<0.05	<0.05	0.3	<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	0.3
MW110	0356-GW03S-201020	Normal	20/10/2020	ES2036949	*<0.01*	<0.01	<0.02	<0.01	<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
MW110	0356_MW110_220721	Normal	21/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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
MW110	0356_MW110_230118	Normal	18/01/2023	ES2301936	*<0.01*	<0.01	<0.01	<0.01	<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
MW114	0356_GW04D_190506	Normal	6/05/2019	ES1913967	*<0.01*	<0.01	<0.02	<0.01	<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
MW114	0356-GW04D-201020	Normal	20/10/2020	ES2036949	*<0.01*	<0.01	<0.02	<0.01	<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
MW114	0356_MW114_220721	Normal	21/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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
MW115	0356_GW04S_190506	Normal	6/05/2019	ES1913967	*<0.01*	<0.01	<0.02	<0.01	<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
MW115	0356-GW04S-201020	Normal	20/10/2020	ES2036949	*<0.01*	<0.01	<0.02	<0.01	<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

Table T8 - Historical Groundwater Analytical Results

AECOM

					PFAS Full Suite																													
					Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	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)	Sum of PFAS
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.005	0.002	0.005	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.002	0.002
PFAS NEMP 2020 Drinking Water						**0.56**		**0.07**																										
PFAS NEMP 2020 Freshwater 99%					*0.00023*	*19*																												
Location_Code	**Field_ID**	**Sample_Type**	**Date**	**Lab_Report #**																														
MW115	0356_MW115_220721	Normal	21/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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	<0.02	<0.02	<0.01
MW118	0356_GW05S_190506	Normal	6/05/2019	ES1913966	*<0.01*	<0.01	<0.02	<0.01	<0.05	<0.05	0.09	<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	<0.02	<0.02	0.09
MW118	0356_MW118_220721	Normal	21/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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	<0.02	<0.02	<0.01
MW121	0356_GW06_190502	Normal	2/05/2019	ES1913385	*<0.01*	0.01	<0.02	<0.01	<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	<0.02	<0.02	0.01
MW121	0356_GW06_190531	Normal	31/05/2019	ES1917196	*<0.01*	0.01	<0.02	<0.01	<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	<0.02	<0.02	0.01
MW121	0356_GW06_201019	Normal	19/10/2020	ES2036629	*0.03*	0.02	<0.02	0.03	<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	<0.02	<0.02	0.05
MW121	0356_QC206_220722	Interlab_D	22/07/2022	301227	*<0.01*	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.02	<0.5	<0.1	<0.02	<0.01
MW121	0356_MW121_220722	Normal	22/07/2022	ES2226474	*<0.01*	<0.01	<0.01	<0.01	<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	<0.02	<0.02	<0.01
MW121	0356_QC106_220722	Field_D	22/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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	<0.02	<0.02	<0.01
MW124	0356_GW07_190502	Normal	2/05/2019	ES1913385	*<0.01*	<0.01	<0.02	<0.01	<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	<0.02	<0.02	<0.01
MW124	0356_GW07_190531	Normal	31/05/2019	ES1917196	*<0.01*	<0.01	<0.02	<0.01	<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	<0.02	<0.02	<0.01
MW124	0356_GW07_201019	Normal	19/10/2020	ES2036629	*<0.01*	<0.01	<0.02	<0.01	<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	<0.02	<0.02	<0.01
MW124	0356_MW124_220720	Normal	20/07/2022	ES2226474	*<0.01*	<0.01	0.07	**0.07**	<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	<0.02	<0.02	0.07
MW126	0356_GW08S_190503	Normal	3/05/2019	ES1913384	*<0.05*	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05
MW126	0356_MW126_220722	Normal	22/07/2022	ES2226120	*<0.01*	<0.01	0.03	0.03	<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	<0.02	<0.02	0.03
MW128	0356_GW09S_190503	Normal	3/05/2019	ES1913384	*<0.01*	<0.01	<0.02	<0.01	<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	<0.02	<0.02	<0.01
MW128	0356_GW09S_190530	Normal	30/05/2019	ES1917195	*0.02*	<0.01	<0.02	0.02	<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	<0.02	<0.02	0.02
MW128	0356_MW128_220722	Normal	22/07/2022	ES2226120	*<0.01*	<0.01	<0.01	<0.01	<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	<0.02	<0.02	<0.01
MW132	0356_RESI_GW011_181106	Normal	6/11/2018	ES1832961	*0.02*	<0.01	0.03	-	<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	<0.02	<0.02	-
MW132	0356_RESI_GW011_190507	Normal	7/05/2019	ES1913968	*<0.01*	<0.01	0.02	0.02	<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	<0.02	<0.02	0.02
MW132	0356_MW132_220719	Normal	19/07/2022	ES2226118	*0.03*	<0.01	0.03	0.06	<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	<0.02	<0.02	0.06
MW167	0356_CNN0230_GW01_181002	Normal	2/10/2018	ES1832056	*<0.05*	<0.05	<0.05	-	<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	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	-
MW167	0356_CNN0230_GW01_190301	Normal	1/03/2019	ES1906391	*0.012*	<0.002	<0.002	0.012	<0.005	<0.005	0.348	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	0.36
MW167	0356_CNN0230_GW01_190515	Normal	15/05/2019	ES1914836	*0.21*	<0.01	0.02	**0.23**	<0.05	<0.05	0.51	<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	0.74
MW167	0356_MW167_220721	Normal	21/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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	<0.02	<0.02	<0.01
MW187D	0356_MW09D_200903	Normal	3/09/2020	ES2031221	*<0.01*	<0.01	<0.02	<0.01	<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	<0.02	<0.02	<0.01
MW187D	0356_MW187D_220720	Normal	20/07/2022	ES2226474	*<0.01*	<0.01	<0.01	<0.01	<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	<0.02	<0.02	<0.01
MW187S	0356_QC202_220720	Interlab_D	20/07/2022	301227	*<0.01*	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.02	<0.5	<0.1	<0.02	<0.01
MW187S	0356_MW187S_220720	Normal	20/07/2022	ES2226474	*<0.01*	<0.01	<0.01	<0.01	<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
MW187S	0356_QC102_220720	Field_D	20/07/2022	ES2226191	*<0.01*	<0.01	<0.01	<0.01	<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	<0.02	<0.02	<0.01
MW188D	0356_QC251_200903	Interlab_D	3/08/2020	RN1288903	*<0.02*	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.2	<0.01	<0.05	<0.2	<0.01	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	-
MW188D	0356_MW10D_200903	Normal	3/09/2020	ES2031221	*<0.01*	<0.01	<0.02	<0.01	<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	<0.02	<0.02	<0.01
MW188D	0356_MW188D_220722	Normal	22/07/2022	ES2226474	*0.02*	<0.01	<0.01	0.02	<0.05	<0.05	0.32	<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	<0.02	<0.02	0.34
MW188S	0356_MW10S_200903	Normal	3/09/2020	ES2031221	*<0.01*	<0.01	<0.02	<0.01	<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	<0.02	<0.02	<0.01
MW188S	0356_QC151_200903	Field_D	3/09/2020	ES2031221	*<0.01*	<0.01	<0.02	<0.01	<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	<0.02	<0.02	<0.01
MW188S	0356_MW188S_220722	Normal	22/07/2022	ES2226474	*<0.01*	<0.01	<0.01	<0.01	<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

Notes:

LOR	Limit of Reporting
Normal	Primary sample
Field_D	Intra-laboratory duplicate sample
Interlab_D	Inter-laboratory duplicate sample
Bold	Denotes exceedance of adopted human health screening criteria
Italics	Denotes exceedance of adopted ecological screening criteria

Table T9 - Historical Surface Water Analytical Results

AECOM

						PFAS Full Suite																												
						Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	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)	Sum of PFAS
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.005	0.002	0.005	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.002	0.002
PFAS NEMP 2020 Freshwater 99%						*19*	*0.00023*																												
PFAS NEMP 2020 Recreational Water						**10**			**2**																										
Location_Code	**Field_ID**	**Sample_Type**	**Date**	**Lab_Report #**																															
OTH006	0356_OTH006_190403	Normal	3/04/2019	ES1910566		<0.01	*0.02*	0.02	0.04	<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
OTH006	0356_QC252_201019	Interlab_D	19/10/2020	RN1292419		<0.01	*<0.02*	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.01	-
OTH006	0356_OTH006_201019	Normal	19/10/2020	ES2036629		<0.01	*<0.01*	<0.02	<0.01	<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
OTH006	0356_QC152_201019	Field_D	19/10/2020	ES2036629		<0.01	*<0.01*	<0.02	<0.01	<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
OTH006	0356_OTH006_220720	Normal	20/07/2022	ES2226474		0.01	*0.12*	0.11	0.23	<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	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.27
OTH006	0356_OTH006_230118	Normal	18/01/2023	ES2301793		<0.01	*0.16*	0.04	0.2	<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	0.2
SW002	0356_SW002_SW_181008	Normal	8/10/2018	ES1832291		0.01	*0.33*	0.34	-	<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	0.07	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	-
SW002	0356_SW002_190228	Normal	28/02/2019	ES1906391		0.007	*0.18*	0.21	0.39	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	0.013	<0.01	<0.002	<0.002	<0.002	0.005	0.004	0.026	<0.002	<0.002	0.011	0.009	<0.005	<0.002	<0.002	0.465
SW002	0356_SW002_190424	Normal	24/04/2019	ES1912502		0.02	*0.31*	0.2	0.51	<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	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.56
SW002	0356_SW002_200416	Normal	16/04/2020	ES2013148		<0.01	*0.26*	0.24	0.5	<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	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.54
SW002	0356_QC204_220721	Interlab_D	21/07/2022	301227		0.01	*0.42*	0.24	0.66	<0.02	<0.01	<0.01	<0.02	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	0.02	<0.02	<0.02	<0.02	<0.05	0.01	<0.01	0.04	<0.01	<0.1	0.02	<0.02	<0.5	<0.1	<0.02	0.76
SW002	0356_SW002_220721	Normal	21/07/2022	ES2226191		0.01	*0.33*	0.24	0.57	<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	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.65
SW002	0356_QC104_220721	Field_D	21/07/2022	ES2226191		0.01	*0.34*	0.21	0.55	<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	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.6
SW002	0356_SW002_230117	Normal	17/01/2023	ES2301936		0.05	*0.85*	0.81	1.66	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	0.04	0.02	0.2	<0.02	<0.02	0.07	0.04	<0.05	<0.02	<0.02	2.13
SW003	0356_SW003_181130	Normal	30/11/2018	ES1836301		<0.01	*0.01*	<0.02	-	<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	-
SW003	0356_SW003_190417	Normal	17/04/2019	ES1912500		0.02	*0.24*	0.23	0.47	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.61
SW003	0356_SW003_220721	Normal	21/07/2022	ES2226191		<0.01	*0.01*	0.02	0.03	<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	0.03
SW003	0356_SW003_230117	Normal	17/01/2023	ES2301936		<0.01	*0.02*	0.02	0.04	<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
SW004	0356_SW004_181130	Normal	30/11/2018	ES1836301		<0.01	*<0.01*	<0.02	-	<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	-
SW004	0356_SW004_190418	Normal	18/04/2019	ES1912500		<0.01	*<0.01*	<0.02	<0.01	<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
SW004	0356_SW004_200418	Normal	18/04/2020	ES2013148		<0.002	*<0.002*	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002
SW004	0356_SW004_220719	Normal	19/07/2022	ES2226191		<0.01	*<0.01*	<0.01	<0.01	<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
SW004	0356_SW004_230119	Normal	19/01/2023	ES2301936		<0.01	*<0.01*	<0.01	<0.01	<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
SW005	0356_SW005_181130	Normal	30/11/2018	ES1836301		<0.01	*0.02*	<0.02	-	<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	-
SW005	0356_QC241_SW_190418	Interlab_D	18/04/2019	216434		<0.01	*<0.01*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.02	<0.5	<0.1	<0.02	<0.01
SW005	0356_SW005_190418	Normal	18/04/2019	ES1912500		<0.01	*<0.01*	<0.02	<0.01	<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
SW005	0356_SW005_200418	Normal	18/04/2020	ES2013148		<0.002	*0.009*	0.004	0.013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	0.013
SW005	0356_SW005_220719	Normal	19/07/2022	ES2226191		<0.01	*<0.01*	<0.01	<0.01	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.03
SW026	0356_SMA13_SW_181008	Normal	8/10/2018	ES1832291		<0.01	*0.23*	0.12	-	<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	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	-
SW026	0356_SMA13_SW_190424	Normal	24/04/2019	ES1912502		0.01	*0.24*	0.13	0.37	<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	0.38
SW026	0356_SMA13_200416	Normal	16/04/2020	ES2013148		<0.01	*0.24*	0.11	0.35	<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	0.35
SW026	0356_QC101_200416	Field_D	16/04/2020	ES2013148		<0.01	*0.27*	0.12	0.39	<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	0.39
SW026	0356_SW026_220721	Normal	21/07/2022	ES2226191		0.02	*0.76*	0.44	1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.06	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	<0.02	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	1.38
SW026	0356_SW026_230117	Normal	17/01/2023	ES2301936		0.02	*0.63*	0.28	0.91	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	1.08
SW028	0356_QC234_SW_181025	Interlab_D	25/10/2018	204852		<0.01	*<0.01*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.02	<0.5	<0.1	<0.02	<0.01
SW028	0356_SWA7_SW_181025	Normal	25/10/2018	ES1832529		<0.01	*<0.01*	<0.02	-	<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	-
SW028	0356_QC134_SW_181025	Field_D	25/10/2018	ES1832529		<0.01	*<0.01*	<0.02	-	<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	-
SW028	0356_SMA7_SW_190417	Normal	17/04/2019	ES1912500		<0.01	*0.03*	<0.02	0.03	<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	0.03
SW028	0356_SW028_220721	Normal	21/07/2022	ES2226191		<0.01	*<0.01*	0.02	0.02	<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
SW028	0356_QC201_230117	Interlab_D	17/01/2023	314827		<0.01	*0.01*	<0.01	0.01	<0.02	<0.01	<0.01	<0.02	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.02	<0.5	<0.1	<0.02	0.01
SW028	0356_SW028_230117	Normal	17/01/2023	ES2301936		<0.01	*0.01*	<0.01	0.01	<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
SW028	0356_QC101_230117	Field_D	17/01/2023	ES2301936		<0.01	*0.01*	<0.01	0.01	<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
SW032	0356_SW032_190322	Normal	22/03/2019	ES1913790		<0.01	*0.07*	0.02	0.09	<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	0.09
SW032	0356_SW032_220721	Normal	21/07/2022	ES2226191		0.03	*0.86*	0.71	1.57	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.11	<0.02	<0.02	0.06	<0.02	<0.05	<0.02	<0.02	1.81
SW032	0356_SW032_230117	Normal	17/01/2023	ES2301936		0.08	*2.13*	1.69	**3.82**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.17	<0.1	<0.02	<0.02	<0.02	0.07	0.04	0.4	<0.02	<0.02	0.21	0.06	<0.05	<0.02	<0.02	4.85
SW034	0356_SMA8_SW_181130	Normal	30/11/2018	ES1836301		<0.01	*0.16*	0.09	-	<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	<0.02	<0.02	<0.02	<0.02	0.04	<0.05	<0.02	<0.02	-
SW034	0356_SMA8_SW_190208	Normal	8/02/2019	ES1903952		<0.01	*<0.01*	<0.02	<0.01	<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
SW034	0356_SMA8_SW_190424	Normal	24/04/2019	ES1912502		<0.01	*0.21*	0.1	0.31	<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	0.31
SW034	0356_SMA8_200424	Normal	24/04/2020	ES2014144		0.01	*0.43*	0.44	0.87	<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	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.96
SW034	0356_SMA8_201019	Normal	19/10/2020	ES2036628		<0.01	*0.35*	0.36	0.71	<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	0.05	<0.02	<0.02	0.02	<0.02	<0.05	<0.02	<0.02	0.81
SW034	0356_SW034_220721	Normal	21/07/2022	ES2226191		0.01	*0.35*	0.24	0.59	<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	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.64

Table T9 - Historical Surface Water Analytical Results

AECOM

																		PFAS Full Suite																
						Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	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)	Sum of PFAS
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.005	0.002	0.005	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.002	0.002
PFAS NEMP 2020 Freshwater 99%						*19*	*0.00023*																												
PFAS NEMP 2020 Recreational Water						**10**			**2**																										
Location_Code	**Field_ID**	**Sample_Type**	**Date**	**Lab_Report #**																															
SW034	0356_QC203_230117	Interlab_D	17/01/2023	314827		0.03	*1.1*	0.73	1.8	<0.02	<0.01	<0.01	<0.02	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	0.07	<0.02	<0.02	<0.02	<0.05	0.03	0.02	0.12	<0.01	<0.1	0.05	0.04	<0.5	<0.1	<0.02	2.2
SW034	0356_SW034_230117	Normal	17/01/2023	ES2301936		0.04	*1.35*	0.55	1.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.18	<0.02	<0.02	0.05	0.04	<0.05	<0.02	<0.02	2.29
SW034	0356_QC103_230117	Field_D	17/01/2023	ES2301936		0.04	*1.33*	0.52	1.85	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	<0.1	<0.02	<0.02	<0.02	0.03	<0.02	0.17	<0.02	<0.02	0.05	0.03	<0.05	<0.02	<0.02	2.21
SW035	0356_RESI_SW035_190411	Normal	11/04/2019	ES1911618		<0.01	*<0.01*	<0.02	<0.01	<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
SW035	0356_QC140_190411	Field_D	11/04/2019	ES1911619		<0.01	*<0.01*	<0.02	<0.01	<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
SW035	0356_SW035_220719	Normal	19/07/2022	ES2226120		<0.01	*<0.01*	<0.01	<0.01	<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
SW035	0356_SW035_230118	Normal	18/01/2023	ES2301792		<0.01	*0.01*	<0.01	0.01	<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
SW036	0356_RESI_SW036_190411	Normal	11/04/2019	ES1911618		<0.01	*0.2*	0.09	0.29	<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
SW036	0356_SW036_220719	Normal	19/07/2022	ES2226120		<0.01	*0.23*	0.15	0.38	<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	0.03	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.41
SW036	0356_SW036_230118	Normal	18/01/2023	ES2301792		0.03	*0.94*	0.58	1.52	<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	0.11	<0.02	<0.02	0.04	0.03	<0.05	<0.02	<0.02	1.75
SW039	0356_SW039_220720	Interlab_D	12/04/2019	215778		0.02	*0.07*	<0.01	0.07	<0.01	<0.01	<0.01	<0.01	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	0.01	<0.01	<0.1	<0.01	0.02	<0.5	<0.1	<0.02	0.12
SW039	0356_RESI_SW039_190412	Normal	12/04/2019	ES1911621		0.02	*0.08*	<0.02	0.08	<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	0.03	<0.02	<0.02	<0.02	0.02	<0.05	<0.02	<0.02	0.15
SW039	0356-RESI-SW039-200420	Normal	20/04/2020	ES2013315		<0.01	*0.01*	<0.02	0.01	<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
SW039	0356_SW039_220720	Normal	20/07/2022	ES2226119		<0.01	*0.01*	0.01	0.02	<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
SW039	0356_SW039_230118	Normal	18/01/2023	ES2301794		<0.01	*0.03*	0.01	0.04	<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	0.03	<0.02	<0.02	<0.02	0.03	<0.05	<0.02	<0.02	0.1
SW040	0356_SW040_190507	Normal	7/05/2019	ES1913967		<0.01	*<0.01*	<0.02	<0.01	<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
SW040	0356_SW040_220721	Normal	21/07/2022	ES2226191		<0.01	*<0.01*	<0.01	<0.01	<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
SW040	0356_SW040_230117	Normal	17/01/2023	ES2301936		<0.01	*<0.01*	<0.01	<0.01	<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
SW064	0356_RESI_SW041_190417	Normal	17/04/2019	ES1912501		0.02	*0.02*	<0.02	0.02	<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
SW064	0356_QC141_190417	Field_D	17/04/2019	ES1912500		0.01	*0.02*	<0.02	0.02	<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	0.03
SW064	0356_QC204_200422	Interlab_D	22/04/2020	241483		<0.01	*<0.01*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	0.02	<0.01	<0.1	<0.01	0.03	<0.5	<0.1	<0.02	0.05
SW064	0356_RESI_SW041_200422	Normal	22/04/2020	ES2013744		<0.01	*<0.01*	<0.02	<0.01	<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	0.03	<0.05	<0.02	<0.02	0.03
SW064	0356_SW064_220720	Normal	20/07/2022	ES2226474		<0.01	*0.02*	0.02	0.04	<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
SW064	0356_SW064_230118	Normal	18/01/2023	ES2301793		0.02	*0.06*	0.02	0.08	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.09	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	0.05	<0.05	<0.02	<0.02	0.33
SW065	0356_RESI_SW042_190417	Normal	17/04/2019	ES1912501		0.02	*0.03*	<0.02	0.03	<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	0.05
SW065	0356_QC201_220720	Interlab_D	20/07/2022	301227		<0.01	*0.02*	0.02	0.05	<0.02	<0.01	<0.01	<0.02	<0.1	<0.02	<0.5	<0.05	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.02	<0.5	<0.1	<0.02	0.05
SW065	0356_QC101_220720	Field_D	20/07/2022	ES2226191		<0.01	*0.02*	0.01	0.03	<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	0.03
SW065	0356_SW065_220720	Normal	20/07/2022	ES2226474		<0.01	*0.01*	0.01	0.02	<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
SW065	0356_SW065_230118	Normal	18/01/2023	ES2301793		<0.01	*0.03*	<0.01	0.03	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.05	<0.02	<0.02	0.11
SW114	0356_SW114_220721	Normal	21/07/2022	ES2226191		<0.01	*0.01*	<0.01	0.01	<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	0.03
SW115	0356_SW115_220721	Normal	21/07/2022	ES2226191		0.01	*0.49*	0.33	0.82	<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	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.86
SW201	0356_QC200_201102	Interlab_D	2/11/2020	RN1293663		<0.01	*<0.02*	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	-
SW201	0356_SW201_201102	Normal	2/11/2020	ES2038668		<0.01	*<0.01*	<0.02	<0.01	<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
SW201	0356_QC100_201102	Field_D	2/11/2020	ES2038668		<0.01	*<0.01*	<0.02	<0.01	<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
SW202	0356_QC201_201102	Interlab_D	2/11/2020	RN1293663		<0.01	*0.095*	0.079	-	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	-
SW202	0356_SW202_201102	Normal	2/11/2020	ES2038668		<0.01	*0.11*	0.08	0.19	<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	0.19
SW202	0356_QC101_201102	Field_D	2/11/2020	ES2038668		<0.01	*0.11*	0.08	0.19	<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	0.19
SW203	0356_SW203_201102	Normal	2/11/2020	ES2038668		<0.01	*0.22*	0.14	0.36	<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	0.38
SW204	0356_QC207_201102	Interlab_D	2/11/2020	RN1293663		<0.01	*0.19*	0.11	-	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	0.015	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	-
SW204	0356_SW204_201102	Normal	2/11/2020	ES2038668		<0.01	*0.21*	0.12	0.33	<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	0.33
SW204	0356_QC107_201102	Field_D	2/11/2020	ES2038668		<0.01	*0.22*	0.12	0.34	<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	0.34
SW205	0356_SW205_201102	Normal	2/11/2020	ES2038668		<0.01	*0.01*	<0.02	0.01	<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
SW553	0356_SW553_201019	Normal	19/10/2020	ES2036629		0.01	*0.25*	0.28	0.53	<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	0.05	<0.02	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	0.65
SW553	0356_SW553_220720	Normal	20/07/2022	ES2226474		<0.01	*0.08*	0.07	0.15	<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	0.15
SW553	0356_SW553_230118	Normal	18/01/2023	ES2301793		0.01	*0.3*	0.2	0.5	<0.05	<0.05	0.18	<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	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.73
SW554	0356_SW554_201019	Normal	19/10/2020	ES2036629		<0.01	*<0.01*	<0.02	<0.01	<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
SW554	0356_SW554_220720	Normal	20/07/2022	ES2226474		<0.01	*0.05*	0.04	0.09	<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	0.09

Table T9 - Historical Surface Water Analytical Results

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						PFAS Full Suite																																
						Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	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)	Sum of PFAS
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.002	0.005	0.005	0.002	0.005	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.002	0.002	
PFAS NEMP 2020 Freshwater 99%						*19*	*0.00023*																														
PFAS NEMP 2020 Recreational Water						**10**			**2**																												
Location_Code	**Field_ID**	**Sample_Type**	**Date**	**Lab_Report #**																																	
SW555	0356_SW555_220721	Normal	21/07/2022	ES2226191		<0.01	*<0.01*	<0.01	<0.01	<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

Notes:

LOR	Limit of Reporting
Normal	Primary sample
Field_D	Intra-laboratory duplicate sample
Interlab_D	Inter-laboratory duplicate sample
Bold	Denotes exceedance of adopted human health screening criteria
Italics	Denotes exceedance of adopted ecological screening criteria

Table T10 - Historical Sediment Analytical Results

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PFAS Full Suite

Location_Code	Field_ID	Sample_Type	Date	Lab_Report #	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	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)	Sum of PFAS
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0005	0.0002	0.0002	0.0001
SD002	0356_SD002_181008	Normal	8/10/2018	ES1832293	0.0024	<0.0002	0.0004	-	<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	<0.0005	<0.0002	<0.0002	-
SD002	0356_SD002_190228	Normal	28/02/2019	ES1906391	0.001	<0.0002	<0.0002	0.001	<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	<0.0005	<0.0002	<0.0002	0.001
SD002	0356_SD002_190424	Normal	24/04/2019	ES1912502	0.0029	<0.0002	<0.0002	0.0029	<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	<0.0005	<0.0002	<0.0002	0.0029
SD002	0356_SD002_200416	Normal	16/04/2020	ES2013148	0.001	<0.0002	<0.0002	0.001	<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	<0.0005	<0.0002	<0.0002	0.001
SD002	0356_QC205_220721	Interlab_D	21/07/2022	301227	0.037	<0.0001	0.0017	0.039	<0.0002	<0.0001	<0.0001	<0.0002	<0.001	<0.0002	<0.005	<0.001	<0.0002	<0.001	<0.0001	0.0002	0.0003	<0.0005	<0.0005	0.0002	<0.0001	0.0002	<0.0001	<0.001	<0.0001	0.0002	<0.005	<0.0005	<0.0005	0.04
SD002	0356_SD002_220721	Normal	21/07/2022	ES2226191	0.0428	0.0002	0.0018	0.0446	<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	<0.0005	<0.0002	<0.0002	0.0448
SD002	0356_QC105_220721	Field_D	21/07/2022	ES2226191	0.0345	0.0002	0.0017	0.0362	<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	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	0.0003	0.0372
SD002	0356_SD002_230117	Normal	17/01/2023	ES2301936	0.006	<0.0002	0.0018	0.0078	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0088
SD003	0356_SD003_181005	Normal	5/10/2018	ES1832293	0.0009	<0.0002	<0.0002	-	<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	<0.0005	<0.0002	<0.0002	-
SD003	0356_SD003_190228	Normal	28/02/2019	ES1906391	0.0013	<0.0002	<0.0002	0.0013	<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	<0.0005	<0.0002	<0.0002	0.0013
SD003	0356_SD003_190417	Normal	17/04/2019	ES1912500	0.0334	<0.0002	0.0035	0.0369	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0002	<0.001	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	0.0003	<0.0005	<0.0002	<0.0002	0.0386
SD003	0356_SD003_220721	Normal	21/07/2022	ES2226191	0.0026	<0.0002	<0.0002	0.0026	<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	<0.0005	<0.0002	<0.0002	0.0026
SD003	0356_SD003_230117	Normal	17/01/2023	ES2301936	0.0003	<0.0002	<0.0002	0.0003	<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	<0.0005	<0.0002	<0.0002	0.0003
SD004	0356_SD004_181012	Normal	12/10/2018	ES1832293	0.0002	<0.0002	<0.0002	-	<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	<0.0005	<0.0002	<0.0002	-
SD004	0356_NSW1164_SD004_190117	Normal	17/01/2019	ES1902070	<0.0002	<0.0002	<0.0002	<0.0002	<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	<0.0005	<0.0002	<0.0002	<0.0002
SD004	0356_SD004_190305	Normal	5/03/2019	ES1906973	<0.0002	<0.0002	<0.0002	<0.0002	<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	<0.0005	<0.0002	<0.0002	<0.0002
SD004	0356_SD004_190418	Normal	18/04/2019	ES1912500	<0.0002	<0.0002	<0.0002	<0.0002	<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	<0.0005	<0.0002	<0.0002	<0.0002
SD004	0356_SD004_200418	Normal	18/04/2020	ES2013148	<0.0002	<0.0002	<0.0002	<0.0002	<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	<0.0005	<0.0002	<0.0002	<0.0002
SD004	0356_SD004_220719	Normal	19/07/2022	ES2226191	<0.0002	<0.0002	<0.0002	<0.0002	<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	<0.0005	<0.0002	<0.0002	<0.0002
SD004	0356_SD004_230119	Normal	19/01/2023	ES2301936	<0.0002	<0.0002	<0.0002	<0.0002	<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	<0.0005	<0.0002	<0.0002	<0.0002
SD005	0356_SD005_181012	Normal	12/10/2018	ES1832293	0.0004	<0.0002	<0.0002	-	<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	<0.0005	<0.0002	<0.0002	-
SD005	0356_SD_QC200_190118	Interlab_D	18/01/2019	210062	0.0004	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0002	<0.005	<0.001	<0.0002	<0.001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0002	<0.005	<0.0005	<0.0005	0.0004
SD005	0356_NSW1164_SD005_190118	Normal	18/01/2019	ES1902070	0.0002	<0.0002	<0.0002	0.0002	<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	<0.0005	<0.0002	<0.0002	0.0002
SD005	0356_SD_QC100_190118	Field_D	18/01/2019	ES1902070	0.0004	<0.0002	<0.0002	0.0004	<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	<0.0005	<0.0002	<0.0002	0.0004
SD005	0356_SD005_190305	Normal	5/03/2019	ES1906973	0.0002	<0.0002	<0.0002	0.0002	<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	<0.0005	<0.0002	<0.0002	0.0002
SD005	0356_QC241_SD_190418	Interlab_D	18/04/2019	216434	0.0004	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0002	<0.005	<0.001	<0.0002	<0.001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0002	<0.005	<0.0005	<0.0005	0.0004
SD005	0356_SD005_190418	Normal	18/04/2019	ES1912500	0.0004	<0.0002	<0.0002	0.0004	<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	<0.0005	<0.0002	<0.0002	0.0004
SD005	0356_SD005_200418	Normal	18/04/2020	ES2013148	0.0002	<0.0002	<0.0002	0.0002	<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	<0.0005	<0.0002	<0.0002	0.0002
SD005	0356_SD005_220719	Normal	19/07/2022	ES2226191	0.0018	<0.0002	<0.0002	0.0018	<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	<0.0005	<0.0002	<0.0002	0.0018
SD005	0356_SD005_230119	Normal	19/01/2023	ES2301936	0.0008	<0.0002	<0.0002	0.0008	<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	<0.0005	<0.0002	<0.0002	0.0008
SD032	0356_SD032_190322	Normal	22/03/2019	ES1913790	0.0006	<0.0002	<0.0002	0.0006	<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	<0.0005	<0.0002	<0.0002	0.0006
SD032	0356_SD032_220721	Normal	21/07/2022	ES2226191	0.0044	<0.0002	0.0007	0.0051	<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	<0.0005	<0.0002	<0.0002	0.0051
SD032	0356_SD032_230117	Normal	17/01/2023	ES2301936	0.0009	<0.0002	<0.0002	0.0009	<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	<0.0005	<0.0002	<0.0002	0.0009
SD039	0356_QC240_190412	Interlab_D	12/04/2019	215778	0.0019	0.0002	<0.0001	0.0019	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0002	<0.005	<0.001	<0.0002	<0.001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0002	<0.005	<0.0005	<0.0005	0.002
SD039	0356_RESI_SD039_190412	Normal	12/04/2019	ES1911621	0.0003	<0.0002	<0.0002	0.0003	<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	<0.0005	<0.0002	<0.0002	0.0003
SD039	0356_RESI_SD039_200420	Normal	20/04/2020	ES2013315	0.0036	0.0003	<0.0002	0.0036	<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	<0.0005	<0.0002	<0.0002	0.0039
SD039	0356_SD039_220720	Normal	20/07/2022	ES2226119	0.0038	<0.0002	<0.0002	0.0038	<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	<0.0005	<0.0002	<0.0002	0.0038
SD039	0356_SD039_230118	Normal	18/01/2023	ES2301794	0.0029	<0.001	<0.001	0.0029	<0.001	<0.001	<0.001	<0.001	<0.0025	<0.001	<0.0025	<0.0025	<0.001	<0.0025	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0025	<0.001	<0.001	0.0029
SD040	0356_SD040_190507	Normal	7/05/2019	ES1913967	<0.0002	<0.0002	<0.0002	<0.0002	<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	<0.0005	<0.0002	<0.0002	<0.0002
SD040	0356_SD040_220721	Normal	21/07/2022	ES2226191	0.0004	<0.0002	<0.0002	0.0004	<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	<0.0005	<0.0002	<0.0002	0.0004
SD040	0356_SD040_230117	Normal	17/01/2023	ES2301936	<0.0002	<0.0002	<0.0002	<0.0002	<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	<0.0005	<0.0002	<0.0002	<0.0002
SD046	0356_QC141_190417	Field_D	17/04/2019	ES1912500	0.0028	<0.0002	<0.0002	0.0028	<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	<0.0005	<0.0002	<0.0002	0.0028
SD046	0356_RESI_SD041_190417	Normal	17/04/2019	ES1912501	0.0034	<0.0002	<0.0002	0.0034	<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	<0.0005	<0.0002	<0.0002	0.0034
SD046	0356_QC203_200422	Interlab_D	22/04/2020	241483	0.0007	<0.0002	<0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.002	<0.0004	<0.01	<0.002	<0.0004	<0.002	<0.0002	<0.0004	<0.0004	<0.001	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.002	<0.0002	<0.0004	<0.01	<0.001	<0.001	0.0007
SD046	0356_RESI_SD041_200422	Normal	22/04/2020	ES2013744	0.0004	<0.0002	<0.0002	0.0004	<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	<0.0005	<0.0002	<0.0002	0.0004
SD046	0356_SD046_220720	Normal	20/07/2022	ES2226474	0.0034	<0.0002	0.0002	0.0036	<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	<0.0005	<0.0002	<0.0002	0.0036
SD046	0356_SD046_230118	Normal	18/01/2023	ES2301793	0.0016	<0.0002	<0.0002	0.0016	<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	<0.0005	<0.0002	<0.0002	0.0016
SD047	0356_RESI_SD042_190417	Normal	17/04/2019	ES1912501	0.0047	<0.0002	<0.0002	0.0047	<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	<0.0005	<0.0002	<0.0002	0.0049
SD047	0356_QC200_220720	Interlab_D	20/07/2022	301227	0.0094	0.0002	0.0002	0.0096	<0.0002	<0.0001	<0.0001	<0.0002	<0.001	<0.0002	<0.005	<0.001	<0.0002	<0.001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0002	<0.005	<0.0005	<0.0005	0.0099
SD047	0356_QC100_220720	Field_D	20/07/2022	ES2226191	0.0081	0.0002	0.0002	0.0083	<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	<0.0005	<0.0002	<0.0002	0.0085
SD047	0356_SD047_220720	Normal	20/07/2022	ES2226474	0.0075	<0.0002	<0.0002	0.0075	<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	<0.0005	<0.0002	<0.0002	0.0075
SD047	0356_SD047_230118	Normal	18/01/2023	ES2301793	0.0048	<0.0002	0.0003	0.0051	<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	<0.0005	<0.0002	<0.0002	0.0051
SD052	0356_RESI_SD035_190411	Normal	11/04/2019	ES1911618	0.0012	<0.0002	0.0003	0.0015	<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	<0.0005	<0.0002	<0.0002	0.0015
SD052	0356_QC140_190411	Field_D	11/04/2019	ES1911619	0.0017	<0.0002	0.0003	0.002	<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	<0.0005	<0.0002	<0.0002	0.002
SD052	0356_SD052_220719	Normal	19/07/2022	ES2226120	0.0009	<0.0002	<0.0002	0.0009	<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	<0.0005	<0.0002	<0.0002	0.0019
SD052	0356_SD052_230118	Normal	18/01/2023	ES2301792	0.0007	<0.0002	<0.0002	0.0007	<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	<0.0005	<0.0002	<0.0002	0.0007
SD053	0356_SMA13_SD_181008	Normal	8/10/2018	ES1832293	0.002	<0.0002	<0.0002	-	<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	<0.0005	<0.0002	<0.0002	-
SD053	0356_SMA13__SD_190228	Normal	28/02/2019	ES1906391	0.0226	<0.0002	0.0011	0.0237	<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	<0.0005	<0.0002	<0.0002	0.0237
SD053	0356_SMA13_SD_190424	Normal	24/04/2019	ES1912502	0.0016	<0.0002	<0.0002	0.0016	<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	<0.0005	<0.0002	<0.0002	0.0016
SD053	0356_QC102_200416	Field_D	16/04/2020	ES2013148	0.0613	<0.0002	0.0004	0.0617	<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	<0.0005	<0.0002	<0.0002	0.0617
SD053	0356_SMA13_SD_200416	Normal	16/04/2020	ES2013148	0.0118	<0.0002	<0.0002	0.0118	<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	<0.0005	<0.0002	<0.0002	0.0118
SD053	0356_SD053_220721	Normal	21/07/2022	ES2226191	0.0043	<0.0002	0.0002	0.0045	<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	<0.0005	<0.0002	<0.0002	0.0045
SD053	0356_SD053_230117	Normal	17/01/2023	ES2301936	0.0051	<0.0002	0.0004	0.0055	<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	<0.0005	<0.0002	<0.0002	0.0055
SD055	0356_QC234_SD_181025	Interlab_D	25/10/2018	204852	0.0027	<0.0002	<0.0002	0.0027	<0.0002	<0.0002	<0.0002	<0.0002	<0.002	<0.0004	<0.01	<0.002	<0.0004	<0.002	<0.0002	<0.0004	0.003	<0.001	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.002	<0.0002	<0.0004	<0.01	<0.001	<0.001	0.0057
SD055	0356_QC134_SD_181025	Field_D	25/10/2018	ES1832529	0.0053	<0.0002	0.0004	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.0018	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	-

Table T10 - Historical Sediment Analytical Results

AECOM

						PFAS Full Suite																												
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	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)	Sum of PFAS
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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						0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0005	0.0002	0.0002	0.0001
Location_Code	**Field_ID**	**Sample_Type**	**Date**	**Lab_Report #**																														
SD055	0356_SMA7_SD_181025	Normal	25/10/2018	ES1832529	0.0048	<0.0002	0.0006	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.0017	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	-
SD055	0356_QC134_SD_181025	Field_D	25/10/2018	ES1832714	0.0012	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	-
SD055	0356_SMA7__SD_190228	Normal	28/02/2019	ES1906391	0.001	<0.0002	<0.0002	0.001	<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	<0.0005	<0.0002	<0.0002	0.001
SD055	0356_SMA7_SD_190417	Normal	17/04/2019	ES1912500	0.001	<0.0002	<0.0002	0.001	<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	<0.0005	<0.0002	<0.0002	0.001
SD055	0356_SD055_220721	Normal	21/07/2022	ES2226191	0.0026	<0.0002	0.0003	0.0029	<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	<0.0005	<0.0002	<0.0002	0.0029
SD055	0356_QC200_230117	Interlab_D	17/01/2023	314827	0.002	<0.0001	<0.0001	0.002	<0.0002	<0.0001	<0.0001	<0.0002	<0.001	<0.0002	<0.005	<0.001	<0.0002	<0.001	<0.0001	<0.0002	0.001	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0002	≤0.005	<0.0005	<0.0005	0.003
SD055	0356_QC100_230117	Field_D	17/01/2023	ES2301936	0.0034	<0.0002	<0.0002	0.0034	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.0028	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0064
SD055	0356_SD055_230117	Normal	17/01/2023	ES2301936	0.002	<0.0002	<0.0002	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.0018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0038
SD056	0356_RESI_SD011_181116	Normal	16/11/2018	ES1834283	<0.0002	<0.0002	<0.0002	-	<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	<0.0005	<0.0002	<0.0002	-
SD065	0356_SMA8_SD_181008	Normal	8/10/2018	ES1832293	0.0024	<0.0002	<0.0002	-	<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	<0.0005	<0.0002	<0.0002	-
SD065	0356_SMA8_SD_190228	Normal	28/02/2019	ES1906391	0.0066	<0.0002	0.0005	0.0071	<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	<0.0005	<0.0002	<0.0002	0.0071
SD065	0356_SMA8_SD_190424	Normal	24/04/2019	ES1912502	0.0048	<0.0002	0.0004	0.0052	<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	<0.0005	<0.0002	<0.0002	0.0052
SD065	0356_SD065_220721	Normal	21/07/2022	ES2226191	0.0007	<0.0002	<0.0002	0.0007	<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	<0.0005	<0.0002	<0.0002	0.0007
SD065	0356_QC202_230117	Interlab_D	17/01/2023	314827	0.0006	<0.0001	0.0001	0.0007	<0.0002	<0.0001	<0.0001	<0.0002	<0.001	<0.0002	<0.005	<0.001	<0.0002	<0.001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0002	≤0.005	<0.0005	<0.0005	0.0007
SD065	0356_QC102_230117	Field_D	17/01/2023	ES2301936	0.0007	<0.0002	<0.0002	0.0007	<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	<0.0005	<0.0002	<0.0002	0.0007
SD065	0356_SD065_230117	Normal	17/01/2023	ES2301936	0.0006	<0.0002	<0.0002	0.0006	<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	<0.0005	<0.0002	<0.0002	0.0006
SD080	0356_RESI_SD013_181116	Normal	16/11/2018	ES1834282	0.0135	<0.0002	0.0024	-	<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	<0.0005	<0.0002	<0.0002	-
SD080	0356_QC103_200420	Field_D	20/04/2020	ES2013314	0.0118	<0.0002	0.0014	0.0132	<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	<0.0005	<0.0002	<0.0002	0.0132
SD080	0356_RESI_SD013_200420	Normal	20/04/2020	ES2013314	0.0111	<0.0002	0.0013	0.0124	<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	<0.0005	<0.0002	<0.0002	0.0124
SD080	0356_SD080_220719	Normal	19/07/2022	ES2226120	0.001	<0.0002	<0.0002	0.001	<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	<0.0005	<0.0002	<0.0002	0.001
SD080	0356_SD080_230118	Normal	18/01/2023	ES2301792	0.0189	<0.0002	0.0021	0.021	<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	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0213
SD114	0356_SD114_220721	Normal	21/07/2022	ES2226191	0.0029	<0.0002	<0.0002	0.0029	<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	<0.0005	<0.0002	<0.0002	0.0029
SD114	0356_SD114_230117	Normal	17/01/2023	ES2301936	0.0023	<0.0002	<0.0002	0.0023	<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	<0.0005	<0.0002	<0.0002	0.0023
SD115	0356_SD115_220721	Normal	21/07/2022	ES2226191	0.0457	0.0002	0.0023	0.048	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.001	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0496
SD115	0356_SD115_230117	Normal	17/01/2023	ES2301936	0.0351	0.0003	0.0023	0.0374	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.001	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	0.0002	<0.0005	<0.0002	<0.0002	0.0391
SD116	0356_SD116_230117	Normal	17/01/2023	ES2301936	0.0003	<0.0002	<0.0002	0.0003	<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	<0.0005	<0.0002	<0.0002	0.0003
SD539	0356_SD539_220720	Normal	20/07/2022	ES2226474	0.0016	<0.0002	<0.0002	0.0016	<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	<0.0005	<0.0002	<0.0002	0.0016
SD539	0356_SD539_230118	Normal	18/01/2023	ES2301793	0.0112	<0.0002	0.0004	0.0116	<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	<0.0005	<0.0002	<0.0002	0.0116
SD540	0356_SD540_201019	Normal	19/10/2020	ES2036629	0.0128	<0.0002	<0.0002	0.0128	<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	<0.0005	<0.0002	0.0003	0.0133
SD540	0356_SD540_220720	Normal	20/07/2022	ES2226474	0.012	0.0002	0.0003	0.0123	<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	<0.0005	<0.0002	<0.0002	0.0125
SD555	0356_SD555_220721	Normal	21/07/2022	ES2226191	0.0003	<0.0002	<0.0002	0.0003	<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	<0.0005	<0.0002	<0.0002	0.0003
SD555	0356_SD555_230117	Normal	17/01/2023	ES2301936	0.0011	<0.0002	0.0002	0.0013	<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	<0.0005	<0.0002	<0.0002	0.0013

Notes:

LOR	Limit of Reporting
Normal	Primary sample
Field_D	Intra-laboratory duplicate sample
Interlab_D	Inter-laboratory duplicate sample

Appendix C

Calibration Certificates

WAMSCIENTIFIC
Your water and air monitoring equipment specialists

Certificate of Service and Calibration
Water Quality Meter
YSI Professional Plus

Company Name	WAM Scientific
Office Address	26 Bungarra Crescent, Chipping Norton NSW 2170
Phone Number	+61 405 241 484
Contact Name	[redacted]
Instrument	YSI Professional Plus Water Quality Meter w/ 1m Quatro Cable
Serial Number	21A103000
Client Name	[redacted] (AECOM Australia Pty Ltd)
Project Number	60612562_8.1
Comments	-

Instrument Check

Item	Test	Test Passed	Comments
2 x Alkaline C-size Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 2.9V
Battery Saver Function	Operation	✓	Automatically turns off after 60 minutes if idle
Unit Display	Operation	✓	Screen visible, no damage
Keypad	Operation	✓	Responsive, no damage
Connection Port and Cable	Condition/Check	✓	Clean, no damage
Monitor Housing	Condition/Check	✓	No damage
Firmware	Version	✓	4.0.0
pH Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
pH millivolts for pH 7.00	Calibration	✓	pH 7.00 calibration range between 0 mV ± 50 mV
pH millivolts for pH 4.00	Calibration	✓	pH 4 mV range +165 to +180 from 7 buffer mV value
pH slope	Calibration	✓	Range between 55 to 60 mV/pH (ideal value 59 mV)
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
ORP Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
ORP Reading	Calibration	✓	Within ± 80 mV of reference Zobell Reading
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
Conductivity/Temp Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
Conductivity Cell	Calibration	✓	Conductivity cell constant 5.0 ± 1.0 in GLP file
Clean Sensor Readings	Calibration	✓	Clean sensor reads less than 3 uS/cm in dry air
Dissolved Oxygen Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
DO Cap	Condition/Calibration	✓	1.25 mil PE membrane (yellow membrane)
DO Sensor in Use	Condition	✓	Polarographic DO sensor
DO Sensor Value	Calibration	✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA

Instrument Readings

Parameter	Standard Used	Reference No.	Calibration Value	Observed	Actual	Units
Temperature	Centre 370 Thermometer	Room Temp.	22.9	22.8	22.9	°C
pH	pH 4.00	386466	4.01	4.01	4.01	pH
pH	pH 7.00	387329	7.00	6.97	7.00	pH
Conductivity	2760 µs/cm at 25°C	388521	2760	2776	2760	µs/cm
ORP (Ref. check only)	Zobell A & B	380835/382785	234.9	236.0	234.9	mV
Zero Dissolved O_2	$NaSO_3$ in Distilled H_2O	389912	0.0	-0.1	0.0	%
100% Dissolved O_2	100% Air Saturated H_2O	Fresh Air	100.0	120.3	100.0	%

7Declaration

WAM Scientific certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The calibration data supplied was obtained in accordance with manufacturer's specifications using solutions of known values.

Calibrated By	[redacted]
Calibration Date	11/01/2023
Calibration Due	11/07/2023

WAMSCIENTIFIC
Your water and air monitoring equipment specialists

WAM Scientific:
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WAMSCIENTIFIC
Your water and air monitoring equipment specialists

Certificate of Service and Calibration
Interface Meter
Heron H.Oil

Company Name	WAM Scientific
Office Address	26 Bungarra Crescent, Chipping Norton NSW 2170
Phone Number	+61 405 241 484
Contact Name	[redacted]
Instrument	Heron H.Oil Interface Meter (30m)
Serial Number	01-8640
Client Name	[redacted] (AECOM Australia Pty Ltd)
Project Number	60612562_8.1

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H_2O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H_2O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

Declaration
WAM Scientific certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

Checked By	[redacted]
Calibration Date	11/01/2023
Calibration Due	11/07/2023

WAM Scientific:
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ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Singleton OMP	**Project Number:**	60612562
Project Location:	Singleton	**Client:**	Department 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:	NAM.
Make and Model:	
Serial Number:	YSI Professional Plus

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	19/1/23 @ 0745				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	7.00	10.00	0.0	
Calibration Reading:	4.00	7.00		0.02	
Calibration Temperature:					

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.

Fieldwork Staff Signature

19-1-23
Date

Distribution: Project Central File

ANZ

AECOM

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Singleton OMP	**Project Number:**	60612562
Project Location:	Singleton	**Client:**	Department 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:	WAM
Make and Model:	
Serial Number:	YSI Prof +

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	18.1.23				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2707	0.0	
Calibration Reading:	4.00	7.00	2694	0.03	
Calibration Temperature:			29.0°c	23.9°c	

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.

Fieldwork Staff Signature

18.1.23
Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Singleton OMP	**Project Number:**	60612562
Project Location:	Singleton	**Client:**	Department 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:	W4M
Make and Model:	
Serial Number:	YSI prof +

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	17.1.23 @0810				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.0	7.0	2707	0	
Calibration Reading:	4	7	2700	0	
Calibration Temperature:			24.0	23.9	

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.

Fieldwork Staff Signature	Date
[signature]	17.1.23

Distribution: Project Central File

Appendix D

Analytical Data Validation

DATA VALIDATION REPORT

Project number:	60612562	Validation by:	[redacted]	Date:	10/02/2023
Client:	Department of Defence	Data verified by:	[redacted]	Date:	3/03/2023
Site:	Singleton Lone Pine Barracks	Project Manager:	[redacted]		
Matrix type:	Groundwater, Surface Water, Sediment				
Primary samples:	3 Groundwater samples, 14 Surface Water samples, 19 Sediment samples and 1 waste-water effluent sample				
Laboratory:	Primary: ALS, Secondary: Envirolab				
Lab reference:	ES2301792, ES2301793, ES2301794, ES2301936 (ALS) and 314827 (Envirolab)				

Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication to decision-making on the project.

Field Quality Assurance and Quality Control

Field DQOs and DQIs	The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2023).
Sampling personnel	Sampling was conducted by [redacted] and [redacted] between 17/01/2023 and 19/01/2023. Field personnel were both suitably qualified and experienced AECOM Environmental Scientists.
Sampling Methodology	All water and sediment samples were collected in accordance with the methodology outlined in the SAQP (AECOM, 2023). After each sample was collected, reusable equipment was decontaminated using Liquinox and potable water and the consumables (nitrile gloves, HydraSleeve™ materials and/or bailers) were disposed of in waste bins.
Chain of Custody (COC)	All samples collected were reported on the Chain of Custody documents (COC) and subsequent email amendments and analysed for requested analytes.
Rinsate Blank	Rinsate blank samples were collected at a frequency of 1 per day of sampling where equipment was re-used and decontaminated between sample points. Rinsate blank samples were either collected from the final rinse of the interface probe or sampling trowel following decontamination, using laboratory-supplied de-ionised water.
Frequency of field QC	Field duplicates (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected at or above a frequency of 1 in ten primary samples (10%), meeting the DQI. In total: • 3 water field duplicates and 3 water field triplicates were collected (17%) for 17 primary water samples • 2 sediment field duplicates and 2 sediment field triplicates were collected (10%) for 19 primary sediment samples in total.
Handling and preservation	All samples were received by the primary laboratory in appropriate containers, with ice present, at 2.4 °C, within the recommended temperature range (<6°C). All samples were received by the secondary laboratory in appropriate containers, with ice present, at 6.0 °C, within the recommended temperature range (<6°C).
Calibration of equipment	Measurements of water geochemical parameters were undertaken using YSI Professional Plus water quality meters, which were calibrated by the supplier prior to use, in accordance with the manufacturer's instructions and bump tested daily by the field personnel. Measurements of depth to groundwater were undertaken using an interface probe, which was serviced by the supplier prior to use. All equipment calibration and service certificates are presented in Appendix C.

DATA VALIDATION REPORT

Laboratory QA/QC	
Laboratory DQOs and DQIs	The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2023).
Tests requested/reported	All samples were analysed for per- and polyfluoroalkyl substances (PFAS) extended suite, at the standard level of detection. All sample requests for analysis are reported on the Chain of Custody (COC).
Holding time compliance	All samples were extracted and analysed by the laboratory within the recommended holding times.
Laboratory accreditation	The primary laboratory analysis was conducted by ALS Environmental Pty Ltd (Sydney) a National Association of Testing Authorities (NATA) accredited laboratory (Accreditation No. 825). The secondary samples were analysed at Envirolab Services, also a NATA accredited laboratory (accreditation number 2901).
Frequency of laboratory QC	The primary laboratory ALS reported a sufficient frequency of quality control samples to assess whether the results have been reported with acceptable accuracy and precision with the exception of the following: ES2301794: • Laboratory duplicates for PFAS (actual rate: 6.67%, expected rate: 10%) • Matrix spikes for PFAS (actual rate: 0.0%, expected rate: 10%) The precision and accuracy of the data can be assessed as acceptable based on method blanks, laboratory control spike and surrogate spike recoveries, which were reported at the required frequencies and within control limits, and the reported laboratory duplicates which were within control limits.
Method Blank	All method blank concentrations were reported <LOR (limit of reporting) for the analytes tested, meeting the project requirements. This is presented in the Quality Control Reports for both laboratories.
Laboratory duplicate RPDs	The reported laboratory duplicate's Relative Percentage Differences (RPDs) were within laboratory control limits. The laboratory duplicate RPDs are presented in the Quality Control Reports for the primary laboratory.
LCS recovery	Laboratory control spike (LCS) recoveries were within control limits. This is presented in the Quality Control Reports for both laboratories.
Matrix spike recovery	Matrix spike (MS) recoveries were within control limits. This is presented in the Quality Control Reports for both laboratories.
Surrogate spike recovery	The reported surrogate spike recoveries were within laboratory control limits.
QA/QC Data Evaluation	
Comparison of Field Observations and Laboratory Results	No anomalies between field observations and analytical results were noted.
Anomalous data / Repeat Analysis	Following the reporting of PFAS concentrations which were outside historical ranges at a number of locations (SW032, SW035 and SW036), the primary laboratory was requested to confirm the results, where necessary by re-analysis. The laboratory confirmed there was no carry-over or dilution error on the sample for SW036. Repeat analysis was performed on the samples for SW032 and SW035 and the original reported concentrations were confirmed.

DATA VALIDATION REPORT

Data transcription	A check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and the tables generated by AECOM.
Limits of reporting	With the exception of the PFAS NEMP Freshwater 99% species protection (HEPA 2020) values for PFOS, the laboratory LORs were sufficiently low to enable assessment against adopted guideline criteria.
Rinsate Blank sample results	The concentrations of PFAS in the Rinsate Blank samples (Table D3) were below the LOR, indicating decontamination procedures were adequate.
RPDs for Field Duplicates / Triplicates	RPDs for field duplicates (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were reported within acceptable limits (≤30%, or ≤50% for results 10-20 x LOR, or No Limit for results <10 x LOR), with the exception of: <u>Intra-laboratory duplicates (Field Duplicates) RPDs</u> SD0055/QC100 - Perfluorooctane sulfonic acid (PFOS): 52% The elevated RPD for sediment is likely to be attributed to the heterogeneous nature of the sediment sampled and given that the concentrations are within the same order of magnitude it is therefore considered acceptable. Where required for quantitative purposes, the highest concentration from the primary and duplicate pair was used in the assessment.
Overall Assessment	
	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.

Attached:
Table D1 – Water RPDs
Table D2 – Sediment RPDs
Table D3 – Rinsate Blank Results

Table D1 - Water Duplicate RPDs

Lab Report Number		ES2301936	ES2301936		ES2301936	ES2301936		ES2301936	ES2301936		ES2301936	314827	
Field ID		0356_SW028_230117	0356_QC101_230117	**RPD**	0356_MW102_230118	0356_QC104_230118	**RPD**	0356_SW034_230117	0356_QC103_230117	**RPD**	0356_SW028_230117	0356_QC201_230117	**RPD**
Sampled Date/Time		17/01/2023	17/01/2023		18/01/2023	18/01/2023		17/01/2023	17/01/2023		17/01/2023	17/01/2023	
Sample Type		Normal	Intralab Duplicate		Normal	Intralab Duplicate		Normal	Intralab Duplicate		Normal	Interlab duplicate	
Chem_Group	**ChemName**	**Units**	**LOR**										
Per- and Poly-fluoroalkyl Substances	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.01	0.01	nc	<0.01	<0.01	nc	1.35	1.33	1	0.01	0.01	nc
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.04	0.04	nc	<0.01	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.55	0.52	6	<0.01	<0.01	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.02	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<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	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.01	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.02	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.5	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<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	<0.02	nc	0.05	0.04	22	<0.02	<0.01	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.02	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.05	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.03	0.03	nc	<0.02	<0.01	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.01	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.18	0.17	6	<0.02	<0.01	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.01	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.1	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.05	0.05	nc	<0.02	<0.01	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	0.04	0.03	29	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.5	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.1	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	0.01	0.01	nc	<0.01	<0.01	nc	2.29	2.21	4	0.01	0.01	nc
	Sum of PFHxS and PFOS	µg/L	0.01	0.01	0.01	nc	<0.01	<0.01	nc	1.9	1.85	3	0.01	0.01	nc

Notes
LOR = Limit of Reporting
µg/L = micrograms per litre
nc = non calculable as concentrations in one or both samples are below the LOR
RPDs have only been considered where a concentration is greater than 1 times the LOR
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.

Table D1 - Water Duplicate RPDs

Lab Report Number	ES2301936	314827		ES2301936	314827		
Field ID	0356_SW034_230117	0356_QC203_230117	**RPD**	0356_MW102_230118	0356_QC204_230118	**RPD**	
Sampled Date/Time	17/01/2023	17/01/2023		18/01/2023	18/01/2023		
Sample Type	Normal	Interlab duplicate		Normal	Interlab duplicate		
Chem_Group	**ChemName**	**Units**	**LOR**						
Per- and Poly-fluoroalkyl Substances	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	1.35	1.1	20	<0.01	<0.01	nc
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.04	0.03	29	<0.01	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.55	0.73	28	<0.01	<0.01	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	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)	0.05	0.07	33	<0.02	<0.01	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc	<0.1	<0.02	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.03	0.03	nc	<0.02	<0.01	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	0.02	nc	<0.02	<0.01	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.18	0.12	40	<0.02	<0.01	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.05	0.05	nc	<0.02	<0.01	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.04	0.04	nc	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	2.29	2.2	4	<0.01	<0.01	nc
	Sum of PFHxS and PFOS	µg/L	0.01	1.9	1.8	5	<0.01	<0.01	nc

Notes
LOR = Limit of Reporting
µg/L = micrograms per litre
nc = non calculable as concentrations in one or both samples are below the LOR
RPDs have only been considered where a concentration is greater than 1 times the LOR
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.

Table D2 - Sediment Duplicate RPDs

Lab Report Number		ES2301936	ES2301936		ES2301936	ES2301936		ES2301936	314827		ES2301936	314827	
Field ID		0356_SD065_230117	0356_QC102_230117	**RPD**	0356_SD055_230117	0356_QC100_230117	**RPD**	0356_SD055_230117	0356_QC200_230117	**RPD**	0356_SD065_230117	0356_QC202_230117	**RPD**
Sampled Date/Time		17/01/2023	17/01/2023		17/01/2023	17/01/2023		17/01/2023	17/01/2023		17/01/2023	17/01/2023	
Sample Type		Primary	Intralab Duplicate		Primary	Intralab Duplicate		Primary	Interlab Duplicate		Primary	Interlab Duplicate	
Chem_Group	**ChemName**	**Units**	**LOR**										
Per- and Poly-fluoroalkyl Substances	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0006	0.0007	15	**0.002**	**0.0034**	**52**	0.002	0.002	nc	0.0006	0.0006	nc
	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	0.0001	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001 : 0.0002 (Interlab)	<0.001	<0.001	nc	<0.001	<0.001	nc	<0.001	<0.0002	nc	<0.001	<0.0002	nc
	Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	nc	0.0018	0.0028	43	0.0018	0.001	57	<0.0002	<0.0002	nc
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.001	nc	<0.0002	<0.001	nc
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc

Notes
LOR = Limit of Reporting
mg/kg = milligrams per kilogram
nc = non calculable as concentrations in one or both samples are below the LOR
RPDs have only been considered where a concentration is greater than 1 times the LOR
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.

Table D3 - Rinsate Blanks

AECOM

Field_ID	0356_QC300_230117	0356_QC301_230118	0356_QC302_230119
Lab_Report_Number	ES2301936	ES2301936	ES2301936
Sample_Type	Rinsate	Rinsate	Rinsate
Sampled_Date/Time	17/01/2023	18/01/2023	19/01/2023

Chem_Group	ChemName	Unit	LOR			
Per- and Poly-fluoroalkyl Substances	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
	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
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01

Appendix E

Laboratory Certificates

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2301936**	Page	: 1 of 17
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: St Patricks Commercial Centre Queen Street SINGLETON NSW, AUSTRALIA 2330	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_23	Date Samples Received	: 20-Jan-2023 19:45
Order number	: 60612562_8.1	Date Analysis Commenced	: 23-Jan-2023
C-O-C number	: 47296	Issue Date	: 30-Jan-2023 20:02
Sampler	: [redacted]		
Site	: Singleton		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 35		
No. of samples analysed	: 32		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: Results for samples #5, 8 and 28 confirmed by re-extraction and re-analysis.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. 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: GROUNDWATER (Matrix: WATER)				Sample ID	0356_MW102_230118	0356_SW003_230117	0356_MW109_230118	0356_MW110_230118	0356_QC104_230118
				Sampling date / time	18-Jan-2023 08:45	17-Jan-2023 12:25	18-Jan-2023 14:15	18-Jan-2023 14:22	18-Jan-2023 08:45
Compound	CAS Number	LOR	Unit		ES2301936-004	ES2301936-005	ES2301936-009	ES2301936-011	ES2301936-030
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.02**	**0.06**	<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	**0.02**	**0.06**	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	**0.04**	<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: GROUNDWATER (Matrix: WATER)				Sample ID	0356_MW102_230118	0356_SW003_230117	0356_MW109_230118	0356_MW110_230118	0356_QC104_230118
				Sampling date / time	18-Jan-2023 08:45	17-Jan-2023 12:25	18-Jan-2023 14:15	18-Jan-2023 14:22	18-Jan-2023 08:45
Compound	CAS Number	LOR	Unit		ES2301936-004	ES2301936-005	ES2301936-009	ES2301936-011	ES2301936-030
					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		<0.01	**0.04**	**0.16**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.04**	**0.12**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.04**	**0.16**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**107**	**106**	**101**	**96.4**	**99.5**
13C8-PFOA	----	0.02	%		**105**	**102**	**102**	**104**	**101**

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0356_QC300_230117	0356_QC301_230118	0356_QC302_230119	----	----
				Sampling date / time	17-Jan-2023 14:00	18-Jan-2023 15:00	19-Jan-2023 12:00	----	----
Compound	CAS Number	LOR	Unit		ES2301936-029	ES2301936-031	ES2301936-032	--------	--------
					Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0356_QC300_230117	0356_QC301_230118	0356_QC302_230119	----	----
				Sampling date / time	17-Jan-2023 14:00	18-Jan-2023 15:00	19-Jan-2023 12:00	----	----
Compound	CAS Number	LOR	Unit		ES2301936-029	ES2301936-031	ES2301936-032	--------	--------
					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		<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	<0.01	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**100**	**102**	**111**	----	----
13C8-PFOA	----	0.02	%		**104**	**105**	**101**	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0356_SD114_230117	0356_SD055_230117	0356_SD116_230117	0356_SD004_230119	0356_SD053_230117
			Sampling date / time	17-Jan-2023 12:10	17-Jan-2023 10:45	17-Jan-2023 12:15	19-Jan-2023 08:05	17-Jan-2023 11:20
Compound	CAS Number	LOR	Unit	ES2301936-012	ES2301936-013	ES2301936-014	ES2301936-015	ES2301936-016
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**2.3**	**51.1**	**1.4**	**52.7**	**24.0**
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	**0.0004**
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	**0.0023**	**0.0020**	**0.0003**	<0.0002	**0.0051**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	**0.0018**	<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	0356_SD114_230117	0356_SD055_230117	0356_SD116_230117	0356_SD004_230119	0356_SD053_230117
				Sampling date / time	17-Jan-2023 12:10	17-Jan-2023 10:45	17-Jan-2023 12:15	19-Jan-2023 08:05	17-Jan-2023 11:20
Compound	CAS Number	LOR	Unit		ES2301936-012	ES2301936-013	ES2301936-014	ES2301936-015	ES2301936-016
					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		**0.0023**	**0.0038**	**0.0003**	<0.0002	**0.0055**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0023**	**0.0020**	**0.0003**	<0.0002	**0.0055**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0023**	**0.0020**	**0.0003**	<0.0002	**0.0055**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**88.0**	**98.0**	**94.0**	**80.0**	**77.5**
13C8-PFOA	----	0.0002	%		**90.0**	**105**	**98.5**	**94.5**	**90.5**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0356_SD555_230117	0356_SD115_230117	0356_SD005_230119	0356_SD040_230117	0356_SD002_230117
				Sampling date / time	17-Jan-2023 12:05	17-Jan-2023 13:45	19-Jan-2023 08:30	17-Jan-2023 14:25	17-Jan-2023 14:05
Compound	CAS Number	LOR	Unit		ES2301936-017	ES2301936-018	ES2301936-019	ES2301936-020	ES2301936-021
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**27.2**	**11.3**	**32.8**	**36.6**	**26.2**
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**	**0.0023**	<0.0002	<0.0002	**0.0018**
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		**0.0011**	**0.0351**	**0.0008**	<0.0002	**0.0060**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	**0.0007**	<0.0002	<0.0002	**0.0007**
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	**0.0005**	<0.0002	<0.0002	**0.0003**
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: SEDIMENT (Matrix: SOIL)				Sample ID	0356_SD555_230117	0356_SD115_230117	0356_SD005_230119	0356_SD040_230117	0356_SD002_230117
				Sampling date / time	17-Jan-2023 12:05	17-Jan-2023 13:45	19-Jan-2023 08:30	17-Jan-2023 14:25	17-Jan-2023 14:05
Compound	CAS Number	LOR	Unit		ES2301936-017	ES2301936-018	ES2301936-019	ES2301936-020	ES2301936-021
					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		**0.0013**	**0.0391**	**0.0008**	<0.0002	**0.0088**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0013**	**0.0374**	**0.0008**	<0.0002	**0.0078**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0013**	**0.0384**	**0.0008**	<0.0002	**0.0081**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**97.5**	**79.5**	**86.5**	**87.0**	**90.0**
13C8-PFOA	----	0.0002	%		**104**	**103**	**99.5**	**107**	**87.5**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0356_SD032_230117	0356_SD065_230117	0356_SD003_230117	0356_QC102_230117	0356_QC100_230117
				Sampling date / time	17-Jan-2023 11:35	17-Jan-2023 13:20	17-Jan-2023 12:25	17-Jan-2023 13:20	17-Jan-2023 10:45
Compound	CAS Number	LOR	Unit		ES2301936-022	ES2301936-023	ES2301936-024	ES2301936-025	ES2301936-026
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**5.7**	**7.4**	**23.6**	**16.4**	**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		**0.0009**	**0.0006**	**0.0003**	**0.0007**	**0.0034**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0028**
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	0356_SD032_230117	0356_SD065_230117	0356_SD003_230117	0356_QC102_230117	0356_QC100_230117
				Sampling date / time	17-Jan-2023 11:35	17-Jan-2023 13:20	17-Jan-2023 12:25	17-Jan-2023 13:20	17-Jan-2023 10:45
Compound	CAS Number	LOR	Unit		ES2301936-022	ES2301936-023	ES2301936-024	ES2301936-025	ES2301936-026
					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**	**0.0006**	**0.0003**	**0.0007**	**0.0064**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0009**	**0.0006**	**0.0003**	**0.0007**	**0.0034**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0009**	**0.0006**	**0.0003**	**0.0007**	**0.0036**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**92.5**	**93.5**	**97.5**	**81.5**	**84.0**
13C8-PFOA	----	0.0002	%		**104**	**104**	**106**	**105**	**94.0**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0356_SW002_230117	0356_SW040_230117	0356_SW032_230117	0356_SW026_230117	0356_SW034_230117
				Sampling date / time	17-Jan-2023 14:05	17-Jan-2023 14:25	17-Jan-2023 11:35	17-Jan-2023 11:20	17-Jan-2023 13:20
					ES2301936-001	ES2301936-002	ES2301936-003	ES2301936-006	ES2301936-007
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.05**	<0.02	**0.17**	**0.04**	**0.05**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.07**	<0.02	**0.21**	**0.03**	**0.05**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.81**	<0.01	**1.69**	**0.28**	**0.55**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.04**	<0.02	**0.07**	<0.02	**0.03**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.85**	<0.01	**2.13**	**0.63**	**1.35**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.04**	<0.02	**0.06**	<0.02	**0.04**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.20**	<0.02	**0.40**	**0.08**	**0.18**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.02**	<0.02	**0.04**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.05**	<0.01	**0.08**	**0.02**	**0.04**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
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: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW002_230117	0356_SW040_230117	0356_SW032_230117	0356_SW026_230117	0356_SW034_230117
				Sampling date / time	17-Jan-2023 14:05	17-Jan-2023 14:25	17-Jan-2023 11:35	17-Jan-2023 11:20	17-Jan-2023 13:20
Compound	CAS Number	LOR	Unit		ES2301936-001	ES2301936-002	ES2301936-003	ES2301936-006	ES2301936-007
					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		<0.05	<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		**2.13**	<0.01	**4.85**	**1.08**	**2.29**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**1.66**	<0.01	**3.82**	**0.91**	**1.90**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**2.02**	<0.01	**4.57**	**1.05**	**2.21**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**102**	**109**	**97.0**	**96.0**	**103**
13C8-PFOA	----	0.02	%		**96.2**	**103**	**100**	**101**	**101**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW028_230117	0356_SW004_230119	0356_QC101_230117	0356_QC103_230117	----
				Sampling date / time	17-Jan-2023 10:45	19-Jan-2023 08:05	17-Jan-2023 10:45	17-Jan-2023 13:20	----
Compound	CAS Number	LOR	Unit		ES2301936-008	ES2301936-010	ES2301936-028	ES2301936-035	--------
					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	**0.04**	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.05**	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.01	**0.52**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	**0.03**	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.01**	<0.01	**0.01**	**1.33**	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	**0.03**	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.17**	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	**0.04**	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW028_230117	0356_SW004_230119	0356_QC101_230117	0356_QC103_230117	----
				Sampling date / time	17-Jan-2023 10:45	19-Jan-2023 08:05	17-Jan-2023 10:45	17-Jan-2023 13:20	----
Compound	CAS Number	LOR	Unit		ES2301936-008	ES2301936-010	ES2301936-028	ES2301936-035	--------
					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		**0.01**	<0.01	**0.01**	**2.21**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.01**	<0.01	**0.01**	**1.85**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.01**	<0.01	**0.01**	**2.13**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**113**	**98.6**	**96.9**	**105**	----
13C8-PFOA	----	0.02	%		**102**	**101**	**106**	**99.9**	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: **RINSATE**

Compound	CAS Number	Recovery Limits (%) Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: **SEDIMENT**

Compound	CAS Number	Recovery Limits (%) Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: **SURFACE WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2301936**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_23	Date Samples Received	: 20-Jan-2023
Site	: Singleton	Issue Date	: 30-Jan-2023
Sampler	: [redacted]	No. of samples received	: 35
Order number	: 60612562_8.1	No. of samples analysed	: 32

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, 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)							
0356_SD114_230117, 0356_SD055_230117, 0356_SD116_230117, 0356_SD053_230117, 0356_SD555_230117, 0356_SD115_230117, 0356_SD040_230117, 0356_SD002_230117, 0356_SD032_230117, 0356_SD065_230117, 0356_SD003_230117, 0356_QC102_230117, 0356_QC100_230117	**17-Jan-2023**	**----**	----	----	**25-Jan-2023**	31-Jan-2023	✓
HDPE Soil Jar (EA055)							
0356_SD004_230119, 0356_SD005_230119	**19-Jan-2023**	**----**	----	----	**25-Jan-2023**	02-Feb-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0356_SD114_230117, 0356_SD055_230117, 0356_SD116_230117, 0356_SD053_230117, 0356_SD555_230117, 0356_SD115_230117, 0356_SD040_230117, 0356_SD002_230117, 0356_SD032_230117, 0356_SD065_230117, 0356_SD003_230117, 0356_QC102_230117, 0356_QC100_230117	**17-Jan-2023**	**24-Jan-2023**	16-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓
HDPE Soil Jar (EP231X)							
0356_SD004_230119, 0356_SD005_230119	**19-Jan-2023**	**24-Jan-2023**	18-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
0356_SD114_230117, 0356_SD055_230117, 0356_SD116_230117, 0356_SD053_230117, 0356_SD555_230117, 0356_SD115_230117, 0356_SD040_230117, 0356_SD002_230117, 0356_SD032_230117, 0356_SD065_230117, 0356_SD003_230117, 0356_QC102_230117, 0356_QC100_230117	**17-Jan-2023**	**24-Jan-2023**	16-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓
HDPE Soil Jar (EP231X)							
0356_SD004_230119, 0356_SD005_230119	**19-Jan-2023**	**24-Jan-2023**	18-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓

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)							
0356_SD114_230117, 0356_SD055_230117, 0356_SD116_230117, 0356_SD053_230117, 0356_SD555_230117, 0356_SD115_230117, 0356_SD040_230117, 0356_SD002_230117, 0356_SD032_230117, 0356_SD065_230117, 0356_SD003_230117, 0356_QC102_230117, 0356_QC100_230117	**17-Jan-2023**	**24-Jan-2023**	16-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓
HDPE Soil Jar (EP231X)							
0356_SD004_230119, 0356_SD005_230119	**19-Jan-2023**	**24-Jan-2023**	18-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0356_SD114_230117, 0356_SD055_230117, 0356_SD116_230117, 0356_SD053_230117, 0356_SD555_230117, 0356_SD115_230117, 0356_SD040_230117, 0356_SD002_230117, 0356_SD032_230117, 0356_SD065_230117, 0356_SD003_230117, 0356_QC102_230117, 0356_QC100_230117	**17-Jan-2023**	**24-Jan-2023**	16-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓
HDPE Soil Jar (EP231X)							
0356_SD004_230119, 0356_SD005_230119	**19-Jan-2023**	**24-Jan-2023**	18-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
0356_SD114_230117, 0356_SD055_230117, 0356_SD116_230117, 0356_SD053_230117, 0356_SD555_230117, 0356_SD115_230117, 0356_SD040_230117, 0356_SD002_230117, 0356_SD032_230117, 0356_SD065_230117, 0356_SD003_230117, 0356_QC102_230117, 0356_QC100_230117	**17-Jan-2023**	**24-Jan-2023**	16-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓
HDPE Soil Jar (EP231X)							
0356_SD004_230119, 0356_SD005_230119	**19-Jan-2023**	**24-Jan-2023**	18-Jul-2023	✓	**27-Jan-2023**	05-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

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)								
0356_SW002_230117,	0356_SW040_230117,	**17-Jan-2023**	**24-Jan-2023**	16-Jul-2023	✓	**27-Jan-2023**	16-Jul-2023	✓
0356_SW032_230117,	0356_SW003_230117,							
0356_SW026_230117,	0356_SW034_230117,							
0356_SW028_230117,	0356_QC101_230117,							
0356_QC300_230117,	0356_QC103_230117							
HDPE (no PTFE) (EP231X)								
0356_MW102_230118,	0356_MW109_230118,	**18-Jan-2023**	**24-Jan-2023**	17-Jul-2023	✓	**27-Jan-2023**	17-Jul-2023	✓
0356_MW110_230118,	0356_QC104_230118,							
0356_QC301_230118								
HDPE (no PTFE) (EP231X)								
0356_SW004_230119,	0356_QC302_230119	**19-Jan-2023**	**24-Jan-2023**	18-Jul-2023	✓	**27-Jan-2023**	18-Jul-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0356_SW002_230117,	0356_SW040_230117,	**17-Jan-2023**	**24-Jan-2023**	16-Jul-2023	✓	**27-Jan-2023**	16-Jul-2023	✓
0356_SW032_230117,	0356_SW003_230117,							
0356_SW026_230117,	0356_SW034_230117,							
0356_SW028_230117,	0356_QC101_230117,							
0356_QC300_230117,	0356_QC103_230117							
HDPE (no PTFE) (EP231X)								
0356_MW102_230118,	0356_MW109_230118,	**18-Jan-2023**	**24-Jan-2023**	17-Jul-2023	✓	**27-Jan-2023**	17-Jul-2023	✓
0356_MW110_230118,	0356_QC104_230118,							
0356_QC301_230118								
HDPE (no PTFE) (EP231X)								
0356_SW004_230119,	0356_QC302_230119	**19-Jan-2023**	**24-Jan-2023**	18-Jul-2023	✓	**27-Jan-2023**	18-Jul-2023	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0356_SW002_230117,	0356_SW040_230117,	**17-Jan-2023**	**24-Jan-2023**	16-Jul-2023	✓	**27-Jan-2023**	16-Jul-2023	✓
0356_SW032_230117,	0356_SW003_230117,							
0356_SW026_230117,	0356_SW034_230117,							
0356_SW028_230117,	0356_QC101_230117,							
0356_QC300_230117,	0356_QC103_230117							
HDPE (no PTFE) (EP231X)								
0356_MW102_230118,	0356_MW109_230118,	**18-Jan-2023**	**24-Jan-2023**	17-Jul-2023	✓	**27-Jan-2023**	17-Jul-2023	✓
0356_MW110_230118,	0356_QC104_230118,							
0356_QC301_230118								
HDPE (no PTFE) (EP231X)								
0356_SW004_230119,	0356_QC302_230119	**19-Jan-2023**	**24-Jan-2023**	18-Jul-2023	✓	**27-Jan-2023**	18-Jul-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)								
0356_SW002_230117,	0356_SW040_230117,	**17-Jan-2023**	**24-Jan-2023**	16-Jul-2023	✓	**27-Jan-2023**	16-Jul-2023	✓
0356_SW032_230117,	0356_SW003_230117,							
0356_SW026_230117,	0356_SW034_230117,							
0356_SW028_230117,	0356_QC101_230117,							
0356_QC300_230117,	0356_QC103_230117							
HDPE (no PTFE) (EP231X)								
0356_MW102_230118,	0356_MW109_230118,	**18-Jan-2023**	**24-Jan-2023**	17-Jul-2023	✓	**27-Jan-2023**	17-Jul-2023	✓
0356_MW110_230118,	0356_QC104_230118,							
0356_QC301_230118								
HDPE (no PTFE) (EP231X)								
0356_SW004_230119,	0356_QC302_230119	**19-Jan-2023**	**24-Jan-2023**	18-Jul-2023	✓	**27-Jan-2023**	18-Jul-2023	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0356_SW002_230117,	0356_SW040_230117,	**17-Jan-2023**	**24-Jan-2023**	16-Jul-2023	✓	**27-Jan-2023**	16-Jul-2023	✓
0356_SW032_230117,	0356_SW003_230117,							
0356_SW026_230117,	0356_SW034_230117,							
0356_SW028_230117,	0356_QC101_230117,							
0356_QC300_230117,	0356_QC103_230117							
HDPE (no PTFE) (EP231X)								
0356_MW102_230118,	0356_MW109_230118,	**18-Jan-2023**	**24-Jan-2023**	17-Jul-2023	✓	**27-Jan-2023**	17-Jul-2023	✓
0356_MW110_230118,	0356_QC104_230118,							
0356_QC301_230118								
HDPE (no PTFE) (EP231X)								
0356_SW004_230119,	0356_QC302_230119	**19-Jan-2023**	**24-Jan-2023**	18-Jul-2023	✓	**27-Jan-2023**	18-Jul-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	4	39	**10.26**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
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

QUALITY CONTROL REPORT

Work Order	: **ES2301936**	Page	: 1 of 11
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: St Patricks Commercial Centre Queen Street SINGLETON NSW, AUSTRALIA 2330	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_23	Date Samples Received	: 20-Jan-2023
Order number	: 60612562_8.1	Date Analysis Commenced	: 23-Jan-2023
C-O-C number	: 47296	Issue Date	: 30-Jan-2023
Sampler	: [redacted]		
Site	: Singleton		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 35		
No. of samples analysed	: 32		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

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: 4833760)									
ES2301764-003	Anonymous	EA055: Moisture Content	----	0.1	%	20.1	20.2	0.6	0% - 20%
ES2301936-018	0356_SD115_230117	EA055: Moisture Content	----	0.1	%	11.3	11.0	2.3	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4833761)									
ES2302017-001	Anonymous	EA055: Moisture Content	----	0.1	%	13.8	14.5	4.8	0% - 20%
ES2302039-021	Anonymous	EA055: Moisture Content	----	0.1	%	18.8	18.0	4.7	0% - 50%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4831003)									
ES2301936-012	0356_SD114_230117	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	0.0023	0.0020	13.5	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2301936-018	0356_SD115_230117	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	0.0023	0.0027	13.8	0% - 50%
		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	0.0351	0.0402	13.7	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0007	0.0008	18.1	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4831003)									
ES2301936-012	0356_SD114_230117	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

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: 4831003) - continued									
ES2301936-012	0356_SD114_230117	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
ES2301936-018	0356_SD115_230117	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0002	0.0003	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0005	0.0007	21.2	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	0.0003	0.0004	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: 4831003)									
ES2301936-012	0356_SD114_230117	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
ES2301936-018	0356_SD115_230117	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

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 (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4831003) - continued									
ES2301936-018	0356_SD115_230117	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: 4831003)									
ES2301936-012	0356_SD114_230117	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
ES2301936-018	0356_SD115_230117	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: 4831233)									
ES2301936-001	0356_SW002_230117	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.81	0.78	3.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.85	0.86	1.2	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.04	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	0.04	0.04	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2301936-010	0356_SW004_230119	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: 4831233)									
ES2301936-001	0356_SW002_230117	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.20	0.21	0.0	0% - 50%

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: 4831233) - continued									
ES2301936-001	0356_SW002_230117	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.03	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
ES2301936-010	0356_SW004_230119	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: 4831233)									
ES2301936-001	0356_SW002_230117	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
ES2301936-010	0356_SW004_230119	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

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: 4831233) - continued									
ES2301936-010	0356_SW004_230119	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: 4831233)									
ES2301936-001	0356_SW002_230117	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
ES2301936-010	0356_SW004_230119	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: 4831233)									
ES2301936-001	0356_SW002_230117	EP231X: Sum of PFAS	----	0.01	µg/L	2.13	2.11	0.9	0% - 20%
ES2301936-010	0356_SW004_230119	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: 4831003)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.0	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4831003)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	107	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.8	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	103	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	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	114	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4831003)								
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	116	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	111	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	106	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	105	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4831003)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	98.0	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	96.0	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	108	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: 4831003) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	126	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: 4831233)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	92.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	91.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	82.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	76.6	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4831233)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	83.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	94.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.0	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	79.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	80.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	88.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	80.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4831233)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	82.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	80.9	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	81.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	81.5	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	99.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	80.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4831233)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	77.4	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	84.4	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: 4831233) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	80.0	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	81.2	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**

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: 4831003)							
ES2301936-012	0356_SD114_230117	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	91.2	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	108	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	98.8	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	106	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	124	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	94.0	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4831003)							
ES2301936-012	0356_SD114_230117	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	110	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	102	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	102	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	96.0	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	115	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	119	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	92.8	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	122	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	113	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4831003)							
ES2301936-012	0356_SD114_230117	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	114	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	112	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	127	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	117	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	118	65.1	134

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: 4831003) - continued							
ES2301936-012	0356_SD114_230117	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	122	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	108	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4831003)							
ES2301936-012	0356_SD114_230117	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	90.8	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	91.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	104	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	128	69.2	143

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: 4831233)							
ES2301936-002	0356_SW040_230117	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	82.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	90.2	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	76.2	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	99.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	80.6	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4831233)							
ES2301936-002	0356_SW040_230117	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	95.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	105	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	105	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	96.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	96.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	87.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	93.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	119	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.0	72.0	134
		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	110	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4831233)							
ES2301936-002	0356_SW040_230117	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	98.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	100	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	116	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	97.7	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4831233) - continued							
ES2301936-002	0356_SW040_230117	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	93.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	112	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	105	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4831233)							
ES2301936-002	0356_SW040_230117	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	74.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	125	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	113	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	81.2	71.4	144

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2301936**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: St Patricks Commercial Centre Queen Street SINGLETON NSW, AUSTRALIA 2330	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [redacted]@aecom.com	E-mail	: [redacted]@ALSGlobal.com
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: NSW_0356_PFASOMP_23	Page	: 1 of 4
Order number	: 60612562_8.1	Quote number	: ES2021AECOMAU0030 (SY/139/19 v4 60612562_8.1)
C-O-C number	: 47296	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Singleton		
Sampler	: [redacted]		

Dates

Date Samples Received	: 20-Jan-2023 19:45	Issue Date	: 25-Jan-2023
Client Requested Due Date	: 30-Jan-2023	Scheduled Reporting Date	: **30-Jan-2023**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 2.4' C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 35 / 32

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is an updated SRN to relfect a change in sampling date/time and ID as per the client**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **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)
ES2301936-012	17-Jan-2023 12:10	0356_SD114_230117		✓	✓
ES2301936-013	17-Jan-2023 10:45	0356_SD055_230117		✓	✓
ES2301936-014	17-Jan-2023 12:15	0356_SD116_230117		✓	✓
ES2301936-015	19-Jan-2023 08:05	0356_SD004_230119		✓	✓
ES2301936-016	17-Jan-2023 11:20	0356_SD053_230117		✓	✓
ES2301936-017	17-Jan-2023 12:05	0356_SD555_230117		✓	✓
ES2301936-018	17-Jan-2023 13:45	0356_SD115_230117		✓	✓
ES2301936-019	19-Jan-2023 08:30	0356_SD005_230119		✓	✓
ES2301936-020	17-Jan-2023 14:25	0356_SD040_230117		✓	✓
ES2301936-021	17-Jan-2023 14:05	0356_SD002_230117		✓	✓
ES2301936-022	17-Jan-2023 11:35	0356_SD032_230117		✓	✓
ES2301936-023	17-Jan-2023 13:20	0356_SD065_230117		✓	✓
ES2301936-024	17-Jan-2023 12:25	0356_SD003_230117		✓	✓
ES2301936-025	17-Jan-2023 13:20	0356_QC102_230117		✓	✓
ES2301936-026	17-Jan-2023 10:45	0356_QC100_230117		✓	✓
ES2301936-027	19-Jan-2023 08:05	0356_QC106_230119	✓		

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2301936-001	17-Jan-2023 14:05	0356_SW002_230117		✓
ES2301936-002	17-Jan-2023 14:25	0356_SW040_230117		✓
ES2301936-003	17-Jan-2023 11:35	0356_SW032_230117		✓
ES2301936-004	18-Jan-2023 08:45	0356_MW102_230118		✓
ES2301936-005	17-Jan-2023 12:25	0356_SW003_230117		✓
ES2301936-006	17-Jan-2023 11:20	0356_SW026_230117		✓
ES2301936-007	17-Jan-2023 13:20	0356_SW034_230117		✓

			(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2301936-008	17-Jan-2023 10:45	0356_SW028_230117		✓
ES2301936-009	18-Jan-2023 14:15	0356_MW109_230118		✓
ES2301936-010	19-Jan-2023 08:05	0356_SW004_230119		✓
ES2301936-011	18-Jan-2023 14:22	0356_MW110_230118		✓
ES2301936-028	17-Jan-2023 10:45	0356_QC101_230117		✓
ES2301936-029	17-Jan-2023 14:00	0356_QC300_230117		✓
ES2301936-030	18-Jan-2023 08:45	0356_QC104_230118		✓
ES2301936-031	18-Jan-2023 15:00	0356_QC301_230118		✓
ES2301936-032	19-Jan-2023 12:00	0356_QC302_230119		✓
ES2301936-033	19-Jan-2023 08:05	0356_QC107_230119	✓	
ES2301936-034	18-Jan-2023 14:12	0356_QC105_230118	✓	
ES2301936-035	17-Jan-2023 13:20	0356_QC103_230117		✓

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]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)	Email	[redacted]@esdat.com.au

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- EDI Format - XTab (XTAB)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]1@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]1@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]1@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]1@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]1@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]1@aecom.com
- EDI Format - XTab (XTAB)	Email	[redacted]1@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]1@aecom.com

CHAIN OF CUSTODY

ALS COC#: 47296 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Singleton

ORDER NO: 60612562_8.1

PROJECT MANAGER [redacted]
PRIMARY SAMPLER: [redacted]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 200123 7:48pm

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0356_SW002_230117		19/01/2023 10:48 AM	WATER	ALS: 4 Non ALS: 0	No			X		
002	0356_SW040_230117		19/01/2023 10:57 AM	WATER	ALS: 4 Non ALS: 0	No			X		
003	0356_SW032_230117		16/01/2023 11:35 AM	WATER	ALS: 4 Non ALS: 0	No			X		
004	0356_MW102_230117		18/01/2023 08:45 AM	WATER	ALS: 4 Non ALS: 0	No			X		
005	0356_SW003_230117		17/01/2023 12:25 PM	WATER	ALS: 4 Non ALS: 0	No			X		
006	0356_SW026_230117		17/01/2023 11:20 AM	WATER	ALS: 4 Non ALS: 0	No			X		
007	0356_SW034_230117		17/01/2023 01:20 PM	WATER	ALS: 4 Non ALS: 0	No			X		
008	0356_SW028_230117		18/01/2023 10:45 AM	WATER	ALS: 4 Non ALS: 0	No			X		
009	0356_MW109_230118		18/01/2023 02:15 PM	WATER	ALS: 3 Non ALS: 0	No			X		

Environmental Division
Sydney
Work Order Reference
ES2301936

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

ALS COC#: 47296 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 20/1/23 07:45 pm

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Singleton

ORDER NO: 60612562[redacted]

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0356_SW004_230119		20/01/2023 08:05 AM	WATER	ALS: 4 Non ALS: 0	No			X		
011	0356_MW110_230118		18/01/2023 02:22 PM	WATER	ALS: 4 Non ALS: 0	No			X		
012	0356_SD114_230117		17/01/2023 12:10 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
013	0356_SD055_230117		18/01/2023 10:45 AM	SOIL	ALS: 1 Non ALS: 0	No		X			
014	0356_SD116_230123		17/01/2023 12:15 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
015	0356_SD004_230119		20/01/2023 08:05 AM	SOIL	ALS: 1 Non ALS: 0	No		X			
016	0356_SD053_230117		19/01/2023 11:20 AM	SOIL	ALS: 1 Non ALS: 0	No		X			
017	0356_SD555_230117		17/01/2023 12:05 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
018	0356_SD115_230117		19/01/2023 01:45 PM	SOIL	ALS: 1 Non ALS: 0	No		X			

CHAIN OF CUSTODY

ALS COC#: 47296 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 200123 7:45 pm

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Singleton

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0356_SD005_230119		20/01/2023 08:30 AM	SOIL	ALS: 1 Non ALS: 0	No		X			
020	0356_SD040_230117		19/01/2023 02:25 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
021	0356_SD002_230117		17/01/2023 02:05 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
022	0356_SD032_230117		17/01/2023 11:35 AM	SOIL	ALS: 1 Non ALS: 0	No		X			
023	0356_SD065_230117		17/01/2023 01:20 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
024	0356_SD003_230117		17/01/2023 12:25 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
025	0356_QC102_230117		17/01/2023 12:05 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
026	0356_QC100_230117		17/01/2023 12:06 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
027	0356_QC106_230118		18/01/2023 12:07 PM	SOIL	ALS: 1 Non ALS: 0	Yes	-				

CHAIN OF CUSTODY

ALS COC#: 47296 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Singleton

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 200123 745 pm

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	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0356_QC101_230117		17/01/2023 12:08 PM	WATER	ALS: 4 Non ALS: 0	No			X		
029	0356_QC300_230117		17/01/2023 12:09 PM	WATER	ALS: 4 Non ALS: 0	No			X		
030	0356_QC104_230118		18/01/2023 12:11 PM	WATER	ALS: 4 Non ALS: 0	No			X		
031	0356_QC301_230118		18/01/2023 12:12 PM	WATER	ALS: 4 Non ALS: 0	No			X		
032	0356_QC302_230119		19/01/2023 12:13 PM	WATER	ALS: 4 Non ALS: 0	No			X		
033	0356_QC107_230119		19/01/2023 12:15 PM	WATER	ALS: 4 Non ALS: 0	Yes			-		
034	0356_QC105_230118		18/01/2023 12:16 PM	WATER	ALS: 4 Non ALS: 0	Yes			-		
035	0356_QC103_230117		17/01/2023 12:18 PM	WATER	ALS: 4 Non ALS: 0	No			X		

CHAIN OF CUSTODY

ALS COC#: 47296 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Singleton

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: [redacted] 20/1/23 7:45pm

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	0356_SW002_230117	HDPE (no PTFE)	20 mL	00350621001380	Grey	No	
001	0356_SW002_230117	HDPE (no PTFE)	20 mL	00350621001326	Grey	No	
001	0356_SW002_230117	HDPE (no PTFE)	20 mL	00350621001819	Grey	No	
001	0356_SW002_230117	HDPE (no PTFE)	20 mL	00350621001641	Grey	No	
002	0356_SW040_230117	HDPE (no PTFE)	20 mL	00350621001758	Grey	No	
002	0356_SW040_230117	HDPE (no PTFE)	20 mL	00350621001823	Grey	No	
002	0356_SW040_230117	HDPE (no PTFE)	20 mL	00350621001680	Grey	No	
002	0356_SW040_230117	HDPE (no PTFE)	20 mL	00350621001299	Grey	No	
003	0356_SW032_230117	HDPE (no PTFE)	20 mL	00350621001516	Grey	No	
003	0356_SW032_230117	HDPE (no PTFE)	20 mL	00350621001316	Grey	No	
003	0356_SW032_230117	HDPE (no PTFE)	20 mL	00350621001399	Grey	No	
003	0356_SW032_230117	HDPE (no PTFE)	20 mL	00350621001848	Grey	No	
004	0356_MW102_230117	HDPE (no PTFE)	20 mL	00350621001611	Grey	No	
004	0356_MW102_230117	HDPE (no PTFE)	20 mL	00350621001764	Grey	No	
004	0356_MW102_230117	HDPE (no PTFE)	20 mL	00350621001482	Grey	No	
004	0356_MW102_230117	HDPE (no PTFE)	20 mL	00350621001745	Grey	No	
005	0356_SW003_230117	HDPE (no PTFE)	20 mL	00350621001710	Grey	No	
005	0356_SW003_230117	HDPE (no PTFE)	20 mL	00350621001719	Grey	No	
005	0356_SW003_230117	HDPE (no PTFE)	20 mL	00350621001794	Grey	No	
005	0356_SW003_230117	HDPE (no PTFE)	20 mL	00350621001807	Grey	No	
006	0356_SW026_230117	HDPE (no PTFE)	20 mL	00350621001796	Grey	No	
006	0356_SW026_230117	HDPE (no PTFE)	20 mL	00350621001400	Grey	No	
006	0356_SW026_230117	HDPE (no PTFE)	20 mL	00350621001395	Grey	No	
006	0356_SW026_230117	HDPE (no PTFE)	20 mL	00350621001549	Grey	No	
007	0356_SW034_230117	HDPE (no PTFE)	20 mL	00350621001560	Grey	No	
007	0356_SW034_230117	HDPE (no PTFE)	20 mL	00350621001431	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 47296 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Singleton

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 20/1/23 7:45pm

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:			

007	0356_SW034_230117	HDPE (no PTFE)	20 mL	00350621001587	Grey	No	
007	0356_SW034_230117	HDPE (no PTFE)	20 mL	00350621001347	Grey	No	
008	0356_SW028_230117	HDPE (no PTFE)	20 mL	00350621001315	Grey	No	
008	0356_SW028_230117	HDPE (no PTFE)	20 mL	00350621001332	Grey	No	
008	0356_SW028_230117	HDPE (no PTFE)	20 mL	00350621001381	Grey	No	
008	0356_SW028_230117	HDPE (no PTFE)	20 mL	00350621001271	Grey	No	
009	0356_MW109_230118	HDPE (no PTFE)	20 mL	00350621001429	Grey	No	
009	0356_MW109_230118	HDPE (no PTFE)	20 mL	00350621001850	Grey	No	
009	0356_MW109_230118	HDPE (no PTFE)	20 mL	00350621001702	Grey	No	
010	0356_SW004_230119	HDPE (no PTFE)	20 mL	00350621001842	Grey	No	
010	0356_SW004_230119	HDPE (no PTFE)	20 mL	00350621001736	Grey	No	
010	0356_SW004_230119	HDPE (no PTFE)	20 mL	00350621001647	Grey	No	
010	0356_SW004_230119	HDPE (no PTFE)	20 mL	00350621001551	Grey	No	
011	0356_MW110_230118	HDPE (no PTFE)	20 mL	00350621001594	Grey	No	
011	0356_MW110_230118	HDPE (no PTFE)	20 mL	00350621001714	Grey	No	
011	0356_MW110_230118	HDPE (no PTFE)	20 mL	00350621001408	Grey	No	
011	0356_MW110_230118	HDPE (no PTFE)	20 mL	00350621001563	Grey	No	
012	0356_SD114_230117	HDPE Soil Jar	200 mL	00620322067182	Grey	No	
013	0356_SD055_230117	HDPE Soil Jar	200 mL	00620719055200	Grey	No	
014	0356_SD116_230123	HDPE Soil Jar	200 mL	00621019080347	Grey	No	
015	0356_SD004_230119	HDPE Soil Jar	200 mL	00620322072126	Grey	No	
016	0356_SD053_230117	HDPE Soil Jar	200 mL	00620322000652	Grey	No	
017	0356_SD555_230117	HDPE Soil Jar	200 mL	00620322067187	Grey	No	
018	0356_SD115_230117	HDPE Soil Jar	200 mL	00620322067203	Grey	No	
019	0356_SD005_230119	HDPE Soil Jar	200 mL	00620322014705	Grey	No	
020	0356_SD040_230117	HDPE Soil Jar	200 mL	00620322067217	Grey	No	
021	0356_SD002_230117	HDPE Soil Jar	200 mL	00620322067209	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 47296 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Singleton

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: [redacted] 200123 7:45pm

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:

022	0356_SD032_230117	HDPE Soil Jar	200 mL	00620322067220	Grey	No	
023	0356_SD065_230117	HDPE Soil Jar	200 mL	00620322067215	Grey	No	
024	0356_SD003_230117	HDPE Soil Jar	200 mL	00620322067213	Grey	No	
025	0356_QC102_230117	HDPE Soil Jar	200 mL	00620322021196	Grey	No	
026	0356_QC100_230117	HDPE Soil Jar	200 mL	00620719055240	Grey	No	
027	0356_QC106_230118	HDPE Soil Jar	200 mL	00620322067167	Grey	No	
028	0356_QC101_230117	HDPE (no PTFE)	20 mL	00350621001263	Grey	No	
028	0356_QC101_230117	HDPE (no PTFE)	20 mL	00350621001481	Grey	No	
028	0356_QC101_230117	HDPE (no PTFE)	20 mL	00350621001843	Grey	No	
028	0356_QC101_230117	HDPE (no PTFE)	20 mL	00350621001257	Grey	No	
029	0356_QC300_230117	HDPE (no PTFE)	20 mL	00350621001569	Grey	No	
029	0356_QC300_230117	HDPE (no PTFE)	20 mL	00350621001260	Grey	No	
029	0356_QC300_230117	HDPE (no PTFE)	20 mL	00350621001585	Grey	No	
029	0356_QC300_230117	HDPE (no PTFE)	20 mL	00350621001595	Grey	No	
030	0356_QC104_230118	HDPE (no PTFE)	20 mL	00350621001480	Grey	No	
030	0356_QC104_230118	HDPE (no PTFE)	20 mL	00350621001748	Grey	No	
030	0356_QC104_230118	HDPE (no PTFE)	20 mL	00350621001445	Grey	No	
030	0356_QC104_230118	HDPE (no PTFE)	20 mL	00350621001592	Grey	No	
031	0356_QC301_230118	HDPE (no PTFE)	20 mL	00350621001543	Grey	No	
031	0356_QC301_230118	HDPE (no PTFE)	20 mL	00350621001418	Grey	No	
031	0356_QC301_230118	HDPE (no PTFE)	20 mL	00350621001591	Grey	No	
031	0356_QC301_230118	HDPE (no PTFE)	20 mL	00350621001258	Grey	No	
032	0356_QC302_230119	HDPE (no PTFE)	20 mL	00350621001694	Grey	No	
032	0356_QC302_230119	HDPE (no PTFE)	20 mL	00350621001494	Grey	No	
032	0356_QC302_230119	HDPE (no PTFE)	20 mL	00350621001488	Grey	No	
032	0356_QC302_230119	HDPE (no PTFE)	20 mL	00350621001612	Grey	No	
033	0356_QC107_230119	HDPE (no PTFE)	20 mL	00350621001349	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 47296 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Singleton

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 20/9/23 07:45

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:			

033	0356_QC107_230119	HDPE (no PTFE)	20 mL	00350621001489	Grey	No	
033	0356_QC107_230119	HDPE (no PTFE)	20 mL	00350621001654	Grey	No	
033	0356_QC107_230119	HDPE (no PTFE)	20 mL	00350621001487	Grey	No	
034	0356_QC105_230118	HDPE (no PTFE)	20 mL	00350621001831	Grey	No	
034	0356_QC105_230118	HDPE (no PTFE)	20 mL	00350621001725	Grey	No	
034	0356_QC105_230118	HDPE (no PTFE)	20 mL	00350621001385	Grey	No	
034	0356_QC105_230118	HDPE (no PTFE)	20 mL	00350621001739	Grey	No	
035	0356_QC103_230117	HDPE (no PTFE)	20 mL	00350621001792	Grey	No	
035	0356_QC103_230117	HDPE (no PTFE)	20 mL	00350621001520	Grey	No	
035	0356_QC103_230117	HDPE (no PTFE)	20 mL	00350621001311	Grey	No	
035	0356_QC103_230117	HDPE (no PTFE)	20 mL	00350621001319	Grey	No	

Total Bottle Count: ALS: 91, Non ALS: 0

ALSCompass SAMPLING *Intelligence*

E-MAILED

LAB OF ORIGIN: NEWCASTLE

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60612562 18.1 Client: DA AECOM Project Manag [redacted]

Phone: [redacted])

ALS Compass COC Reference: ~~AN~~ 47296 # Samples: Sampler:

Phone: ( )

Turnaround Requirements: Standard ✓ Urgent

Special Instructions:	ALS Use Only			
~~AN~~ 47296,	Custody seal intact?	YES	NO	(N/A)
	Free ice / frozen ice bricks upon receipt?	(YES)	NO	N/A
	Random sample temperature on receipt?	2.4	°C	

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	TOB	JN 20.1.23	[redacted] AJ
Date / Time: 19.1.23 @ 1545.	Date / Time: 19/1/23 3:46pm.	Date / Time: 1700	Date / Time: 20/1/23 1945

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2301792**	Page	: 1 of 7
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR [redacted]	Contact	: [redacted]
Address	: 17 WARABROOK BOULEVARDE WARABROOK NSW, AUSTRALIA 2304	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_23	Date Samples Received	: 19-Jan-2023 15:46
Order number	: 60612562_8.1	Date Analysis Commenced	: 23-Jan-2023
C-O-C number	: 47297	Issue Date	: 03-Feb-2023 14:25
Sampler	: [redacted]		
Site	: Offsite		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: Positive result for analyte Perfluorooctane sulfonic acid (PFOS) on sample ES2301792_002 has been confirmed by re-extraction and re-analysis.
- Amendment (03/02/2023): This report has been amended to alter the project reference. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. 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	0356_SD080_230118	0356_SD052_230118	----	----	----
			Sampling date / time	18-Jan-2023 10:45	18-Jan-2023 10:20	----	----	----
Compound	CAS Number	LOR	Unit	ES2301792-003	ES2301792-004	--------	--------	--------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**52.5**	**46.2**	----	----	----
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	**0.0021**	<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	**0.0189**	**0.0007**	----	----	----
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	**0.0003**	<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	0356_SD080_230118	0356_SD052_230118	----	----	----
				Sampling date / time	18-Jan-2023 10:45	18-Jan-2023 10:20	----	----	----
Compound	CAS Number	LOR	Unit		ES2301792-003	ES2301792-004	--------	--------	--------
					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		**0.0213**	**0.0007**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0210**	**0.0007**	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0213**	**0.0007**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**95.0**	**84.5**	----	----	----
13C8-PFOA	----	0.0002	%		**95.5**	**104**	----	----	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW036_230118	0356_SW035_230118	----	----	----
				Sampling date / time	18-Jan-2023 10:45	18-Jan-2023 10:20	----	----	----
Compound	CAS Number	LOR	Unit		ES2301792-001	ES2301792-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.02**	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.04**	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.58**	<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		**0.94**	**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		**0.03**	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.11**	<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		**0.03**	<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: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW036_230118	0356_SW035_230118	----	----	----
				Sampling date / time	18-Jan-2023 10:45	18-Jan-2023 10:20	----	----	----
Compound	CAS Number	LOR	Unit		ES2301792-001	ES2301792-002	--------	--------	--------
					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		**1.75**	**0.01**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**1.52**	**0.01**	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.71**	**0.01**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.6**	**94.5**	----	----	----
13C8-PFOA	----	0.02	%		**98.9**	**100**	----	----	----

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: **SURFACE WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2301792**	Page	: 1 of 5
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_23	Date Samples Received	: 19-Jan-2023
Site	: Offsite	Issue Date	: 03-Feb-2023
Sampler	: [redacted]	No. of samples received	: 4
Order number	: 60612562_8.1	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, 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)								
0356_SD080_230118,	0356_SD052_230118	**18-Jan-2023**	**----**	----	----	**25-Jan-2023**	01-Feb-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0356_SD080_230118,	0356_SD052_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**25-Jan-2023**	04-Mar-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
0356_SD080_230118,	0356_SD052_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**25-Jan-2023**	04-Mar-2023	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
0356_SD080_230118,	0356_SD052_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**25-Jan-2023**	04-Mar-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0356_SD080_230118,	0356_SD052_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**25-Jan-2023**	04-Mar-2023	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
0356_SD080_230118,	0356_SD052_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**25-Jan-2023**	04-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
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0356_SW036_230118,	0356_SW035_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**24-Jan-2023**	17-Jul-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0356_SW036_230118,	0356_SW035_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**24-Jan-2023**	17-Jul-2023	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0356_SW036_230118,	0356_SW035_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**24-Jan-2023**	17-Jul-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)							
0356_SW036_230118, 0356_SW035_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**24-Jan-2023**	17-Jul-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0356_SW036_230118, 0356_SW035_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**24-Jan-2023**	17-Jul-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	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**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	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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.

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

QUALITY CONTROL REPORT

Work Order	: **ES2301792**	Page	: 1 of 10
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: 17 WARABROOK BOULEVARDE WARABROOK NSW, AUSTRALIA 2304	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_23	Date Samples Received	: 19-Jan-2023
Order number	: 60612562_8.1	Date Analysis Commenced	: 23-Jan-2023
C-O-C number	: 47297	Issue Date	: 03-Feb-2023
Sampler	: [redacted]		
Site	: Offsite		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

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: 4833659)									
ES2301268-067	Anonymous	EA055: Moisture Content	----	0.1	%	31.8	33.7	5.6	0% - 20%
ES2301528-010	Anonymous	EA055: Moisture Content	----	0.1	%	15.4	15.0	2.6	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4828806)									
EP2300552-001	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
ES2301793-006	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	0.0003	0.0003	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	0.0048	0.0050	4.1	0% - 20%
		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: 4828806)									
EP2300552-001	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

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: 4828806) - continued									
EP2300552-001	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
ES2301793-006	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: 4828806)									
EP2300552-001	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
ES2301793-006	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

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: 4828806)									
EP2300552-001	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
ES2301793-006	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 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: 4828595)									
ES2301792-001	0356_SW036_230118	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.58	0.56	3.9	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.94	0.94	0.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.04	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: 4828595)									
ES2301792-001	0356_SW036_230118	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.11	0.10	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: 4828595)									
ES2301792-001	0356_SW036_230118	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: 4828595) - continued									
ES2301792-001	0356_SW036_230118	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: 4828595)									
ES2301792-001	0356_SW036_230118	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: 4828595)									
ES2301792-001	0356_SW036_230118	EP231X: Sum of PFAS	----	0.01	µg/L	1.75	1.72	1.7	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **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: 4828806)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4828806)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	101	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.0	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	108	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	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	89.2	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	110	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4828806)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	109	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	103	65.1	134
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	119	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4828806)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	86.0	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	91.2	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	106	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: 4828806) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	99.2	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: 4828595)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	90.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	90.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	82.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4828595)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	78.0	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	85.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	90.0	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	90.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	87.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.0	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	84.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	76.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	101	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4828595)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	88.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	89.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	73.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	87.3	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	88.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4828595)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	93.4	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	87.8	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: 4828595) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	88.6	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	93.4	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 4828806)							
EP2300552-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	101	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	103	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	82.4	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	95.6	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	89.6	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	94.8	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4828806)							
EP2300552-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	101	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	110	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	105	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	112	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	105	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	107	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	81.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	114	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4828806)							
EP2300552-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	112	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	109	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	104	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	111	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	105	65.1	134

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: 4828806) - continued							
EP2300552-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	101	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	119	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4828806)							
EP2300552-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	90.4	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	86.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	107	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	92.8	69.2	143

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: 4828595)							
ES2301792-002	0356_SW035_230118	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	77.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	82.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	85.2	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	94.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	77.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4828595)							
ES2301792-002	0356_SW035_230118	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	75.6	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	84.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	84.0	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.4	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	87.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	87.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	89.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	85.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	95.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4828595)							
ES2301792-002	0356_SW035_230118	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	105	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	84.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	90.6	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4828595) - continued							
ES2301792-002	0356_SW035_230118	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	85.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	76.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	85.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4828595)							
ES2301792-002	0356_SW035_230118	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	81.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	93.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	96.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.0	71.4	144

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2301792**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR [redacted]	Contact	: [redacted]
Address	: 17 WARABROOK BOULEVARDE WARABROOK NSW, AUSTRALIA 2304	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [redacted]@aecom.com	E-mail	: [redacted]@ALSGlobal.com
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_8.1 NSW_0356_PFASOMP_23	Page	: 1 of 3
Order number	: 60612562_8.1	Quote number	: ES2021AECOMAU0030 (SY/139/19 v4 60612562_8.1)
C-O-C number	: 47297	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Offsite		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Jan-2023 15:46	Issue Date	: 25-Jan-2023
Client Requested Due Date	: 27-Jan-2023	Scheduled Reporting Date	: **27-Jan-2023**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 2.4 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 4 / 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is an updated SRN to reflect change in sampling date as per client**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2301792-003	18-Jan-2023 10:45	0356_SD080_230118	✓	✓
ES2301792-004	18-Jan-2023 10:20	0356_SD052_230118	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2301792-001	18-Jan-2023 10:45	0356_SW036_230118	✓
ES2301792-002	18-Jan-2023 10:20	0356_SW035_230118	✓

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]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)	Email	[redacted]@esdat.com.au

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- EDI Format - XTab (XTAB)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

ALSCompass SAMPLING Intelligence

ALS

E-MAILED

LAB OF ORIGIN: NEWCASTLE

Environmental Division Sydney

Work Order Reference ES2301792

Telephone : +61-2-8784 8555

Custody Document for Submissions via ALS Compass App

Project: 60612562 18.1 Client: AECOM Project Manag [redacted]

Phone:

ALS Compass COC Reference: ~~AT~~ 47297 # Samples: Sampler:

Phone: ( )

Turnaround Requirements: Standard ✓ Urgent

Special Instructions:	ALS Use Only			
~~AT~~ 47297	Custody seal intact?	YES	NO	N/A
	~~Free ice~~ / frozen ice bricks upon receipt?	~~YES~~	NO	N/A
	Random sample temperature on receipt?	2.4 °C		

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	KS	JN 20.1.23	[redacted] AS.
Date / Time:	Date / Time: 19.1.23 3:46pm	Date / Time: 1700	Date / Time:
19.1.23 @ 1545.			20/1/23 1945

CHAIN OF CUSTODY

ALS COC#: 47297 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 20/1/23 1945

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Offsite

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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: 24 °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0356_SW036_230118		19/01/2023 10:45 AM	WATER	ALS: 4 Non ALS: 0	No		X		
002	0356_SW035_230118		19/01/2023 10:20 AM	WATER	ALS: 4 Non ALS: 0	No		X		
003	0356_SD080_230118		19/01/2023 10:45 AM	SOIL	ALS: 1 Non ALS: 0	No	X			
004	0356_SD052_230118		19/01/2023 10:20 AM	SOIL	ALS: 1 Non ALS: 0	No	X			

LAB OF ORIGIN: NEWCASTLE

MAILED

CHAIN OF CUSTODY

ALS COC#: 47297 *ALS Laboratory:* ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 20/1/23 1945

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Offsite

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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: 2.4 °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0356_SW036_230118	HDPE (no PTFE)	20 mL	00350621001428	Grey	No	
001	0356_SW036_230118	HDPE (no PTFE)	20 mL	00350621001464	Grey	No	
001	0356_SW036_230118	HDPE (no PTFE)	20 mL	00350621001470	Grey	No	
001	0356_SW036_230118	HDPE (no PTFE)	20 mL	00350621001362	Grey	No	
002	0356_SW035_230118	HDPE (no PTFE)	20 mL	00350621001505	Grey	No	
002	0356_SW035_230118	HDPE (no PTFE)	20 mL	00350621001517	Grey	No	
002	0356_SW035_230118	HDPE (no PTFE)	20 mL	00350621001752	Grey	No	
002	0356_SW035_230118	HDPE (no PTFE)	20 mL	00350621001313	Grey	No	
003	0356_SD080_230118	HDPE Soil Jar	200 mL	00620322067172	Grey	No	
004	0356_SD052_230118	HDPE Soil Jar	200 mL	00620322067170	Grey	No	

Total Bottle Count: ALS: 10, Non ALS: 0

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2301793**	Page	: 1 of 9
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR [redacted]	Contact	: [redacted]
Address	: 17 WARABROOK BOULEVARDE WARABROOK NSW, AUSTRALIA 2304	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_23	Date Samples Received	: 19-Jan-2023 15:46
Order number	: 60612562_8.1	Date Analysis Commenced	: 23-Jan-2023
C-O-C number	: 47298	Issue Date	: 03-Feb-2023 14:46
Sampler	: [redacted]		
Site	: Offsite		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

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.
- Amendment (03/02/2023): This report has been amended to alter the project reference. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. 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: EFFLUENT (Matrix: WATER)				Sample ID	0356_OTH006_230118	----	----	----	----
				Sampling date / time	18-Jan-2023 12:10	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2301793-002	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.04**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.16**	----	----	----	----
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: EFFLUENT (Matrix: WATER)				Sample ID	0356_OTH006_230118	----	----	----	----
				Sampling date / time	18-Jan-2023 12:10	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2301793-002	--------	--------	--------	--------
					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		**0.20**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.20**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.20**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.1**	----	----	----	----
13C8-PFOA	----	0.02	%		**97.3**	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0356_SD046_230118	0356_SD047_230118	0356_SD539_230118	----	----
			Sampling date / time	18-Jan-2023 13:15	18-Jan-2023 12:43	18-Jan-2023 12:30	----	----
Compound	CAS Number	LOR	Unit	ES2301793-005	ES2301793-006	ES2301793-007	--------	--------
				Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**20.9**	**37.6**	**52.4**	----	----
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	<0.0002	**0.0003**	**0.0004**	----	----
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	**0.0016**	**0.0048**	**0.0112**	----	----
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: SEDIMENT (Matrix: SOIL)				Sample ID	0356_SD046_230118	0356_SD047_230118	0356_SD539_230118	----	----
				Sampling date / time	18-Jan-2023 13:15	18-Jan-2023 12:43	18-Jan-2023 12:30	----	----
Compound	CAS Number	LOR	Unit		ES2301793-005	ES2301793-006	ES2301793-007	--------	--------
					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		**0.0016**	**0.0051**	**0.0116**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0016**	**0.0051**	**0.0116**	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0016**	**0.0051**	**0.0116**	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**94.5**	**91.5**	**86.5**	----	----
13C8-PFOA	----	0.0002	%		**89.5**	**94.5**	**95.5**	----	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW064_230118	0356_SW065_230118	0356_SW553_230118	----	----
				Sampling date / time	18-Jan-2023 13:15	18-Jan-2023 12:45	18-Jan-2023 12:30	----	----
Compound	CAS Number	LOR	Unit		ES2301793-001	ES2301793-003	ES2301793-004	--------	--------
					Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.09**	**0.05**	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.02**	<0.01	**0.20**	----	----
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		**0.06**	**0.03**	**0.30**	----	----
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		**0.05**	**0.03**	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.03**	<0.02	**0.04**	----	----
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		**0.02**	<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: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW064_230118	0356_SW065_230118	0356_SW553_230118	----	----
				Sampling date / time	18-Jan-2023 13:15	18-Jan-2023 12:45	18-Jan-2023 12:30	----	----
Compound	CAS Number	LOR	Unit		ES2301793-001	ES2301793-003	ES2301793-004	--------	--------
					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		**0.06**	<0.05	**0.18**	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**0.33**	**0.11**	**0.73**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.08**	**0.03**	**0.50**	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.33**	**0.11**	**0.73**	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.3**	**91.7**	**95.3**	----	----
13C8-PFOA	----	0.02	%		**103**	**100**	**100**	----	----

Surrogate Control Limits

Sub-Matrix: **EFFLUENT**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: **SEDIMENT**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: **SURFACE WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2301793**	Page	: 1 of 5
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR [redacted]	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_23	Date Samples Received	: 19-Jan-2023
Site	: Offsite	Issue Date	: 03-Feb-2023
Sampler	: [redacted]	No. of samples received	: 7
Order number	: 60612562_8.1	No. of samples analysed	: 7

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)								
0356_SD046_230118, 0356_SD539_230118	0356_SD047_230118,	**18-Jan-2023**	**----**	----	----	**25-Jan-2023**	01-Feb-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0356_SD046_230118, 0356_SD539_230118	0356_SD047_230118,	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**25-Jan-2023**	04-Mar-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
0356_SD046_230118, 0356_SD539_230118	0356_SD047_230118,	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**25-Jan-2023**	04-Mar-2023	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
0356_SD046_230118, 0356_SD539_230118	0356_SD047_230118,	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**25-Jan-2023**	04-Mar-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0356_SD046_230118, 0356_SD539_230118	0356_SD047_230118,	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**25-Jan-2023**	04-Mar-2023	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
0356_SD046_230118, 0356_SD539_230118	0356_SD047_230118,	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**25-Jan-2023**	04-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
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0356_SW064_230118, 0356_SW065_230118,	0356_OTH006_230118, 0356_SW553_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**24-Jan-2023**	17-Jul-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)							
0356_SW064_230118, 0356_OTH006_230118, 0356_SW065_230118, 0356_SW553_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**24-Jan-2023**	17-Jul-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0356_SW064_230118, 0356_OTH006_230118, 0356_SW065_230118, 0356_SW553_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**24-Jan-2023**	17-Jul-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0356_SW064_230118, 0356_OTH006_230118, 0356_SW065_230118, 0356_SW553_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**24-Jan-2023**	17-Jul-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0356_SW064_230118, 0356_OTH006_230118, 0356_SW065_230118, 0356_SW553_230118	**18-Jan-2023**	**23-Jan-2023**	17-Jul-2023	✓	**24-Jan-2023**	17-Jul-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	3	25	**12.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**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	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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.

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

QUALITY CONTROL REPORT

Work Order	: **ES2301793**	Page	: 1 of 10
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR [redacted]	Contact	: [redacted]
Address	: 17 WARABROOK BOULEVARDE WARABROOK NSW, AUSTRALIA 2304	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_23	Date Samples Received	: 19-Jan-2023
Order number	: 60612562_8.1	Date Analysis Commenced	: 23-Jan-2023
C-O-C number	: 47298	Issue Date	: 03-Feb-2023
Sampler	: [redacted]		
Site	: Offsite		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 7		
No. of samples analysed	: 7		

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
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 4833659)									
ES2301268-067	Anonymous	EA055: Moisture Content	----	0.1	%	31.8	33.7	5.6	0% - 20%
ES2301528-010	Anonymous	EA055: Moisture Content	----	0.1	%	15.4	15.0	2.6	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4833660)									
ES2301941-001	Anonymous	EA055: Moisture Content	----	0.1	%	38.0	41.2	8.1	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4828806)									
EP2300552-001	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
ES2301793-006	0356_SD047_230118	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	0.0003	0.0003	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	0.0048	0.0050	4.1	0% - 20%
		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: 4828806)									
EP2300552-001	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

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: 4828806) - continued									
EP2300552-001	Anonymous	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
ES2301793-006	0356_SD047_230118	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: 4828806)									
EP2300552-001	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
ES2301793-006	0356_SD047_230118	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

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: 4828806) - continued									
ES2301793-006	0356_SD047_230118	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: 4828806)									
EP2300552-001	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
ES2301793-006	0356_SD047_230118	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: 4828595)									
ES2301792-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.58	0.56	3.9	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.94	0.94	0.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.04	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: 4828595)									
ES2301792-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.11	0.10	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory 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: 4828595) - continued									
ES2301792-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4828595)									
ES2301792-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4828595)									
ES2301792-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4828595)									
ES2301792-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	1.75	1.72	1.7	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **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: 4828806)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4828806)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	101	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.0	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	108	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	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	89.2	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	110	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4828806)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	109	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	103	65.1	134
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	119	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4828806)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	86.0	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	91.2	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	106	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: 4828806) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	99.2	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: 4828595)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	90.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	90.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	82.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4828595)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	78.0	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	85.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	90.0	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	90.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	87.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.0	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	84.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	76.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	101	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4828595)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	88.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	89.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	73.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	87.3	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	88.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4828595)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	93.4	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	87.8	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: 4828595) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	88.6	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	93.4	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 4828806)							
EP2300552-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	101	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	103	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	82.4	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	95.6	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	89.6	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	94.8	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4828806)							
EP2300552-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	101	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	110	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	105	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	112	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	105	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	107	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	81.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	114	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4828806)							
EP2300552-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	112	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	109	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	104	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	111	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	105	65.1	134

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: 4828806) - continued							
EP2300552-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	101	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	119	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4828806)							
EP2300552-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	90.4	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	86.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	107	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	92.8	69.2	143

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: 4828595)							
ES2301792-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	77.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	82.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	85.2	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	94.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	77.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4828595)							
ES2301792-002	Anonymous	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	75.6	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	84.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	84.0	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.4	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	87.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	87.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	89.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	85.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	95.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4828595)							
ES2301792-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	105	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	84.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	90.6	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4828595) - continued							
ES2301792-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	85.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	76.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	85.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4828595)							
ES2301792-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	81.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	93.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	96.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.0	71.4	144

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2301793**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR [redacted]	Contact	: [redacted]
Address	: 17 WARABROOK BOULEVARDE WARABROOK NSW, AUSTRALIA 2304	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [redacted]@aecom.com	E-mail	: [redacted]@ALSGlobal.com
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_8.1 NSW_0356_PFASOMP_23	Page	: 1 of 3
Order number	: 60612562_8.1	Quote number	: ES2021AECOMAU0030 (SY/139/19 v4 60612562_8.1)
C-O-C number	: 47298	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Offsite		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Jan-2023 15:46	Issue Date	: 25-Jan-2023
Client Requested Due Date	: 27-Jan-2023	Scheduled Reporting Date	: **27-Jan-2023**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 2.4 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 7 / 7

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
- **This is an updated SRN to relfect change in ID and Sample date as per client**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2301793-005	18-Jan-2023 13:15	0356_SD046_230118	✓	✓
ES2301793-006	18-Jan-2023 12:43	0356_SD047_230118	✓	✓
ES2301793-007	18-Jan-2023 12:30	0356_SD539_230118	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2301793-001	18-Jan-2023 13:15	0356_SW064_230118	✓
ES2301793-002	18-Jan-2023 12:10	0356_OTH006_230118	✓
ES2301793-003	18-Jan-2023 12:45	0356_SW065_230118	✓
ES2301793-004	18-Jan-2023 12:30	0356_SW553_230118	✓

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]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)	Email	[redacted]@esdat.com.au

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- EDI Format - XTab (XTAB)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

ALSCompass SAMPLING *Intelligence*

ALS

LAB OF ORIGIN: NEWCASTLE

E-MAILED

Environmental Division Sydney

Work Order Reference

ES2301793

Telephone : +61-2-8784 8555

Custody Document for Submissions via ALS Compass App

Project: 60612562 18.1 Client: AECOM Project Manager [redacted]

Phone:

ALS Compass COC Reference: 4 T298 # Samples: Sampler:

Phone: ( )

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?	2.4	°C	

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	19-1-23 VS	JN 20-1-23	[redacted]
Date / Time: 19-1-23 @ 1545.	Date / Time: 3:46pm	Date / Time: 1700	Date / Time: 20/1/23 1945

CHAIN OF CUSTODY

ALS COC#: 47298 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 20/1/22 1945

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Offsite

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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: 2.4 °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0356_SW064_230118		19/01/2023 11:02 AM	WATER	ALS: 4 Non ALS: 0	No		X		
002	0356_OTH006_220118		18/01/2023 12:10 PM	WATER	ALS: 4 Non ALS: 0	No		X		
003	0356_SW065_230118		18/01/2023 12:45 PM	WATER	ALS: 4 Non ALS: 0	No		X		
004	0356_SW553_230118		18/01/2023 12:30 PM	WATER	ALS: 4 Non ALS: 0	No		X		
005	0356_SD046_220118		18/01/2023 01:15 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
006	0356_SD047_230118		18/01/2023 12:43 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
007	0356_SD539_230118		18/01/2023 12:30 PM	SOIL	ALS: 1 Non ALS: 0	No	X			

LAB OF ORIGIN: NEWCASTLE

E-MAILED

CHAIN OF CUSTODY

ALS COC#: 47298 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Offsite

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU003 0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: [redacted] 20/1/22/945

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: 2.4 °C

Other comments:

E-MAILED

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0356_SW064_230118	HDPE (no PTFE)	20 mL	00350621001439	Grey	No	
001	0356_SW064_230118	HDPE (no PTFE)	20 mL	00350621001713	Grey	No	
001	0356_SW064_230118	HDPE (no PTFE)	20 mL	00350621001834	Grey	No	
001	0356_SW064_230118	HDPE (no PTFE)	20 mL	00350621001608	Grey	No	
002	0356_OTH006_220118	HDPE (no PTFE)	20 mL	00350621001798	Grey	No	
002	0356_OTH006_220118	HDPE (no PTFE)	20 mL	00350621001386	Grey	No	
002	0356_OTH006_220118	HDPE (no PTFE)	20 mL	00350621001331	Grey	No	
002	0356_OTH006_220118	HDPE (no PTFE)	20 mL	00350621001688	Grey	No	
003	0356_SW065_230118	HDPE (no PTFE)	20 mL	00350621001629	Grey	No	
003	0356_SW065_230118	HDPE (no PTFE)	20 mL	00350621001533	Grey	No	
003	0356_SW065_230118	HDPE (no PTFE)	20 mL	00350621001851	Grey	No	
003	0356_SW065_230118	HDPE (no PTFE)	20 mL	00350621001484	Grey	No	
004	0356_SW553_230118	HDPE (no PTFE)	20 mL	00350621001761	Grey	No	
004	0356_SW553_230118	HDPE (no PTFE)	20 mL	00350621001732	Grey	No	
004	0356_SW553_230118	HDPE (no PTFE)	20 mL	00350621001282	Grey	No	
004	0356_SW553_230118	HDPE (no PTFE)	20 mL	00350621001556	Grey	No	
005	0356_SD046_220118	HDPE Soil Jar	200 mL	00620322067185	Grey	No	
006	0356_SD047_230118	HDPE Soil Jar	200 mL	00620322067156	Grey	No	
007	0356_SD539_230118	HDPE Soil Jar	200 mL	00621019087305	Grey	No	

Total Bottle Count: ALS: 19, Non ALS: 0

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2301794**	Page	: 1 of 7
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR [redacted]	Contact	: [redacted]
Address	: 17 WARABROOK BOULEVARDE WARABROOK NSW, AUSTRALIA 2304	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_23	Date Samples Received	: 19-Jan-2023 15:46
Order number	: 60612562_8.1	Date Analysis Commenced	: 23-Jan-2023
C-O-C number	: 47299	Issue Date	: 03-Feb-2023 14:50
Sampler	: [redacted]		
Site	: Offsite		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Organic Chemist	Sydney Inorganics, Smithfield, NSW
	Organic Chemist	Sydney Organics, Smithfield, NSW
	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (03/02/2023): This report has been amended to alter the project reference. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. 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	0356_SD039_230118	----	----	----	----
			Sampling date / time	18-Jan-2023 09:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2301794-002	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**66.9**	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0029**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0010	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.005	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0010	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0025	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0010	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0025	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0356_SD039_230118	----	----	----	----
				Sampling date / time	18-Jan-2023 09:30	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2301794-002	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0025	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0025	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0025	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0010	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0010	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0010	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0010	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0010	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0010	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0029**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0029**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0029**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**80.0**	----	----	----	----
13C8-PFOA	----	0.0002	%		**90.0**	----	----	----	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW039_230118	----	----	----	----
				Sampling date / time	18-Jan-2023 09:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2301794-001	--------	--------	--------	--------	
				Result	----	----	----	----	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.01**	----	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.03**	----	----	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.03**	----	----	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.03**	----	----	----	----	
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: SURFACE WATER (Matrix: WATER)				Sample ID	0356_SW039_230118	----	----	----	----
				Sampling date / time	18-Jan-2023 09:30	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2301794-001	--------	--------	--------	--------
					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		**0.10**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.04**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.10**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**104**	----	----	----	----
13C8-PFOA	----	0.02	%		**92.6**	----	----	----	----

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: **SURFACE WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2301794**	Page	: 1 of 5
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR [redacted]	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_23	Date Samples Received	: 19-Jan-2023
Site	: Offsite	Issue Date	: 03-Feb-2023
Sampler	: [redacted]	No. of samples received	: 2
Order number	: 60612562_8.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, 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 / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	15	6.67	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	15	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
0356_SD039_230118	**18-Jan-2023**	**----**	----	----	**27-Jan-2023**	01-Feb-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0356_SD039_230118	**18-Jan-2023**	**24-Jan-2023**	17-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
0356_SD039_230118	**18-Jan-2023**	**24-Jan-2023**	17-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
0356_SD039_230118	**18-Jan-2023**	**24-Jan-2023**	17-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0356_SD039_230118	**18-Jan-2023**	**24-Jan-2023**	17-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
0356_SD039_230118	**18-Jan-2023**	**24-Jan-2023**	17-Jul-2023	✓	**27-Jan-2023**	05-Mar-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	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)							
0356_SW039_230118	**18-Jan-2023**	**27-Jan-2023**	17-Jul-2023	✓	**30-Jan-2023**	17-Jul-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0356_SW039_230118	**18-Jan-2023**	**27-Jan-2023**	17-Jul-2023	✓	**30-Jan-2023**	17-Jul-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0356_SW039_230118	**18-Jan-2023**	**27-Jan-2023**	17-Jul-2023	✓	**30-Jan-2023**	17-Jul-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0356_SW039_230118	**18-Jan-2023**	**27-Jan-2023**	17-Jul-2023	✓	**30-Jan-2023**	17-Jul-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0356_SW039_230118	**18-Jan-2023**	**27-Jan-2023**	17-Jul-2023	✓	**30-Jan-2023**	17-Jul-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	1	**100.00**	**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	15	**6.67**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	15	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
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

QUALITY CONTROL REPORT

Work Order	: **ES2301794**	Page	: 1 of 9
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR [redacted]	Contact	: [redacted]
Address	: 17 WARABROOK BOULEVARDE WARABROOK NSW, AUSTRALIA 2304	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: NSW_0356_PFASOMP_23	Date Samples Received	: 19-Jan-2023
Order number	: 60612562_8.1	Date Analysis Commenced	: 23-Jan-2023
C-O-C number	: 47299	Issue Date	: 03-Feb-2023
Sampler	: [redacted]		
Site	: Offsite		
Quote number	: SY/139/19 v4 60612562_8.1		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Organic Chemist	Sydney Inorganics, Smithfield, NSW
[redacted]	Organic Chemist	Sydney Organics, Smithfield, NSW
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

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: 4838277)									
ES2301794-002	0356_SD039_230118	EA055: Moisture Content	----	0.1	%	66.9	68.7	2.7	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4828820)									
ES2301268-062	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
ES2301896-005	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0083	0.0071	15.4	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0033	0.0025	27.3	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.513	0.441	15.1	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0065	0.0048	30.6	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4828820)									
ES2301268-062	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: 4828820) - continued									
ES2301268-062	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
ES2301896-005	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0017	0.0014	16.7	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0013	0.0010	22.2	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.005	<0.005	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4828820)									
ES2301268-062	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
ES2301896-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	0.0073	0.0052	34.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4828820)									

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: 4828820) - continued									
ES2301268-062	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
ES2301896-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.0021	0.0017	20.7	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	0.0014	0.0012	20.0	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: 4832989)									
ES2301794-001	0356_SW039_230118	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	0.03	0.03	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: 4832989)									
ES2301794-001	0356_SW039_230118	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.03	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: 4832989)									
ES2301794-001	0356_SW039_230118	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: 4832989) - continued									
ES2301794-001	0356_SW039_230118	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: 4832989)									
ES2301794-001	0356_SW039_230118	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: 4832989)									
ES2301794-001	0356_SW039_230118	EP231X: Sum of PFAS	----	0.01	µg/L	0.10	0.09	10.5	0% - 50%

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: 4828820)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4828820)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	78.0	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.8	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.0	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.0	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.3	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4828820)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.0	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.7	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.4	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.0	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.2	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4828820)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	91.2	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	84.0	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	88.0	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: 4828820) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	82.0	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: 4832989)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	77.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	90.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	77.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	98.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4832989)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	83.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	81.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	83.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	80.2	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	80.0	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	80.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	82.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	88.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.8	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
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4832989)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	81.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	80.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	81.1	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	83.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	83.0	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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4832989)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	86.8	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	80.8	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: 4832989) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	87.0	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	85.0	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**

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: 4828820)							
ES2301268-062	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	102	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	94.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	90.0	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	93.6	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	96.0	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	108	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4828820)							
ES2301268-062	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	84.7	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	87.6	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	105	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	102	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	112	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	112	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	95.6	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	108	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	93.6	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	86.4	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	98.7	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4828820)							
ES2301268-062	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	98.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	111	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	97.9	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	102	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	105	65.1	134

Sub-Matrix: **SOIL**

				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: 4828820) - continued							
ES2301268-062	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	111	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	85.2	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4828820)							
ES2301268-062	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	95.6	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	92.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	96.8	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	90.0	69.2	143

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2301794**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR [redacted]	Contact	: [redacted]
Address	: 17 WARABROOK BOULEVARDE WARABROOK NSW, AUSTRALIA 2304	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [redacted]@aecom.com	E-mail	: [redacted]@ALSGlobal.com
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_8.1 NSW_0356_PFASOMP_23	Page	: 1 of 3
Order number	: 60612562_8.1	Quote number	: ES2021AECOMAU0030 (SY/139/19 v4 60612562_8.1)
C-O-C number	: 47299	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Offsite		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Jan-2023 15:46	Issue Date	: 25-Jan-2023
Client Requested Due Date	: 30-Jan-2023	Scheduled Reporting Date	: **30-Jan-2023**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 2.4 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is an updated SRN to reflect change in sample date as per client**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2301794-002	18-Jan-2023 09:30	0356_SD039_230118	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2301794-001	18-Jan-2023 09:30	0356_SW039_230118	✓

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]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)	Email	[redacted]@esdat.com.au

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- EDI Format - XTab (XTAB)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[redacted]@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[redacted]@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[redacted]@aecom.com
- Chain of Custody (CoC) (COC)	Email	[redacted]@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	[redacted]@aecom.com
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	[redacted]@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	[redacted]@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	[redacted]@aecom.com

ALSCompass
SAMPLING *Intelligence*

LAB OF ORIGIN:
NEWCASTLE
E-MAILED

Environmental Division
Sydney
Work Order Reference
ES2301794

Telephone : + 61-2-8784 8555

Custody Document for Submissions via ALS Compass App

Project: 60612562 18.1 Client: Re AECOM

Project Manager: [redacted]
Phone:

ALS Compass COC Reference: ~~47299~~ # Samples:

Sampler:
Phone: ( )

Turnaround Requirements: Standard ✓ Urgent

Special Instructions:	ALS Use Only
~~47299~~	Custody seal intact? YES NO (N/A)
	~~Free ice~~ / frozen ice bricks upon receipt? (YES) NO N/A
	Random sample temperature on receipt? 2·4 °C

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	19·1·23	JN 20.1.23	[redacted]
Date / Time:	Date / Time: 3:46pm	Date / Time: 1700	Date / Time:
19.1.23 @ 1545.			20/1/23/945

CHAIN OF CUSTODY

ALS COC#: 47299 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 20/1/23 1945

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Offsite

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

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: 24

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0356_SW039_230118		18/01/2023 09:30 AM	WATER	ALS: 4 Non ALS: 0	No		X		
002	0356_SD039_230118		19/01/2023 09:30 AM	SOIL	ALS: 1 Non ALS: 0	No	X			

LAB OF ORIGIN: NEWCASTLE E-MAILED

CHAIN OF CUSTODY

ALS COC#: 47299 *ALS Laboratory:* ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW_0356_PFASOMP_23

SITE: Offsite

ORDER NO: 60612562_8.1

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 v4 60612562_8.1 / ES2021AECOMAU0030

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 20/1/23 1945

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: 24 °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0356_SW039_230118	HDPE (no PTFE)	20 mL	00350621001370	Grey	No	
001	0356_SW039_230118	HDPE (no PTFE)	20 mL	00350621001789	Grey	No	
001	0356_SW039_230118	HDPE (no PTFE)	20 mL	00350621001685	Grey	No	
001	0356_SW039_230118	HDPE (no PTFE)	20 mL	00350621001766	Grey	No	
002	0356_SD039_230118	HDPE Soil Jar	200 mL	00620322067199	Grey	No	

Total Bottle Count: ALS: 5, Non ALS: 0

E-MAILED
LAB OF ORIGIN:
NEWCASTLE

Envirolab Services Pty Ltd
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CERTIFICATE OF ANALYSIS 314827

Client Details

Client	AECOM Australia Pty Ltd (Sydney)
Attention	[redacted]
Address	PO Box Q410, QVB Post Office, Sydney, NSW, 1230

Sample Details

Your Reference	**60612562_8.1, NSW_0356_PFASOMP_23**
Number of Samples	3 Soil, 5 Water, 3 Soil
Date samples received	20/01/2023
Date completed instructions received	20/01/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	30/01/2023
Date of Issue	25/01/2023
Reissue Details	This report replaces R00 created on 25/01/2023 due to: Sample ID Amended

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Results Approved By

[redacted] Development Chemist
Laboratory Manager, Sydney

Authorised By

[redacted]

PFAS in Soils Extended			
Our Reference		314827-1	314827-3
Your Reference	UNITS	0356_QC200_230117	0356_QC202_230117
Date Sampled		17/01/2023	17/01/2023
Type of sample		Soil	Soil
Date prepared	-	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	2.0	0.6
Perfluorodecanesulfonic acid	µg/kg	1	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	102	99
Surrogate $^{13}C_2$ *PFOA*	%	99	98
Extracted ISTD $^{13}C_3$ *PFBS*	%	118	102
Extracted ISTD $^{18}O_2$ *PFHxS*	%	112	131
Extracted ISTD $^{13}C_4$ *PFOS*	%	115	136

PFAS in Soils Extended			
Our Reference		314827-1	314827-3
Your Reference	UNITS	0356_QC200_230117	0356_QC202_230117
Date Sampled		17/01/2023	17/01/2023
Type of sample		Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	118	131
Extracted ISTD $^{13}C_3$ *PFPeA*	%	125	143
Extracted ISTD $^{13}C_2$ *PFHxA*	%	113	100
Extracted ISTD $^{13}C_4$ *PFHpA*	%	127	142
Extracted ISTD $^{13}C_4$ *PFOA*	%	115	99
Extracted ISTD $^{13}C_5$ *PFNA*	%	132	148
Extracted ISTD $^{13}C_2$ *PFDA*	%	103	129
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	61	139
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	83	142
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	122	155
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	109	104
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	102	98
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	115	96
Extracted ISTD $^{13}C_8$ *FOSA*	%	100	100
Extracted ISTD d_3 *N MeFOSA*	%	89	100
Extracted ISTD d_5 *N EtFOSA*	%	98	106
Extracted ISTD d_7 *N MeFOSE*	%	108	102
Extracted ISTD d_9 *N EtFOSE*	%	104	101
Extracted ISTD d_3 *N MeFOSAA*	%	123	96
Extracted ISTD d_5 *N EtFOSAA*	%	87	100
Total Positive PFHxS & PFOS	µg/kg	2.0	0.7
Total Positive PFOS & PFOA	µg/kg	2.0	0.6
Total Positive PFAS	µg/kg	3.0	0.7

Moisture			
Our Reference		314827-1	314827-3
Your Reference	UNITS	0356_QC200_230117	0356_QC202_230117
Date Sampled		17/01/2023	17/01/2023
Type of sample		Soil	Soil
Date prepared	-	23/01/2023	23/01/2023
Date analysed	-	24/01/2023	24/01/2023
Moisture	%	36	14

PFAS in Waters Extended				
Our Reference		314827-2	314827-4	314827-5
Your Reference	UNITS	0356_QC201_230117	0356_QC203_230117	0356_QC204_230118
Date Sampled		17/01/2023	17/01/2023	18/01/2023
Type of sample		Water	Water	Water
Date prepared	-	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	0.07	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	0.05	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	0.73	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	0.03	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	1.1	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	0.04	<0.02
Perfluorohexanoic acid	µg/L	<0.01	0.12	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	0.02	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	0.03	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	102	98	99
Surrogate $^{13}C_2$ *PFOA*	%	118	121	119
Extracted ISTD $^{13}C_3$ *PFBS*	%	107	101	100
Extracted ISTD $^{18}O_2$ *PFHxS*	%	106	111	106
Extracted ISTD $^{13}C_4$ *PFOS*	%	106	106	107

PFAS in Waters Extended				
Our Reference		314827-2	314827-4	314827-5
Your Reference	UNITS	0356_QC201_230117	0356_QC203_230117	0356_QC204_230118
Date Sampled		17/01/2023	17/01/2023	18/01/2023
Type of sample		Water	Water	Water
Extracted ISTD $^{13}C_4$ *PFBA*	%	93	62	92
Extracted ISTD $^{13}C_3$ *PFPeA*	%	115	108	94
Extracted ISTD $^{13}C_2$ *PFHxA*	%	111	112	95
Extracted ISTD $^{13}C_4$ *PFHpA*	%	108	112	96
Extracted ISTD $^{13}C_4$ *PFOA*	%	109	104	93
Extracted ISTD $^{13}C_5$ *PFNA*	%	111	112	101
Extracted ISTD $^{13}C_2$ *PFDA*	%	120	116	106
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	117	119	108
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	112	117	109
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	103	98	85
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	130	137	69
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	120	131	89
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	122	119	92
Extracted ISTD $^{13}C_8$ *FOSA*	%	109	106	103
Extracted ISTD d_3 *N MeFOSA*	%	102	98	101
Extracted ISTD d_5 *N EtFOSA*	%	104	96	99
Extracted ISTD d_7 *N MeFOSE*	%	120	117	121
Extracted ISTD d_9 *N EtFOSE*	%	104	101	109
Extracted ISTD d_3 *N MeFOSAA*	%	114	117	88
Extracted ISTD d_5 *N EtFOSAA*	%	111	114	85
Total Positive PFHxS & PFOS	µg/L	0.01	1.8	<0.01
Total Positive PFOA & PFOS	µg/L	0.01	1.1	<0.01
Total Positive PFAS	µg/L	0.01	2.2	<0.01

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	314827-1
Date prepared	-			23/01/2023	3	23/01/2023	23/01/2023		23/01/2023	23/01/2023
Date analysed	-			23/01/2023	3	23/01/2023	23/01/2023		23/01/2023	23/01/2023
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	3	<0.1	<0.1	0	102	107
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	3	<0.1	<0.1	0	103	105
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	3	0.1	0.1	0	102	106
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	3	<0.1	<0.1	0	101	103
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	3	0.6	0.7	15	91	92
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	3	<0.2	<0.2	0	96	82
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	3	<0.2	<0.2	0	110	114
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	3	<0.2	<0.2	0	99	99
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	3	<0.1	<0.1	0	99	103
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	3	<0.1	<0.1	0	100	99
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	3	<0.1	<0.1	0	92	93
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	3	<0.1	<0.1	0	105	110
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	3	<0.5	<0.5	0	91	90
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	3	<0.5	<0.5	0	90	102
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	3	<0.5	<0.5	0	96	108
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	3	<0.5	<0.5	0	93	112
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	3	<5	<5	0	103	105
4:2 FTS	µg/kg	0.1	Org-029	<0.1	3	<0.1	<0.1	0	103	110
6:2 FTS	µg/kg	0.1	Org-029	<0.1	3	<0.1	<0.1	0	113	115
8:2 FTS	µg/kg	0.2	Org-029	<0.2	3	<0.2	<0.2	0	103	105
10:2 FTS	µg/kg	0.2	Org-029	<0.2	3	<0.2	<0.2	0	106	66
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	3	<1	<1	0	99	101
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	3	<1	<1	0	90	87
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	3	<1	<1	0	104	106
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	3	<1	<1	0	118	117
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	3	<5	<5	0	107	103
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	3	<0.2	<0.2	0	98	96
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	3	<0.2	<0.2	0	103	127
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	96	3	99	100	1	100	100
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	95	3	98	96	2	99	95

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	314827-1
Extracted ISTD $^{13}C_3$ PFBS	%		Org-029	95	3	102	104	2	97	136
Extracted ISTD $^{18}O_2$ PFHxS	%		Org-029	99	3	131	129	2	101	113
Extracted ISTD $^{13}C_4$ PFOS	%		Org-029	98	3	136	130	5	102	115
Extracted ISTD $^{13}C_4$ PFBA	%		Org-029	99	3	131	137	4	100	117
Extracted ISTD $^{13}C_3$ PFPeA	%		Org-029	99	3	143	140	2	103	124
Extracted ISTD $^{13}C_2$ PFHxA	%		Org-029	100	3	100	104	4	100	114
Extracted ISTD $^{13}C_4$ PFHpA	%		Org-029	97	3	142	139	2	100	123
Extracted ISTD $^{13}C_4$ PFOA	%		Org-029	97	3	99	101	2	102	112
Extracted ISTD $^{13}C_5$ PFNA	%		Org-029	97	3	148	151	2	103	127
Extracted ISTD $^{13}C_2$ PFDA	%		Org-029	95	3	129	127	2	96	115
Extracted ISTD $^{13}C_2$ PFUnDA	%		Org-029	97	3	139	144	4	91	62
Extracted ISTD $^{13}C_2$ PFDoDA	%		Org-029	95	3	142	137	4	89	89
Extracted ISTD $^{13}C_2$ PFTeDA	%		Org-029	65	3	155	153	1	59	122
Extracted ISTD $^{13}C_2$ 4:2FTS	%		Org-029	97	3	104	102	2	96	110
Extracted ISTD $^{13}C_2$ 6:2FTS	%		Org-029	95	3	98	100	2	100	111
Extracted ISTD $^{13}C_2$ 8:2FTS	%		Org-029	90	3	96	106	10	98	110
Extracted ISTD $^{13}C_8$ FOSA	%		Org-029	99	3	100	102	2	102	101
Extracted ISTD d_3 N MeFOSA	%		Org-029	98	3	100	103	3	99	94
Extracted ISTD d_5 N EtFOSA	%		Org-029	99	3	106	106	0	99	99
Extracted ISTD d_7 N MeFOSE	%		Org-029	92	3	102	108	6	99	111

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	314827-1
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	101	3	101	106	5	99	106
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	102	3	96	104	8	102	124
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	97	3	100	99	1	97	92

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Date analysed	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	110	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	112	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	119	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	112	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	111	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	116	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	110	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	120	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	109	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	93	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	120	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	109	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	112	[NT]	[NT]	[NT]	[NT]	116	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	114	[NT]	[NT]	[NT]	[NT]	111	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	112	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	110	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	81	[NT]	[NT]	[NT]	[NT]	89	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	118	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	108	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	117	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	114	[NT]	[NT]	[NT]	[NT]	106	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	AECOM Australia Pty Ltd (Sydney)
Attention	[redacted]

Sample Login Details

Your reference	60612562_8.1, NSW_0356_PFASOMP_23
Envirolab Reference	314827
Date Sample Received	20/01/2023
Date Instructions Received	20/01/2023
Date Results Expected to be Reported	30/01/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	6 Water, 2 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	6
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

[redacted]

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	PFAS in Soils Extended	PFAS in Waters Extended	On Hold
0356_QC200_2301	✓		
0356_QC201_2301		✓	
0356_QC202_2301	✓		
0356_QC203_2301		✓	
0356_QC204_2301		✓	
0356_QC205_2301			✓
0356_QC206_2301			✓
0356_QC207_2301			✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

AECOM

Chain of Custody

AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney, NSW, 2000
PO Box Q410, QVB PO, Sydney, NSW, 1230
T +61 2 8934 1000
F +61 2 8934 0001
[redacted]

Laboratory Details

Lab. Name: Envirolab Tel: 02 8784 8555
Lab. Address: 12 Ashley St, Chaswood NSW 2067
Contact Name:
Lab. Ref: Lab Quote No:

Sampled By: [redacted] **Project Name: NSW_0356_PFASOMP_23** **AECOM Project #: 60612562_8.1** **Purchase Order No: 60612562_8.1**

Specifications: Please report in ESdat format

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	

6. Report Format: ESdat 7. Project Manager:

Analysis Request

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 314827
Date Received: 20.1.23
Time Received: 09:05
Received By:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	sed	Preservation: filtered	acid	ice	other	Container (No. & type)	PFAS Extended Suite	HOLD	Notes
1	0356_QC200_2301	17/01/23			X			x			x		
2	0356_QC201_2301	17/01/23		X				x			x		
3	0356_QC202_2301	17/01/2023			X			x			x		
4	0356_QC203_2301	17/01/2023		X				x			x		
5	0356_QC204_2301	18/01/23		X				x			x		
6	0356_QC205_2301	18/01/23		X				x				X	
7	0356_QC206_2301	19/01/23			X			x				X	
8	0356_QC207_2301	19/01/23		X				x				X	

Comments: Please send ESdat files to DERP.labreports@esdat.com.au and esdat.apac@aecom.com and ensure that the files use the PROJECT NAME

Temp. received: °C

Report & invoice: [redacted]

Lab Report No: Esky ID:

Relinquished by: [redacted]	Signed: CM	Date: 19/01/2023	Relinquished by:	Signed:	Date:
Received by:	Signed:	Date:	Received by:	Signed:	Date: