PFAS Ongoing Monitoring Report (April 2021 – October 2023)

RAAF Base Wagga

DEF19008

Prepared for
Department of Defence

24 July 2024

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now

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Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Cardno now Stantec is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

Executive Summary

Background

Cardno now Stantec (Cardno) were engaged by the Australian Department of Defence (Defence) to carry out the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan (OMP) (Department of Defence, 2019a) at RAAF Base Wagga, New South Wales ("the Base or "the Site").

The OMP outlines the rationale and scope for the monitoring of the concentrations and extent of PFAS in groundwater and surface water originating from the Site. The monitoring program consists of biannual monitoring events.

The objective of the OMP is to assess the changes in the nature and extent of PFAS within the environment. The OMP used the monitoring network developed as part of the PFAS Management Area Plan (PMAP) (Department of Defence, 2019b), to monitor the amount of PFAS leaving the Site through groundwater and surface water. The PMAP was designed to target areas where there is a potential risk to a receptor (for example, people or an ecological environment) associated with Defence's historical use of legacy aqueous film forming foam (AFFF).

The OMP includes sampling and analysis of the Monitoring Area (MA), comprised of both On-Site and Off-Site areas. The On-Site MA incorporates the Site, Wagga Wagga City Domestic Airport (WWCDA) and the operational airfield. Areas to the north, east, west and north-west of the Site form the Off-Site MA.

Monitoring Program

The scope of work comprised monitoring of 47 groundwater wells and 16 surface water locations, as specified in the OMP. Throughout the monitoring period, groundwater elevation data was periodically collected from 13 groundwater wells containing automatic data loggers. Works were conducted in general accordance with the Sampling and Analysis Quality Plan (SAQP) (Cardno, 2023b).

The monitoring period for the OMP covered under this report is from January 2021 to December 2023 and included biannual monitoring events in April (end of summer) and October (end of winter) of 2021, 2022 and 2023. Sampling under these different climatic conditions provides a better understanding of the potential influence of seasonal variability on the movement and concentrations of PFAS in the environment.

Interpretive Assessment

Groundwater Flow Direction

Inferred groundwater flow direction was generally consistent throughout the monitoring period, indicating a north-westerly flow direction, towards the Murrumbidgee River. The flow direction is consistent with previous monitoring events. It is important to understand groundwater flow direction as it is used to monitor the movement of contamination.

Groundwater PFAS Concentrations

Trend analysis of PFAS concentrations within groundwater indicated that a minority of groundwater well locations reported increasing or possibly increasing trends:

- On-Base, PFOS+PFHxS concentrations at MW300 (Lachlan) was noted as increasing.
- Off-Base, PFOS concentrations at MW240 (Cowra) and MW254 (Cowra) were noted as possibly increasing, and increasing, respectively. These changes in PFOS concentrations at MW240 and MW254 are considered associated with the Gumly Gumly wetland source area.

Results from this monitoring period also indicate that the PFAS contaminant plume associated with the Gumly Gumly wetland is present further to the north-west than presented in the 2020 Annual Interpretive Report (Cardno, 2021d). This is likely due to expansion of the groundwater monitoring network rather than a result of PFAS moving at a faster rate than anticipated. MW240 and MW254 are located near the leading edge of the PFAS plume associated with the wetland, and results indicate that lateral migration of PFAS impacts from the upgradient wetland is occurring, but at a relatively gradual rate.

PFAS impacts associated with the Gumly Gumly wetland is delineated towards the East Wagga Borefield, with PFOS+PFHxS concentrations at MW245 (Cowra) and MW250 (Cowra) also reporting decreasing trends. Decreasing trends were also reported within the wetland itself, at MW200 (Lachlan) and MW312 (Lachlan).

The detection of PFAS in MW258 (Lachlan) and MW259 (Cowra) near Marshalls Creek since July 2023 (first time they were sampled after installation), and the ongoing detection of PFAS in MW248 (Cowra), suggests Marshalls Creek is potentially acting as a secondary source of PFAS to local groundwater. Further investigation is underway to better understand these pathways.

Surface Water PFAS Concentrations

Concentrations reported for surface water locations were generally consistent with historical results. Monitoring locations SW206, SW289 and SW310 have reported exceedances of recreational water criteria in a singular event (November 2022). However, as per the OMP the three-year rolling average has been calculated for each location, with results below recreational water criteria. Multiple new maximums and first-time exceedances were also reported during the November 2022 (E6) event. This is likely attributable to the higher-than-average rainfall received during this period, which saw widespread flooding throughout the wider area. All surface water monitoring locations which reported a new maximum or first-time detection during this event reported a decrease in subsequent events. As discussed above, Marshalls Creek was identified as a potential new secondary source of PFAS for local groundwater via vertical migration.

CSM and Risk Pro ile

Results from the monitoring period indicate the following changes to the Conceptual Site Model (CSM) as described in the 2019 PMAP (available online at defence.gov.au/environment/pfas/raaf-base-wagga) and the 2020 Annual Interpretive Report (Cardno, 2021) for the MA:

- The PFAS contaminant plume associated with the Gumly Gumly wetland is greater than the extent presented in the 2020 Annual Interpretive Report (Cardno, 2021d), with PFOS+PFHxS concentrations within the Lachlan aquifer exceeding drinking water criteria as far north-west as MW253 since August 2023.
- Marshalls Creek is potentially acting as a secondary source of PFAS to local groundwater via vertical migration. PFAS concentrations at MW258 currently do not exceed Drinking Water criteria. However, impacts are not delineated and located approximately 600m up-gradient of MW212. This is closer to the Riverina Water County Council (RWCC) East Wagga Borefield than the extent of PFAS impacts presented in the 2020 Annual Interpretive Report (Cardno, 2021d). Cardno understands that further investigation is currently underway throughout this area.
- Based on surface water monitoring results, the Forest Hill Rural Fire Service appears to be a likely source of PFAS which contributes to PFAS entering the Gumly Gumly wetland.

Overall, as PFAS concentrations within the RWCC water supply bores remain below LOR, there is no complete exposure pathway to human health receptors at this stage.

Conclusions

The April 2021 to October 2023 monitoring events met the objective of the OMP and were carried out in general accordance with the SAQP (Cardno, 2023b). Results from the monitoring period indicate potential changes to the CSM, as summarised above and discussed in detail within this report.

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Table of Abbreviations and Units

Chemical Names

DO	Dissolved Oxygen
ORP	Oxidation Reduction Potential
PFAS	Per- and Poly-fluoroalkyl Substances
PFHxS	Perfluorohexane Sulfonate
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
TDS	Total Dissolved Solids (salinity of water)

Technical Terms

AFFF	Aqueous Film Forming Foam
AHD	Australian Height Datum
AS	Australian Standard
BGL	Below Ground Level
COC	Chain of Custody
CSM	Conceptual Site Model
DSI	Detailed Site Investigation
DQI	Data Quality Indicator
DQO	Data Quality Objective
EC	Electrical Conductivity
EPA	Environment Protection Authority
ESA	Environmental Site Assessment
HEPA	Heads of Environmental Protection Authority's Australia and New Zealand
LOR	Limit of Reporting
NA	Not Analysed
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPC	National Environment Protection Council
NEPM	National Environmental Protection Measure
NHMRC	National Health and Medical Research Council
QA	Quality Assurance
QC	Quality Control
RL	Relative Levels
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan

Units

mAHD	Metres Australian Height Datum
mBGL	Metres Below Ground Level
mbTOC	Metres below Top of Casing
mg/L	Milligram per Litre
µg/L	Micrograms per Litre
µS/cm	Micro Siemens per Centimetre (Electrical Conductivity – Water)

Site Specific

HHERA	Human Health and Ecological Risk Assessment
MA	Monitoring Area
OMP	Ongoing Monitoring Plan
PMAP	PFAS Management Area Plan
FTG	Fire Training Ground
STP	Sewerage Treatment Plant
WWCDA	Wagga Wagga City Domestic Airport

1 Introduction

Cardno, now Stantec (Cardno) was engaged by the Australian Department of Defence (Defence) to carry out the Per- and Poly-Fluoroalkyl Substances (PFAS) Ongoing Monitoring Plan (OMP) (Department of Defence, 2019a) at RAAF Base Wagga ("the Site"). The Site is located in Wagga Wagga, New South Wales, as shown in Figure 1, Appendix A.

The OMP (Department of Defence, 2019a) was carried out in general accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP) and subsequent updates (Cardno 2023a), presented in Appendix K:

> Cardno, 20 October 2023, Reference: DEF19008, PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP) RAAF Base Wagga Wagga, (Rev 9).

The OMP applies to not only RAAF Base Wagga, but also the surrounding areas that, together with the Site, make up the "Monitoring Area". For the purpose of this report:

> RAAF Base Wagga is defined as "the Site", which also represents the "On-Site Monitoring Area", shown as the yellow polygon (Figure 1, Appendix A). The Site is inclusive of the RAAF Base as well as an operational airfield, Wagga Wagga City Domestic Airport (WWCDA) which is operated by the Wagga Wagga City Council (Council).

> The "Off-Site Monitoring Area" comprise areas to the east, north, west and north-west of the Site as shown by the orange polygon (Figure 1, Appendix A).

> The "Monitoring Area" (MA) is comprised of the "On-Site and Off-Site Monitoring Areas", as shown by the blue polygon (Figure 1, Appendix A).

The Site is located on Commonwealth Land and is regulated under Commonwealth environmental legislation.

1 1 Purpose and Ob ective

Before the OMP, a Detailed Site Investigation (DSI) was undertaken from September 2017 to February 2018 by Jacobs Pty Ltd (Jacobs) to assess PFAS on and near the Site (Jacobs, 2018a). The DSI works were commissioned as part of Defence's review of several sites around Australia that used legacy aqueous film forming foam (AFFF) for firefighting and firefighting training exercises. The DSI identified the PFAS sources, pathways and receptors that form the initial conceptual site model (CSM) and risk profile, and established the 'baseline' for distribution and concentration of PFAS in and around the Site. The DSI was used to inform the development of the Human Health and Ecological Risk Assessment (HHERA) and the PFAS Management Area Plan (PMAP), where an updated risk profile was presented.

The objective of the OMP (Department of Defence, 2019a) is to assess the changes in the nature and extent of PFAS in groundwater and surface water within the MA, specifically where there is an identified potentially elevated risk to a receptor or a potential future risk to a receptor, associated with Defence's historical use of AFFF. The OMP will also provide confirmation of our current understanding of risk.

The purpose of this consolidated PFAS Ongoing Monitoring Report (OMR) is to present and evaluate OMP data from the monitoring period (January 2021 to December 2023) within the context of the PMAP, historical monitoring data (i.e. from the DSI and previous ongoing monitoring), and other ancillary information, to achieve the following objectives:

> Assess changes in the distribution, concentration, and transport of PFAS;

> Confirm or update the current understanding of risk for the purpose of protecting human health and environmental receptors; and

> Provide supporting data for the PMAP delivery and evaluation of management actions, where relevant.

1 Scope

Cardno carried out the following tasks to satisfy the purpose and objectives of this assessment:

- Reviewed monitoring data from the April 2021 (E3) to October 2023 (E8) ongoing monitoring program events, and available data since 2017;
- E3 corresponds to the third OMP sampling event in April 2021
- E4 corresponds to the fourth OMP sampling event in October 2021
- E5 corresponds to the fifth OMP sampling event in April/May 2022
- E6 corresponds to the sixth OMP sampling event in November 2022
- E7 corresponds to the seventh OMP sampling event in April 2023
- E8 corresponds to the eighth OMP sampling event in October 2023
- Undertook both qualitative and quantitative evaluation of PFAS concentration trends;
- Reviewed datalogger elevation data from 2020 to 2023, interpreted the findings and compared to the previous datalogger data; and
- Prepared this report to provide findings relevant to the objectives of the assessment.

Note that the OMR does not:

- Provide recommendations for changes to state or territory precautionary advice.
- Recommend changes or amendments to remediation measures or activities.
- Provide health advice, such as recommendations to limit PFAS exposure through food consumption.

1 Relevant Guidelines

This assessment has been undertaken in general accordance with applicable industry standards for a site investigation for the purpose, objectives and scope identified in this report. These standards are set out in:

- Australian and New Zealand Guidelines, (2018), Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
- Australian Standard (AS) 4482-2005, Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 – Non-volatile and semi-volatile compounds[1].
- DEC NSW, (2007), Contaminated sites: Guidelines for the assessment and management of groundwater contamination.
- Department of Defence, (2019), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance – Routine Water Quality Monitoring.
- Department of Defence, (2021a), Contamination Management Manual – Annex L Data Management, August 2018, amended June 2021.
- Department of Defence, (2021b), PFAS OMP Annual Interpretive Report Guidance, Version 3.0, November 2021.
- Department of Defence, Department of Energy, (2018), Quality System Manual Schedule B15.
- Environment Protection Authority (EPA) NSW, (2002), The NSW State Groundwater Dependant Ecosystems Policy, April 2002.
- EPA NSW, (2004), Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales, Publication 1669.2, March 2004.
- EPA NSW, (2016), Designing Sampling Programs for Sites Potentially Contaminated by PFAS.
- Heads of Environmental Protection Authority's Australia and New Zealand (HEPA), (2020), PFAS National Environmental Management Plan (NEMP), Version 2.0, January 2020.
- National Environment Protection Council (NEPC), (1999), National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM).

[1] AS 4482.1-2005 is currently 'Withdrawn', but the assessment will consider it still to be suitable as a state of knowledge document until superseded.

> National Health and Medical Research Council (NHMRC), (2019), Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water, August 2019

> Standards Australia, (1998), AS/NZ 5667:1998 Water quality – sampling.

> U.S. Environmental Protection Agency (USEPA), (2000), 'Guidance for the Data Quality Objectives Process (EPA QA/G-4)'.

> USEPA, (2002), 'Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8)'.

Site Setting

A detailed description of the Base is provided in the OMP (Department of Defence, 2019a), which is summarised below.

- RAAF Base Wagga is located approximately 10 km east of the central business district of Wagga Wagga, NSW and covers an area of 3.1 square kilometres. RAAF Base Wagga has operated as a Royal Australian Air Field since the 1920s.
- The Site is situated south of the Sturt Highway in the suburb of Forest Hill. It is located to the east of the residential area of Forest Hill.
- Most of the buildings and associated infrastructure and support services are located in the north to north-west portion of the Site and include:
  - Various accommodation blocks in the north-western portions of the Site.
  - Commercial buildings in the central portion of the Site.
  - An airport in the southern portion of the Site.

1 Site Description

1 1 Surrounding Land Uses and oning

The Site is Commonwealth owned land which is zoned as Special Activities Zone SP1 by the NSW Government. An exception is Lot 2 DP 819642 which is a disused railway line reserve, running east-west across the Site, owned by the NSW Government (RailCorp) and leased by Defence. Surrounding land uses are presented in Table 2-1.

Table 2-1 Current Surrounding Land Uses

Direction	Current Land Use
North	▪ Sturt Highway, then farm lands – Primary Production (RU1) ▪ Former Forest Hill STP – Special Purpose (SP2) ▪ Residential and minor commercial properties (Forest Hill) to the north-west – Industrial Use (IN1) and Single-Unit Residential (R1), then Gumly Gumly Wetland further north-west – Primary Production (RU1)
West	▪ Residential and commercial properties to the north-west (Forest Hill) – Industrial Use (IN1) and Single-Unit Residential (R1) ▪ Gumly Gumly Wetland – Primary Production (RU1) ▪ The Murray Cod Hatcheries are located within the Gumly Gumly Wetland – Primary Production (RU1) ▪ Farm lands (small holdings) – Primary Production (RU1) ▪ Town of Wagga Wagga further west
East	▪ Farm lands – Primary Production (RU1)
South	▪ Farm lands – Primary Production (RU1)

▪ Source: Google Maps, 2024; Department of Defence, 2019b; NSW Planning Portal [https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address], accessed on 17 January 2024

1 Environmental Setting

Key details defining the Site are summarised in Table 2-2 below. Associated locations are presented in Figure 1 and Figure 2, Appendix A.

Table 2-2 Key Site Details

Setting	Description
Climate	Climate data measured at the Bureau of Meteorology (BoM[1]) gauge 072150, Wagga Wagga AMO, located at the airport within the Site boundary is available from 1942 to present day. Mean maximum temperatures ranged from 12.8 in July to 31.9 °C in January. Between 1942 and present day, the annual mean rainfall is 574.6 mm, with lower mean rainfall from December to April and the highest mean rainfall from May to November. The prevailing wind direction in the morning (9 am) is predominantly from the east and north-east while in the afternoon (3 pm) the prevailing winds are predominantly from the west and south-west.
Topography	The Site is situated within the Murrumbidgee Valley and therefore the local topography is relatively flat and has acted as the floodplain for the Murrumbidgee River. Ground elevation on the Base ranges from approximately 225 m Australia Height Datum (mAHD) in the south-east to approximately 210 mAHD in the south-west. The area surrounding the Site slopes gently down to Kyeamba Creek to the north-east and to Gumly Gumly Wetland and Murrumbidgee River to the north-west. To the north, there is a gentle slope up to an area of granite outcrop, from where it slopes down towards the Murrumbidgee River to the north and north-west (Department of Defence, 2019b).
Geology	Regional Geology The Site is underlain by alluvial and colluvial sediments (silts and clays) of Cainozoic age. These sediments are underlain by Ordovician-aged shale and siltstone, and by Silurian-aged Wantabadgery granite (1:100,000 Wagga Wagga and Kyeamba Valley geological map – Australian Geological Survey Organisation, Raymond 1993) Site-specific Geology Previous investigations defined two groundwater formations within the alluvium; the Cowra Formation mainly comprised of silts and clays with horizons of sands and gravels and the deeper Lachlan Formation, comprised of coarser grained sediments such as gravels and sands with lenses of clays and silts. The Lachlan Formation is the target formation for groundwater abstraction within the region. During drilling for the installation of additional wells along Marshalls Creek, a clay layer of approximately 11 meters thickness was observed to be separating the upper permeable zone of the Lachlan Formation and a lower permeable zone in this formation, above the granite bedrock. The extent and continuity of this clay layer is currently not known.
Acid Sulfate Soil	A review of the Acid Sulfate Soils (ASS) risk mapping, available on the Australian Soil Resources Information System (ASRIS[2]) atlas online database indicates that the Site and surrounds have an extremely low probability of ASS.
Hydrology	▪ There are three surface water drainage pathways from the Site: ▪ East: surface water from the Site drains via overland flow to a series of ephemeral farm dams, which then drain to Kyeamba Creek during extended periods of high rainfall. ▪ West: surface water from the Site drains via overland flow to a series of ephemeral farm dams, which then drain to Gregadoo Creek during extended periods of high rainfall. ▪ North-west: surface water from the Site drains via a stormwater channel to the Gumly Gumly Wetland which then drain to Marshalls Creek during periods of high rainfall (Department of Defence, 2019b). Kyeamba Creek and Marshalls Creek discharge to the Murrumbidgee River to the north and north-west respectively. Forest Hill Sewerage Treatment Plant (STP) approximately 1.8 km to the north of the Site may also be considered a receiving water body as sewage from the Site is discharged to the STP via the sewer network (Department of Defence, 2019b).
Hydrogeology	▪ The hydrogeology of the Site consists predominantly of alluvial and colluvial sediments (silts and clays) with relatively deep aquifers (>20 m). The aquifers are typically recharged through surface water via rainfall in the local catchment. ▪ The regional water table within the sediments is mainly associated with the deeper Lachlan Formation.

Setting	Description
	▪ Perched water is present On-Site. However, this is discontinuous and does not appear to interact with the underlying aquifers (Jacobs, 2018a). ▪ **Depth to Groundwater** – groundwater in the Cowra formation was encountered between 161.714 and 202.504 mAHD, with the majority of On-Site well locations in this formation being dry as the Cowra formation On-Site is predominantly unsaturated. Groundwater in the Lachlan Formation was encountered between 161.268 and 202.54 mAHD. Groundwater gauging records are presented in Table B1a, Appendix B. Groundwater contours indicate that depth to groundwater in the alluvium ranges from 30 to 40 m below ground level (mbgl) in the south-east of the Site to approximately 20 mbgl in the north-west of the Site (Department of Defence, 2019b). ▪ **Groundwater Flow Direction –** the groundwater flow direction has been interpreted to be in a north-westerly direction, which is consistent with the direction of the Murrumbidgee River (Department of Defence, 2019b). ▪ **Groundwater Use** – A survey of properties surrounding the Site identified that mains water is supplied by Riverina Water City Council (RWCC) to most of the properties within the MA for drinking and domestic supply, including the Base (Department of Defence, 2019b). – There are five Off-Site bores owned by Defence that were historically used to supply water to the Site. Four of these bores (Bore 1 to Bore 4) are no longer in use. As stated within the DSI (Jacobs, 2018a), Bore 5 is still used to supply water for irrigation of the former golf course and recreational fields. – The closest bore upgradient of the Site (not owned by Defence) is an irrigation bore situated 3.5km south-east of the Site. – The East Wagga Wagga borefield (RWCC), which supplies potable water to the township, is located approximately 7 km down-gradient of the Site (north-west) and near the edge of the Murrumbidgee River. These bores are inferred to extract water from the deeper portions of the Lachlan Formation. – A private property bore used for irrigation is located approximately 3.5 km to the north-north-west (semi-downgradient) of the Site (MW231). Another bore located on the same property, which is used for potable purposes as well as stock watering and irrigation, is located approximately 4 km north (cross-gradient) of the Site (MW209). These bores are inferred to extract water from the Lachlan Formation. – The Gumly Gumly Private Irrigation District has one active bore located approximately 4.5 km north-north-west (semi-downgradient) of the Site (MW260), near the edge of the Murrumbidgee River. It is used to supply potable water to 60 homes nearby and is inferred to extract water from the Lachlan Formation. – The Murray Cod Hatchery is located approximately 2 km north-west (down-gradient) of the Site and has six bores. As stated in the DSI (Jacobs, 2018), the bore used to supply water to the aquaculture ponds (at the time of the DSI) is located in the north-western corner of the property (MW200), and is inferred to extract water from the Lachlan Formation. At the time of preparing this OMR, the Hatchery was observed to be not operational. ▪ **Receiving Sur ace Water Bodies** – Surface water run-off is to Kyeamba Creek to the north-east and north of the Site, and to Gregadoo and Marshalls Creeks and Gumly Gumly Wetland to the north-west of the Site. It should be noted that some of the surface water run-off to the north-east and north of the Site is via overland flow to farm dams, and that during extended periods of high rainfall, water may flow to Kyeamba Creek.
Ecological Receptors	The ecological receptors in the area include (but are not limited to3): ▪ Mammals (kangaroos, possums, wallabies, bats, flying foxes etc.) ▪ Birds ▪ Reptiles, amphibians & insects ▪ Semi-aquatic & aquatic biota (cod, crayfish etc.) ▪ Grass, trees & other vegetation

- 1. Bureau of Meteorology http://www.bom.gov.au/climate/averages/tables/cw_072150.shtml, last accessed on 18th of January, 2024
- 2. Australian Soil Resource Information System http://www.asris.csiro.au/mapping/viewer.htm, last accessed on 18th of January, 2024.
- 3. Further information can be found in the PFAS Ongoing Monitoring Plan, RAAF Base Wagga (Department of Defence, 2019b)

Removal o Management ones

As part of the PMAP process, surface water and groundwater management zones were previously identified so that government agencies, property owners and other community members were aware of the potential for elevated risks of PFAS exposure if:

- Surface water from Marshalls Creek or farm dams in the Gumly Gumly Wetland and around the Site is used to grow food for home consumption, and
- Groundwater from the Gumly Gumly Wetland and the surrounding area is used for drinking water or to grow food for home consumption.

Following advice provided to Defence by the NSW government PFAS Technical Advisory Group (TAG), the decision was made to remove the management zones based on all current evidence received since the publishing of the PMAP, that management zones are no longer required to manage risk from PFAS leaving the Site. A Factsheet was issued to the community in August 2021 regarding the removal of management zones, and the SAQP (Cardno, 2023b) for the ongoing monitoring program were updated to remove reference to management zones.

Source Areas

Based on the findings of the PMAP (Department of Defence 2019b) and the DSI (Jacobs, 2018a), the following were reported to be On-Site primary source areas where PFAS-impacted surface water, groundwater, soil or sediment were identified (Figure 2, Appendix A):

- Former fire training area near the eastern end of the runway (RMV0093);
- Current Fire Station (RMV0097); and
- Fire Extinguisher Concrete Pad and Former Fire Station Area (RMV0098).

An On-Site secondary source area was identified as follows:

- Aircraft Parking Area to the south of Building 88, which appears to be contributing to PFAS emissions to sewer.

The entire Site has also been identified as a diffuse source of PFAS due to the detections of low levels of PFAS in soil or sediment from drainage swales around the Site, and the potential that there are other areas of low level PFAS On-Site (Department of Defence, 2019b).

Off-Site secondary source areas include the following:

- Former Forest Hill STP and associated settling lagoons; and
-
- Gumly Gumly Wetland (including Murray Cod Hatcheries).

OMP Monitoring Locations

Monitoring of groundwater bores was performed in general accordance with the SAQP (Cardno, 2023b), applying methods set out in Section 3 of this report. The network of On- and Off-Site groundwater locations sampled as part of the OMP (Department of Defence, 2019a) is summarised in Table 2-3, and are shown in Figure 3, Appendix A. Note that all groundwater monitoring locations are sampled biannually.

Table 2-3 Groundwater Monitoring Locations

Monitoring Area	No o Monitoring Locations	Formation	Location ID	Rationale
On-Site (along Site boundary)	6	Cowra	MW301, MW303, MW305, MW307, MW309, MW311	Monitoring Cowra Formation (shallow aquifer) to assess potential Off-Site migration from source areas.
	7	Lachlan	MW300, MW302, MW304, MW306, MW308, MW310, MW243	Monitoring Lachlan Formation (deep aquifer) to assess potential Off-Site migration from source areas.

Monitoring Area	No o Monitoring Locations	Formation	Location ID	Rationale
Gumly Gumly Wetland	2	Cowra	MW233, MW313	Assess changes in PFAS concentrations in environmentally sensitive area.
	3	Lachlan	MW200, MW204, MW312	
Downgradient of Gumly Gumly Wetland	10	Cowra	MW239, MW240 (OMP-MW2)[4], MW245, MW248[2], MW250[2], MW251[2], MW254[2], MW256[2], MW257[2] (OMP-MW1)[4], MW259[3].	Assess changes in PFAS concentrations down-gradient of environmentally sensitive area.
	8	Lachlan	MW238 (OMP-MW3)[4], MW244, MW247[2], MW249[2], MW252[2], MW253[2], MW255[2], MW258[3].	
Off-Site to the north and north-west of Site	4	Lachlan	MW214[1], MW231, MW235, MW246[2].	Assess PFAS concentrations in groundwater downgradient of Site.
Drinking water supply bores to the north and north-west of Site	5	Lachlan	MW209, MW210, MW211, MW212, MW213.	Drinking water supply bores downgradient of Site.
Property to the east of the Site	1	Wantabadgery Granite	MW241 (OMP-MW5)[4]	Assess PFAS concentrations in new bores, testing Lachlan Formation and Wantabadgery Granite aquifers. It is understood that the wells at this location target a north-south orientated dyke at a point where the Kyeamba Creek drainage pathway from the Base crosses the Sturt Highway.
	1	Lachlan	MW242 (OMP-MW6)[4]	

Notes:
1. MW214 is the current production bore supplying irrigation water to the Site.
2. New bores installed in 2020 (Jacobs, 2020).
3. New bores added to OMP prior to October 2023.
4. Original location ID as presented in the OMP (Department of Defence, 2019a).

Sampling of surface water locations was performed in general accordance with the SAQP (Cardno, 2023b), applying methods set out in Section 3 of this report. The network of On- and Off-Site surface water locations sampled as part of the OMP is summarised in Table 2-4, and are shown in Figure 4, Appendix A. Note that all surface water monitoring locations are sampled biannually.

Table 2-4 Surface Water Monitoring Locations

Monitoring Area	No o Monitoring Locations	Monitoring Locations	Rationale
Surface Water Outflows – drains discharging from the Site	2	SW104, SW206.	To monitor the concentration of PFAS in stormwater discharged from the Base.

Monitoring Area	No o Monitoring Locations	Monitoring Locations	Rationale
Surface Water Outflows – Elizabeth Avenue drain outlet (drain parallel to Forest Hill Rural Fire Service)	1	SW218.	To evaluate whether the fire station is contributing to PFAS discharging ultimately into the Gumly Gumly Wetland.
Marshalls Creek downstream of Gumly Gumly Wetland	4	SW234, SW262, SW294, SW310.	Provide spatial coverage of PFAS concentrations in the Marshalls Creek drainage pathway.
Murrumbidgee River	3	SW212, SW261, SW286, SW309.	Quantify PFAS concentrations within the river; SW309 is a sentinel monitoring location for the drinking water supply.
Kyeamba Creek	3	SW236, SW240.	Provide spatial coverage of PFAS concentrations in this drainage pathway.
Forest Hill Sewage Treatment Plant	3	SW228, SW288, SW289.	To monitor changes in PFAS concentrations in treated sewage effluent originating from the sewage treatment plant.

Sampling and Analytical Methodology

1 Groundwater and Sur ace Water Sampling Methodology

The sampling and analytical methodology is outlined in the Site SAQP (Cardno, 2023b), presented in Appendix K.

Changes to the Monitoring Network

Changes to the monitoring network that occurred between 2021 and 2023 are summarised in Table 3-1.

Table 3-1 Changes to the Monitoring Network

Well ID	Status	Comments	Date o Change
MW258 (Lachlan) and MW259 (Cowra)	New monitoring wells	New monitoring wells to assess changes in PFAS concentrations down-gradient of environmentally sensitive area.	July 2023

Deviations rom OMP SAQP

Deviations from the SAQP (Cardno, 2023b) are detailed in Table D1, Appendix D. The general groundwater deviations are summarised below:

- One alternate location (MW260) was sampled due to decommissioning of previous sampling point (MW210).
- One location (MW211) was unable to be sampled due to an electrical fault with the bore pump.
- A number of groundwater monitoring wells (MW213, MW251, MW252) were unable to be accessed and sampled due to flood water.
- A number of groundwater monitoring wells (MW301, MW303, MW305, MW307, MW309, MW311, MW313) were unable to be sampled as they were dry or had insufficient water.
- Two groundwater monitoring wells (MW312, MW313) were unable to be sampled due to private property access not being granted.
- One groundwater sample (MW250) was lost by the laboratory and unable to be analysed.
- A number of groundwater monitoring bores (MW211, MW212, MW213, MW235) were not operational and therefore unable to be sampled.
- These deviations were considered to have minimal impact on the existing dataset and program. Further details are presented in Table D1, Appendix D.

The general surface water deviations are summarised below:

- A number of locations (SW236, SW262, SW286, SW309) were moved due to flood water.
- A number of locations (SW212, SW261, SW294) were unable to be assessed and sampled due to flood water.
- These deviations were considered to have a minimal impact on the dataset.

Quality Assurance and Quality Control

1 Data alidation Process

A critical aspect of Site assessments is the demonstration of the quality of the data used as the basis for the assessment. This is achieved through a Data Validation process which includes a review of the following Data Quality Indicators (DQIs), as described in the SAQP (Cardno, 2023b), presented in Appendix K.

- Quality Assurance documentation.
- Bias.
- Data Representativeness.
- Data Precision & Accuracy.
- Laboratory Performance.
- Data Comparability.
- Data Set Completeness.

QA/QC Summary

Details of field quality assurance (QA) procedures and the field quality control procedures to monitor and measure the effectiveness of the QA procedures are summarised in the SAQP (Cardno, 2023b). QC results, field data and equipment calibration documentation from each monitoring event are presented in the respective Factual Reports (see Appendix E to J for each Factual Report), A detailed evaluation of QA/QC for each monitoring event is presented in the Factual Report Data Quality Reviews including review of QA documentation, data representativeness, precision, accuracy, comparability and completeness. . Standard sampling methods, handling, preservation and transport procedures were complied with as detailed in the SAQP (Cardno, 2023b). Quality control samples comprising blind replicate (duplicate or intra-laboratory sample), triplicate (inter-laboratory sample), rinsate blanks and trip blanks were collected during each field event, in accordance with the frequency outlined in the SAQP (Cardno, 2023b). Standard procedures and qualified personnel were used for each sampling event.

Field Chain of Custody forms are included in the Factual Reports and demonstrate sample integrity. The data collected is considered comparable for each sampling event and can be used for the assessment.

Details of the primary and secondary laboratories internal QA/QC compliance for each monitoring event are presented in the respective Factual Reports.

The data validation process has concluded that there are no significant systematic errors in the data collection process or laboratory QC testing. Therefore, the data set used as the basis for this assessment is considered valid and complete.

Assessment Criteria

1 Groundwater and Sur ace Water

The assessment levels adopted for groundwater and surface water in the SAQP (Cardno, 2023b) are based upon the PFAS screening criteria specified in the OMP (Department of Defence, 2019a), which were adopted based on the guidance in the PFAS NEMP (HEPA, 2020). The adopted assessment criteria for groundwater and surface water are detailed in Appendix K.

Table 5-1 Criteria for Groundwater and Surface Water

E posure Scenario	Adopted Assessment Criteria		Guidance
	PFH S / PFOS	PFOA	
	µg/L		
Human Health – Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Human Health - Surface Water Recreational	2[2]	10	HEPA 2020
Ecological	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Department of Defence, 2019).

Contextual and Ancillary Information

Cardno reached out to the Lead Consultant at RAAF Base Wagga (Jacobs) for details of PMAP delivery activities, remediation and/or infrastructure projects during the monitoring period (April 2021 to October 2023), and planned works for the next 12 months, that have the potential to affect the interpretation of the OMP results. These works are summarised below, have been assessed and are not considered to have influenced the interpretation of the monitoring results.

1 Remediation Works Undertaken During the Monitoring Period

Excavation and removal of PFAS impacted soil was undertaken as part of the Taxiway Extension project in 2021. No works have occurred within known source areas on Base between 2021 and 2023 that are likely to have impacted monitoring results from OMP locations that Jacobs or Cardno are aware of.

PMAP Delivery Works Undertaken During the Monitoring Period

Mass Flux Assessment equipment was demobilised in December 2022.

Two new wells, MW258 (which screens the top of the Lachlan Formation) and MW259 (screened in the Cowra formation) were installed at 13 Forge Street immediately to the north of Marshalls Creek in July 2023. PFAS was detected in both wells with concentrations of 0.03 ug/L PFOS + PFHxS reported in MW258. These wells were installed to understand the potential for Marshalls Creek to act as a secondary source of PFAS to groundwater in this area. An additional well was recommended for installation at the same depth as the nearby East Wagga drinking water supply bores to understand whether PFAS is also present at greater depths. This was installed in January 2024 and initial sampling results reported PFAS <LOR. Further investigations with regard to this issue are planned.

Remediation Works Planned Post Monitoring Period

Remediation procurement is underway with remediation expected to kick off in the first half of 2024. Groundbreaking activities are not likely to occur until Q2 2024 at the earliest. Remediation will focus on the former fire training pad, former fire station and current fire station. Following remediation completion, a second mass flux study will be completed.

Monitoring Data Summary

1 Groundwater

1 1 Groundwater Quality Field Parameters

The groundwater quality field parameters recorded during the April 2021 (E3) to October 2023 (E8) monitoring events are summarised in Table 7-1 below.

Table 7-1 Summary of Water Quality Field Parameters (Groundwater)

Monitoring Event	pH	DO mg/L	EC (µS/cm)	TDS mg/L [1]	ORP m
E3 (April 2021)	5.97 (MW251) – 11.92 (MW241) Slightly acidic to moderately alkaline conditions	0.32 (MW204) – 5.95 (MW210) Anaerobic to aerobic conditions	171.5 (MW235) – 2,342 (MW248)	111.48 (MW235) – 1,522.3 (MW248) Fresh water	-209 (MW241) – 198.8 (MW245) Reducing to oxidising conditions
E4 (October 2021)	5.84 (MW252) – 11.77 (MW241) Slightly acidic to moderately alkaline conditions	0.50 (MW204) – 7.4 (MW210) Anaerobic to aerobic conditions	136.3 (MW235) – 1,875 (MW248)	88.60 (MW235) – 1,218.8 (MW248) Fresh water	-158.8 (MW242) – 183.9 (MW256) Reducing to oxidising conditions
E5 (April/May 2022)	5.84 (MW249) – 7.89 (MW241 & MW308) Slightly acidic to slightly alkaline conditions	0.57 (MW306) – 9.07 (MW249) Anaerobic to aerobic conditions	0.49 (MW204) – 4,710 (MW310 & MW311)	0.32 (MW204) – 3,061.5 (MW310 & MW311) Fresh to slightly brackish water	-114.5 (MW246) – 610.7 (MW249) Moderately reducing to highly oxidising conditions
E6 (November 2022)	5.12 (MW214) – 11.09 (MW241) Slightly acidic to moderately alkaline conditions	0.27 (MW242) – 6.81 (MW210) Anaerobic to aerobic conditions	138.6 (MW235) – 3,966 (MW311)	90.1 (MW235) – 2,577.9 (MW311) Fresh water	-182.7 (MW233) – 195.5 (MW300) Reducing to oxidising conditions
E7 (April 2023)	6.01 (MW251) – 11.31 (MW241) Slightly acidic to moderately alkaline conditions	0.07 (MW304) – 6.93 (MW239) Anaerobic to aerobic conditions	157.9 (MW244) – 4,076.9 (MW311)	102.6 (MW244) – 2,650 (MW311) Fresh water	-176.6 (GW025234_D) – 165.3 (MW300) Reducing to oxidising conditions
E8 (October 2023)	5.3 (MW251) – 11.84 (MW241) Slightly acidic to moderately alkaline conditions	0.07 (MW304) – 6.19 (MW210) Anaerobic to aerobic conditions	188.7 (MW210) – 3,810 (MW246)	122.7 (MW210) – 2,476.5 (MW246) Fresh water	-523.5 (MW247) – 159.4 (MW304) Highly reducing to moderately oxidising conditions

1. TDS calculated from EC where TDS = EC*0.64

Groundwater water quality parameters recorded during the groundwater sampling program are presented in Table B1a, Appendix B.

In summary, the water quality parameter results indicate the following:

- pH was generally consistent across the monitoring period, ranging from slightly acidic to moderately alkaline. pH reported a lower maximum concentration during the April/May 2022 event (E5). However, this is likely attributable to an atypical reading at MW241, which has consistently reported the highest pH (possibly due to it being screened in the Wantabadgery Granite formation).
- Dissolved oxygen (DO) and Oxidation-Reduction Potential (ORP) reported higher values during the April/May 2022 (E5) event, with the highest DO and ORP measurements reported by MW249, indicative of highly oxidising conditions at this location. Electrical Conductivity (EC) reported generally consistent results from the April/May 2022 (E5) event to the October 2023 (E8) event, however reported lower concentrations during the April 2021 (E3), and October 2021 (E4) events.
- There does not appear to be any distinct differences in water quality parameters between the Cowra and Lachlan Formations.

1 Groundwater Elevation and Flow Directions

Groundwater flow for both the Cowra and Lachlan aquifers was interpreted to be generally in a north-westerly direction, consistent with previous monitoring events.

Contour plans are included in Figures 5A to 5N, Appendix B. Gauging records are presented in Table B1a, Appendix B. A summary of the groundwater elevation range encountered for the Cowra and Lachlan aquifers is presented in Table 7-2. Groundwater elevation data for all three aquifers during each monitoring event is presented in Appendix B.

Table 7-2 Summary of Groundwater Elevation Ranges

	Groundwater Elevation Range mAHD	
Monitoring Event	Cowra A ui er Shallow	Lachlan A ui er Deep
E1 (March 2020)	161.745 (MW245) to 202.419 (MW307)	162.204 (MW244) to 187.843 (MW306)
E (September/October 2020)	162.767 (MW245) to 166.261 (MW239)	164.15 (MW244) to 188.615 (MW306)
E3 (April 2021)	161.714 (MW251) to 202.504 (MW307)	161.268 (MW249) to 188.138 (MW306)
E4 (October 2021)	163.326 (MW250) to 202.414 (MW307)	162.988 (MW249) to 188.178 (MW306)
E5 (April/May 2022)	164.882 (MW251) to 189.961 (MW311)	163.809 (MW252) to 187.208 (MW306)
E6 (November 2022)	178.394 (MW251) to 232.904 (MW307)	168.179 (MW204) to 188.167 (MW306)
E7 (April 2023)	168.888 (MW239) to 192.551 (MW311)	168.48 (MW204) to 188.364 (MW306)
E8 (October 2023)	167.594 (MW251) to 171.344 (MW259)	166.098 (MW249) to 202.54 (MW306)

Groundwater flow was interpreted to be in a north-westerly direction for both formations, consistent with the general slope of the surface topography and the direction of flow in Kyeamba Creek and Marshalls Creek, which is towards the Murrumbidgee River. A steep hydraulic gradient was noted within the Lachlan Formation from MW308 to MW310, which could be attributed to a variety of geological changes, such as depositional facies or local neotectonics influencing as a flow barrier (Jacobs, 2022).

The majority of On-Site monitoring wells screened within the Cowra formation were dry during the monitoring period. However, groundwater flow appears to consistently be towards the north-west. A groundwater trough

also appears to be present during the April 2023 (E7) event. However, this is based upon only one data point on-Base, with contours from October 2023 (E8) showing a flow regime consistent with previous monitoring events. Groundwater levels within the Cowra aquifer are also raised during the April 2023 (E7) and October 2023 (E8) events, with greater minimum and maximum groundwater elevation ranges reported relative to March 2020 (E1) to April/May 2022 (E5).

During the November 2022 (E6) event, groundwater levels in the Lachlan aquifer appear to have risen with observed increases in rainfall, which resulted in significant flooding throughout the region during the November 2022 event, as detailed within the associated factual report provided in Appendix H. This resulted in the formation of localized groundwater troughs around MW238 and MW253, directing groundwater to flow more northernly instead of north-west. Groundwater elevations were also substantially raised during the April 2023 (E7) events, particularly toward the north-west, resulting in a similar trough forming around MW246 and MW255 and the Gumly Gumly wetland within the Lachlan. Levels within October 2023 (E8) were also raised towards the north-west, but this may also be associated with above-average rainfall recorded in October 2023.

As one of the objectives of the OMP is to collect additional data on geological and hydrogeological conditions to inform future management actions, including the potential refinement of the RAAF Base Wagga groundwater model, loggers for monitoring water levels were deployed in each of the wells installed for the OMP, the existing Lachlan Formation wells on- Base, and the monitoring well next to the current Base irrigation bore (MW215). Figure 7-1 below shows the data logging of 10-minute intervals for the standing water Relative Levels (RLs) at each well location during the period May 2020 through to October 2023, with MW215, MW238, MW247, MW248, MW249, and MW250 missing some portions of data due to technical equipment issues.

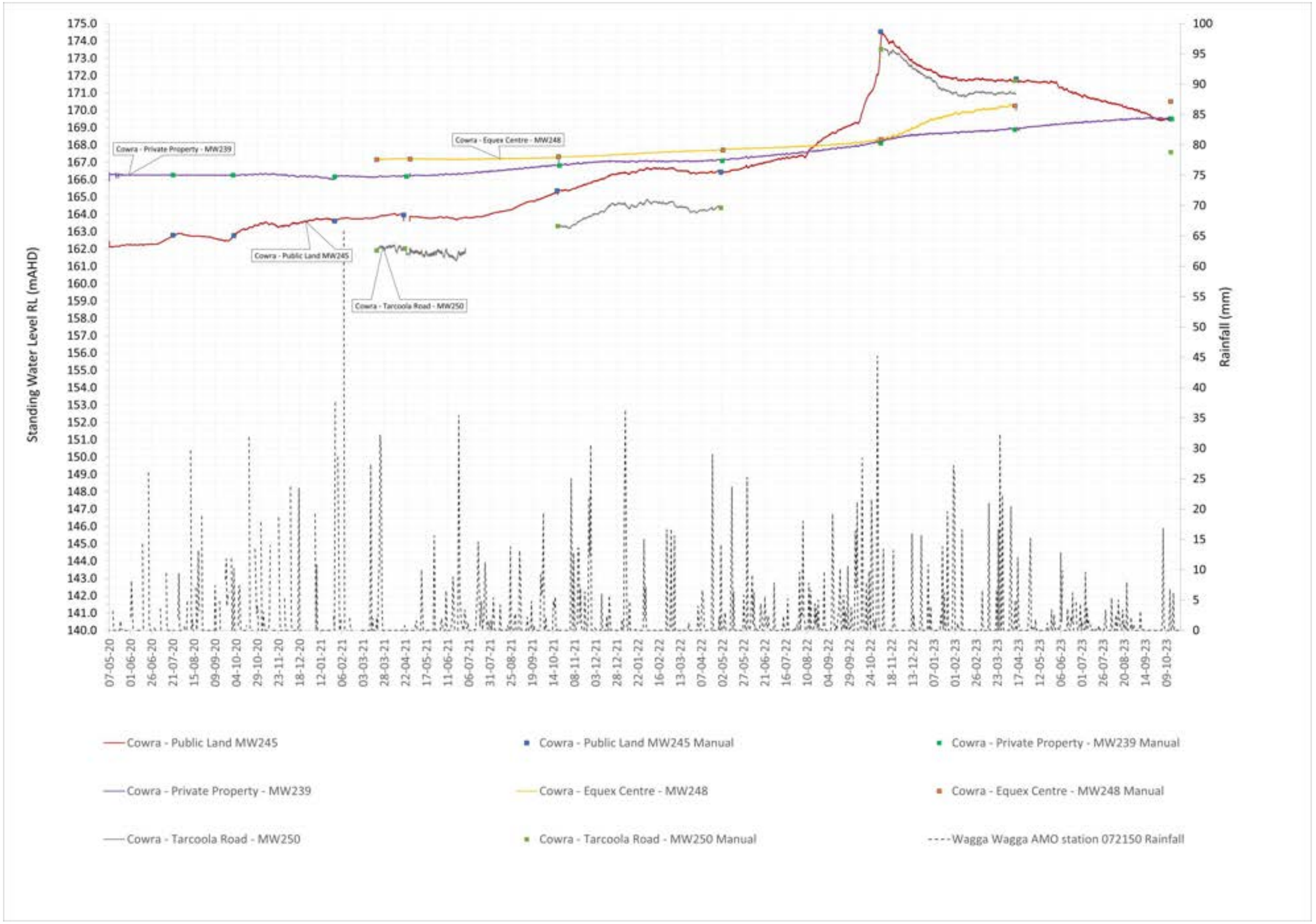

Figure 7-1 Cowra Groundwater Elevations over Time (May 2020 to October 2023)

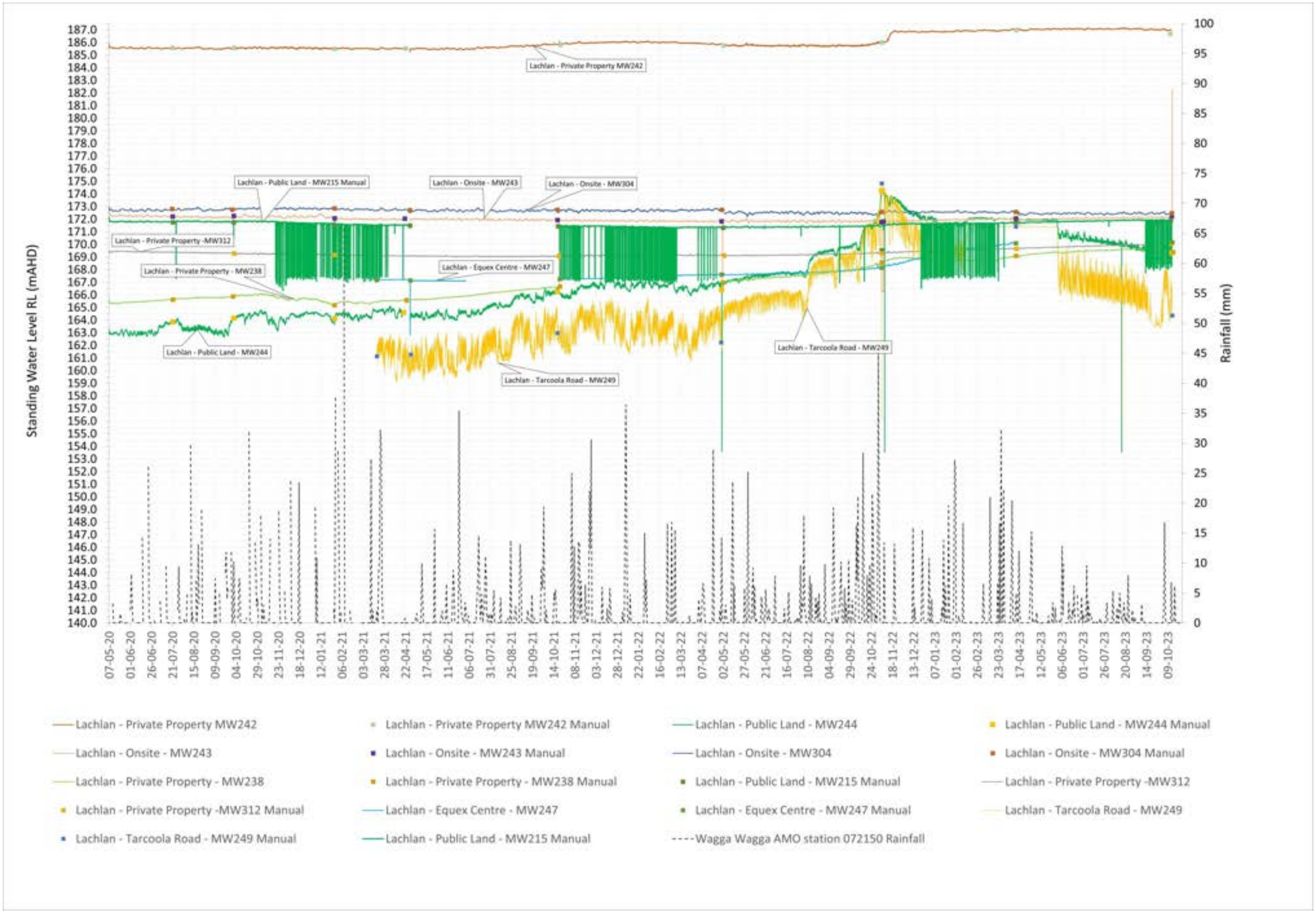

Figure 7-2 Lachlan Groundwater Elevations over Time (May 2020 to October 2023)

A review of Figure 7-1 and Figure 7-2 indicates the below:

7.1.2.2 Data Logger Observations – Cowra

- MW239: Water levels have increased by approximately 3 meters since logging began in May 2020. Levels appear very consistent, with minimal evidence of pumping.
- MW245: Water levels gradually increased over time before sharply increasing in Q4 2022, peaking in November 2022 at 174.5mAHD. Water levels have been gradually decreasing since.
- MW248: An increase of approximately 3 meters was reported from May 2020 to the October 2023 (E8) event, with the majority of this increase observed following rainfall in November 2022. Data from April 2023 to October 2023 is not available due to a technical equipment glitch. However, from manual gauging undertaken in the October 2023 (E8) event, water levels appear to be generally stable.
- MW250: Water levels increased by approximately 9 meters following the November 2022 event (E6), which saw above-average rainfall. MW250 is nested with MW249, which is screened within the Lachlan aquifer and has daily fluctuations of approximately 2 meters, whereas MW250 has reported relatively stable daily water levels with very small fluctuations. Numerous data gaps are present throughout the logging period, with logger glitches reported. However, from the manual data point in October 2023 (E8) the SWL has increased to approximately 168mAHD.

7.1.2.3 Data Logger Observations - Lachlan

- MW215: Cyclical seasonal trends can be observed, with water levels decreasing and recovering by approximately 5 meters a day, which is likely associated with pumping. Trends can be observed to begin around October each year and last until March/April, at which point water levels stabilize. No long-term trends are discernible.
- MW238: Water levels have seen a consistent increase since monitoring began, with a total increase of 3 meters by October 2023 (E8). No notable increases were reported following significant rainfall events. As such, increasing trends may be partially attributable to increased rainfall associated with La Nina.
- MW244: Water levels have seen consistent, daily fluctuations, with an overall upward trend. This upward trend accelerated from August 2022, peaking during November 2022 at approximately 174.5mAHD. Water levels then sharply declined through to February 2023, subsequently stabilizing at approximately 172.0mAHD until July 2023, at which point levels are observed to decrease again.
- MW247: Multiple data gaps are present at this location; however, levels are generally consistent at approximately 167mAHD. An increase was observed following rainfall in November 2022, with levels rising to a maximum of 170mAHD within April 2023. No data is available from April 2023 (E7) to October 2023 (E8) due to a data glitch. However, manual gauging undertaken in October 2023 (E8) suggests that water levels are generally stable now.
- MW249: Water levels exhibited very noisy trends, with highly consistent elevation fluctuations of up to 3.5 meters. Levels notably increased beginning in August 2022, peaking in November 2022. This bore is located near the East Wagga Borefield in the Lachlan Formation, which is what the bores are targeting. The water levels increased up to the November floods, where the water level peaked at approximately 175mAHD. Levels have consistently decreased post this peak until October 2023.
- MW242: Water levels were generally consistent (185.5mAHD) throughout the monitoring period until November 2022, at which point levels were observed to increase by approximately 1 meter to 187.0mAHD. Levels have remained at this elevation until October 2023 (E8).
- MW243: Water levels are generally stable. No observable trend throughout the monitoring period.
- MW304: Water levels are generally stable. No observable trend throughout the monitoring period.
- MW312: Water levels are generally stable. No observable trend throughout the monitoring period.

Plans of inferred groundwater elevation contours are included in Figures 5A to 5N, Appendix A. Gauging records are presented in Tables B1a, Appendix B. Discussion of data logger trends is presented within Section 8.1.2.1.

1 Laboratory Results

Groundwater sampling locations have been indicatively grouped with respect to the following monitoring areas across the Site:

- On-Site (along Site boundary)
- Gumly Gumly Wetland
- Downgradient of Gumly Gumly Wetland
- Off-Site to the north and north-west of Site
- Drinking water supply bores to the north and north-west of Site
- Property to the east of the Site

These locations were used to identify trends in PFAS concentrations laterally along indicative groundwater flow paths and vertically within deeper aquifers.

Laboratory analytical results were compared to the adopted assessment criteria, and are presented in Table B2a, Appendix B, and summarised in Table 7-3 to Table 7-8 below. PFOS+PFHxS concentrations for groundwater are mapped in Figures 6A to 6I, Appendix A.

Laboratory reports are included in the Factual Reports, presented in Appendix E through to Appendix J.

7.1.3.1 On-Site Monitoring Area

A summary of the PFOA and PFOS+PFHxS concentrations for the reporting period and the historical (pre-OMP monitoring plus E1 and E2 results) concentration ranges for the On-Site monitoring locations are presented in Table 7-3.

Table 7-3 On-Site Monitoring Well Location PFOS+PFHxS and PFOA Concentrations (µg/L)

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring						
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	Resampling Aug 0	E Oct 0
MW243 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	0.01[2]	<0.01	-	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	0.01[2]	<0.01	-	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
MW300 (Lachlan)	PFOS+PFHxS	<0.01 – 0.03	0.03	0.07[2]	0.13[2]	0.13	0.2[2]	0.16	0.18
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	0.02[2]	0.02	0.02
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW302	PFOS+PFHxS	<0.01 – 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring						
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	Resampling Aug 0	E Oct 0
(Lachlan)	PFOS	<0.01 – 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
MW304 (Lachlan)	PFOS+PFHxS	<0.01 – 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
	PFOS	<0.01 – 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
MW306 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
MW308 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
MW309 (Cowra)	PFOS+PFHxS	-	0.04	NS – Insufficient water in bore				-	NS – Insufficient water in bore
	PFOS	-	0.04					-	
	PFOA	-	0.03					-	
MW310 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
MW311 (Cowra)	PFOS+PFHxS	0.04	NS – Dry			0.49^	0.43	-	0.48
	PFOS	<0.01				<0.01	<0.01	-	<0.01
	PFOA	<0.01				<0.01	<0.01	-	<0.01

New Maximum | New Minimum | New Exceedance | First-Time Detection

Notes:

1. Historical range from January 2018 during the DSI to September/October 2020 as part of the OMP.
2. Duplicate or triplicate result adopted.
3. Samples collected by Jacobs to confirm initial results from the April 2023 (E7) event.

^ Order of magnitude increase

<0.01 – Limit of Reporting (LOR); NS – Not sampled

Review of Table 7-3 indicates the following:

- PFOS+PFHxS concentrations ranged from <0.01 µg/L to 0.13 µg/L (MW300) within the Lachlan aquifer, and between <0.01 µg/L to 0.49 µg/L (MW311) within the Cowra aquifer.
- A first-time detection due to not previously being sampled was reported for PFOS+PFHxS, PFOS and PFOA at MW309 in April 2021 (E3).
- A new exceedance of drinking water criteria was reported for PFOS+PFHxS at MW311 in November 2022 (E6).
- MW311 reported an order of magnitude increase for PFOS+PFHxS in November 2022 (E6) compared to the previous event it was sampled. Concentrations have remained within the same order of magnitude in subsequent events.

7.1.3.2 Gumly Gumly Wetland

A summary of the PFOA and PFOS+PFHxS concentrations for the reporting period and the historical concentration ranges for the Off-Site locations within the Gumly Gumly Wetland, which historically received PFAS discharges from the nearby Site, are presented in Table 7-4.

Table 7-4 Gumly Gumly Wetland PFOS+PFHxS and PFOA Concentrations (µg/L)

Location ID	Analyte	Historical Concentration Range[1]	E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0
				OMP Monitoring				
MW200 (Lachlan)	PFOS+PFHxS	1.56 – 3.36	1.39	0.86	0.92	0.92	0.96	0.90
	PFOS	0.60 – 1.36	0.39	0.31	0.28	0.28	0.30	0.30
	PFOA	0.04 – 0.08	0.04	0.02	0.03	0.02	0.02	0.02
MW204 (Lachlan)	PFOS+PFHxS	<0.01 – 0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOS	<0.01 – 0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW233 (Cowra)	PFOS+PFHxS	0.18 – 0.44	0.38	0.52	0.39	0.47	0.41	0.36
	PFOS	0.08 – 0.25	0.17	0.28	0.20	0.24	0.20	0.18
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW312 (Lachlan)	PFOS+PFHxS	0.06 – 0.10	NS – Inaccessible on private property	0.03	<0.01	<0.01	<0.01	<0.01
	PFOS	0.01 – 0.02		0.01	<0.01	<0.01	<0.01	<0.01
	PFOA	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01

New Maximum | New Minimum | New Exceedance | First-Time Detection

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring								
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0			

Notes:

1. Historical range from January 2018 during the DSI to September/October 2020 as part of the OMP.
2. Duplicate or triplicate result adopted.

<0.01 – Limit of Reporting; NS – Not sampled

Review of Table 7-4 indicates the following:

> Multiple new minimums were reported in October 2021 (E4) and April/May 2022 (E5), at MW200 and MW312.

> One new maximum was reported, occurring at MW233 in October 2021 (E4) for both PFOS+PFHxS and PFOS.

7.1.3.3 Downgradient of Gumly Gumly Wetland

A summary of the PFOA and PFOS+PFHxS concentrations for the reporting period and the pre-OMP concentration ranges for monitoring well locations downgradient of Gumly Gumly Wetland are presented in Table 7-5.

Table 7-5 Downgradient of Gumly Gumly Wetland Monitoring Wells PFOS+PFHxS and PFOA Concentrations (µg/L)

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring							
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	Resampling Aug 0	E Oct 0	Resampling Dec 0
MW238 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-
MW239 (Cowra)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-
MW240 (Cowra)	PFOS+PFHxS	0.11 – 0.41	0.27	0.19	0.19	0.21	0.19	-	0.20	-
	PFOS	0.01 – 0.06	0.04	0.04	0.04	0.04	0.05	-	0.06	-
	PFOA	<0.01 – 0.02	0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-
	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Location ID	Analyte	Historical Concentration Range[1]	E April 0 1	E Oct 0 1	OMP Monitoring E Apr/May 0	E Nov 0	E Apr 0	Resampling Aug 0	E Oct 0	Resampling Dec 0
MW244 (Lachlan)	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
MW245 (Cowra)	PFOS+PFHxS	0.02 – 0.03	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
MW258 (Lachlan)[4]	PFOS+PFHxS	-	-	-	New location added in August 2023			0.03	0.03	0.02
	PFOS	-	-	-				0.01	0.01	0.01
	PFOA	-	-	-				<0.01	<0.01	<0.01
MW259 (Cowra)[4]	PFOS+PFHxS	-	-	-	New location added in August 2023			0.06	0.06	0.05
	PFOS	-	-	-				0.02	0.02	0.02
	PFOA	-	-	-				0.01	0.01	<0.01
MW247 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
MW248 (Cowra)	PFOS+PFHxS	0.15	0.12	0.14	0.10	0.12	0.13	0.18	0.15	-
	PFOS	0.09	0.07	0.08	0.06	0.07	0.07	0.10	0.08	-
	PFOA	0.01	<0.01	0.01	<0.01	<0.01	0.01	0.01	0.01	-
MW249 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
MW250 (Cowra)	PFOS+PFHxS	0.03 – 0.1	0.03	0.02	Sample lost	0.01	0.01	<0.01	0.01	-
	PFOS	<0.01 – 0.06	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	-
	PFOA	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	-
MW251 (Cowra)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	-
	PFOS	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	-

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	Resampling Aug 0	E Oct 0	Resampling Dec 0
	PFOA	<0.01	<0.01	<0.01	<0.01	NS – Inaccessible in flood water	<0.01	<0.01	<0.01	-
MW252 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	NS – Inaccessible in flood water	<0.01	<0.01	<0.01	-
	PFOS	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	-
	PFOA	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	-
MW253 (Lachlan)	PFOS+PFHxS	0.03	0.04	0.06[2]	0.03	0.02	0.04	0.11	0.11[2]	0.12
	PFOS	0.01	<0.01	0.02	<0.01	<0.01	0.02	0.05	0.06[2]	0.07
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01[2]	0.01
MW254 (Cowra)	PFOS+PFHxS	0.15	0.19	0.14[2]	0.33	0.14	0.14	0.45	0.40	0.37
	PFOS	<0.01	<0.01	<0.01	0.13	0.02	0.02	0.32	0.27	0.26
	PFOA	0.014	0.14	0.13[2]	0.25	0.10	0.10	0.14	0.14	0.15
MW255 (Lachlan)	PFOS+PFHxS	0.04	0.14	0.05	0.02	0.07	0.07	-	0.05	-
	PFOS	<0.01	0.04	0.01	<0.01	0.04[2]	0.02	-	0.01	-
	PFOA	0.02	0.14	0.05	0.02	<0.01	<0.01	-	<0.01	-
MW256 (Cowra)	PFOS+PFHxS	0.32[2]	0.30	0.10	0.06	0.04	0.02	-	0.05	-
	PFOS	0.04	0.07	0.01	<0.01	<0.01	<0.01	-	<0.01	-
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-
MW257 (Cowra)	PFOS+PFHxS	<0.01	NS – Insufficient water in bore		<0.01	<0.01	<0.01	-	<0.01	
	PFOS	<0.01			<0.01	<0.01	<0.01	-	<0.01	
	PFOA	<0.01			<0.01	<0.01	<0.01	-	<0.01	

New Maximum | New Minimum | New Exceedance | First-Time Detection

Notes:

1. Historical range from January 2018 during the DSI to September/October 2020 as part of the OMP.
2. Duplicate or triplicate result adopted.
3. Result taken from re-sampling conducted by Jacobs in August 2023.
4. MW258 and MW259 were first sampled by Jacobs in July 2023 following installation. PFOS+PFHxS and PFOS were detected above the LOR, and reported similar concentrations to August 2023 results. Results are presented within Table B2a, Appendix B.

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring						
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	Resampling Aug 0	E Oct 0	Resampling Dec 0

5. Result taken from re-sampling conducted by Jacobs in December 2023.

<0.01 – Limit of Reporting; NS – Not sampled

Review of Table 7-5 indicates the following:

- PFAS concentrations fluctuate across the monitoring period and no obvious trends are observed.
- A new exceedance of assessment criteria was reported at MW253 for PFOS+PHFxS during resampling conducted in August 2023, between the April 2023 (E7) and October 2023 (E8) events. Concentrations were confirmed in the following event.
- A first-time detection was reported for PFOA at MW253 in August 2023.
- A new exceedance of ecological assessment criteria was reported at MW254 in August 2023. Concentrations have remained above criteria in subsequent events.
- A new exceedance of assessment criteria was reported at MW255 for PFOS+PFHxS in April 2021 (E3). Concentrations have decreased to below or at criteria in subsequent events.

7.1.3.4 Off-Site to the North and North-West Sentinel

A summary of the PFOA and PFOS+PFHxS concentrations for the reporting period and the pre-OMP concentration ranges for monitoring locations located Off-Site to the north and north-west are presented in Table 7-6.

Table 7-6 Off-Site to North and North-West Sentinel Monitoring Wells PFOS+PFHxS and PFOA Concentrations (µg/L)

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring						
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0	
MW214[2] (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW231 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring					
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW235 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW246 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

New Maximum | New Minimum | New Exceedance | First-Time Detection

Notes:

1. Historical range from January 2018 during the DSI to September/October 2020 as part of the OMP.
2. MW214 is the current production bore supplying irrigation water to the Site.

<0.01 – Limit of Reporting

Review of Table 7-6 indicates the following:

> All reported concentrations were below the LOR.

7.1.3.5 Drinking Water Supply Bores

A summary of the PFOA and PFOS+PFHxS concentrations for the reporting period and the pre-OMP concentration ranges for the drinking water supply bores are presented in Table 7-7.

Table 7-7 Drinking Water Supply Bores PFOS+PFHxS and PFOA Concentrations (µg/L)

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring					
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0
MW209 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW210 (Lachlan)	PFOS+PFHxS	<0.01 – 0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOS	<0.01 – 0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring					
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW211 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	NS – Electrical fault	<0.01	NS – Not operational[2]	<0.01
	PFOS	<0.01	<0.01	<0.01		<0.01		<0.01
	PFOA	<0.01	<0.01	<0.01		<0.01		<0.01
MW212 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	NS – Not operational[2]	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01
MW213 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	NS – Inaccessible in flood water	NS – Not operational[2]	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01			<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01			<0.01
GW025234_D (Lachlan)	PFOS+PFHxS	Additional well sampled in lieu of MW211, MW212 and MW213 during April 2023 (E7)					<0.01	-
	PFOS						<0.01	-
	PFOA						<0.01	-
GW025234_I (Lachlan)	PFOS+PFHxS	Additional well sampled in lieu of MW211, MW212 and MW213 during April 2023 (E7)					<0.01	-
	PFOS						<0.01	-
	PFOA						<0.01	-

New Maximum | New Minimum | New Exceedance | First-Time Detection

Notes:

1. Historical range from January 2018 during the DSI to September/October 2020 as part of the OMP.
2. Sampling of MW211, MW212 and MW213 was undertaken by RWCC during August 2023, with all results below LOR.

<0.01 – Limit of Reporting; NS – Not sampled

Review of Table 7-7 indicates the following:

> All reported concentrations were below the LOR.

7.1.3.6 Property to the East of the Site Monitoring Well Results Summary

A summary of the PFOA and PFOS+PFHxS concentrations for the reporting period and the pre-OMP concentration ranges for the monitoring wells located east of the Site are presented in Table 7-8.

Table 7-8 Property to the East of the Site Monitoring Wells PFOS+PFHxS and PFOA Concentrations (µg/L)

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring					
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0
MW241 (Wantabadgery Granite)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW242 (Lachlan)	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

New Maximum | New Minimum | New Exceedance | First-Time Detection

Notes:

1. Historical range from January 2018 during the DSI to September/October 2020 as part of the OMP.

<0.01 – Limit of Reporting

Review of Table 7-8 indicates the following:

> All reported concentrations were below the LOR.

Sur ace Water

1 Sur ace Water Quality Field Parameters

The surface water quality field parameters recorded during the April 2021 (E3) to October 2023 (E8) sampling events are summarised in Table 7-9.

Table 7-9 Summary of Surface Water Quality Field Parameters

Monitoring Event	pH	DO mg/L	EC (µS/cm)	TDS mg/L [1]	ORP m
E3 (April 2021)	7.02 (SW310) – 9.67 (SW228) Neutral to moderately alkaline conditions	0.37 (SW289) – 11.19 (SW228) Anaerobic to aerobic conditions	162.4 (SW286) – 1,346 (SW218)	104.0 (SW286) - 861.4 (SW218) Fresh water	-172.3 (SW288) - 172.5 (SW262) Reducing to oxidising conditions
E4 (October 2021)	7.13 (SW240) – 8.73 (SW294) Neutral to slightly alkaline conditions	0.29 (SW288) – 6.92 (SW294) Anaerobic to aerobic conditions	64 (SW104) – 1,057 (SW288)	41.0 (SW104) – 676.5 (SW288) Fresh water	-82.4 (SW288) – 133.5 (SW234) Slightly reducing to moderately oxidising conditions
E5 (April/May 2022)	5.26 (SW286) – 9.53 (SW228) Slightly acidic to moderately alkaline conditions	0.05 (SW310) – 12.12 (SW228) Anaerobic to aerobic conditions	61 (SW286) – 590 (SW294)	39.0 (SW286) – 377.6 (SW294) Fresh water	18.5 (SW289) – 175.2 (SW309) Oxidising conditions
E6 (November 2022)	6.65 (SW240) – 8.95 (SW228) Near neutral to slightly alkaline conditions	0.09 (SW218) – 12.9 (SW228) Anaerobic to aerobic conditions	53.9 (SW218) – 947 (SW288)	34.5 (SW218) – 606.1 (SW288) Fresh water	-160.4 (SW288) - 168.8 (SW218) Reducing to oxidising conditions
E7 (April 2023)	7.24 (SW240) – 11.55 (SW294) Neutral to alkaline conditions	0.61 (SW288) – 10.44 (SW228) Anaerobic to aerobic conditions	110 (SW262) – 3,990 (SW286)	70.4 (SW262) – 2553.6 (SW286) Fresh to slightly brackish water	-179.4 (SW288) - 168.3 (SW309) Reducing to oxidising conditions
E8 (October 2023)	7.12 (SW310) – 8.44 (SW294) Neutral to slightly alkaline conditions	0.97 (SW228) – 7.98 (SW212) Slightly anaerobic to aerobic conditions	28.4 (SW218) – 1,167 (SW236)	18.2 (SW218) – 746.9 (SW236) Fresh water	-118.8 (SW288) -122 (SW104) Reducing to oxidising conditions

1. TDS calculated from EC where TDS = EC*0.64

In summary, the water quality parameters indicate the following:

- pH was mostly neutral to alkaline throughout the monitoring period. Lower pH was recorded during April/May 2022, during which slightly acidic concentrations were reported at select locations. Higher values were recorded during November 2022 (E6).
- DO has been generally consistent throughout the monitoring period, however slightly more aerobic conditions were reported throughout 2022 (E5 and E6).

- EC and TDS were lowest throughout 2022, with April 2023 (E7) recording the highest results with slightly brackish conditions observed at select locations. Seasonal fluctuation is not readily apparent.
- ORP was generally highest during April/May 2022 (E5), reporting oxidising conditions. Conditions throughout the monitoring period were otherwise consistently reducing to oxidising.

Surface water quality field parameters, water colour and turbidity observations recorded during the surface water sampling program are presented in Table B1b, Appendix B.

Sur ace Water Flow

Surface water flow was observed along Marshalls Creek, Kyeamba Creek and the Murrumbidgee River during all sampling events. Flow rates were estimated during sampling through observational factors (i.e. the time taken for water to flow from one spot to another). The flow details observed are listed below:

Qualitative flow rates have been recorded throughout the monitoring period, however quantitative flow rates were not recorded until the April 2023 (E7) event, making flow rate comparisons difficult due to a lack of standardised data. Flow rates are generally consistent at each location across the monitoring period, with an increased number of locations noted as stagnant throughout the 2023 monitoring events (April 2023 - E7, and November 2023 - E8).

Surface water flow records are presented in Table B2a, Appendix B.

7.2.2.1 Rainfall

Figure 7-3, Figure 7-4 and Figure 7-5 below present both the average (mean) rainfall over all years of available station data (1942 to present), and received rainfall for each month of 2021, 2022 and 2023 respectively.

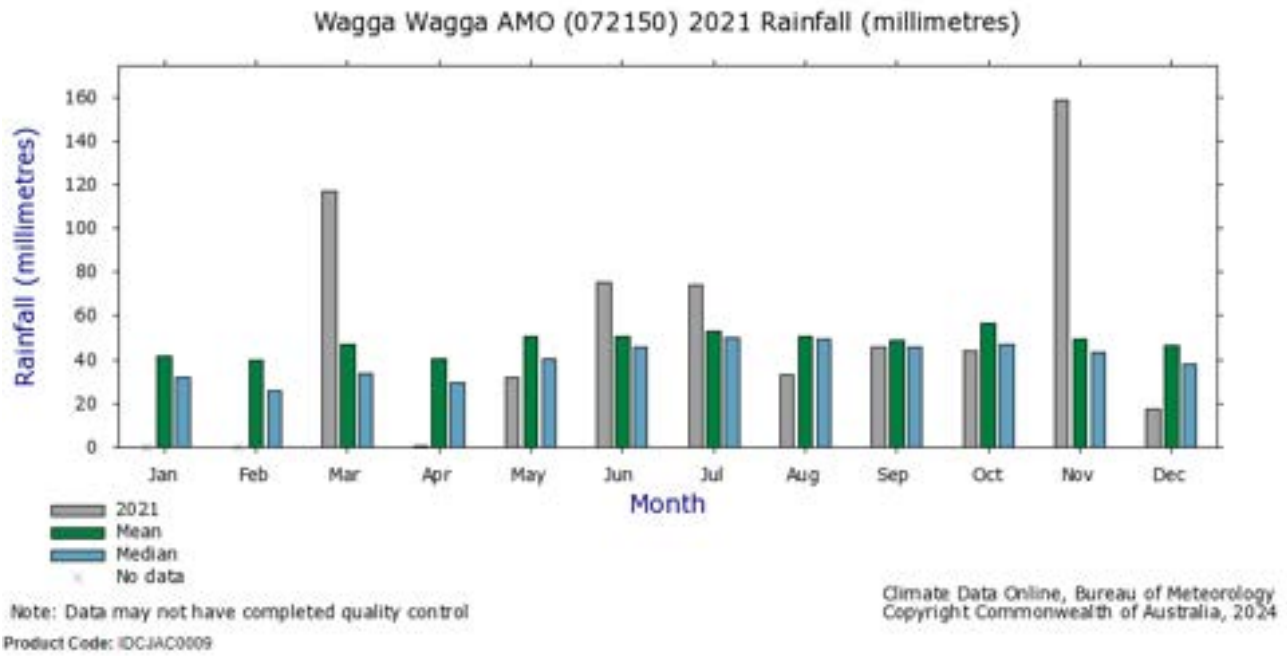

Figure 7-3 Mean monthly rainfall data (Station 072150) and rainfall data per month for 2021 (BoM, 2023).

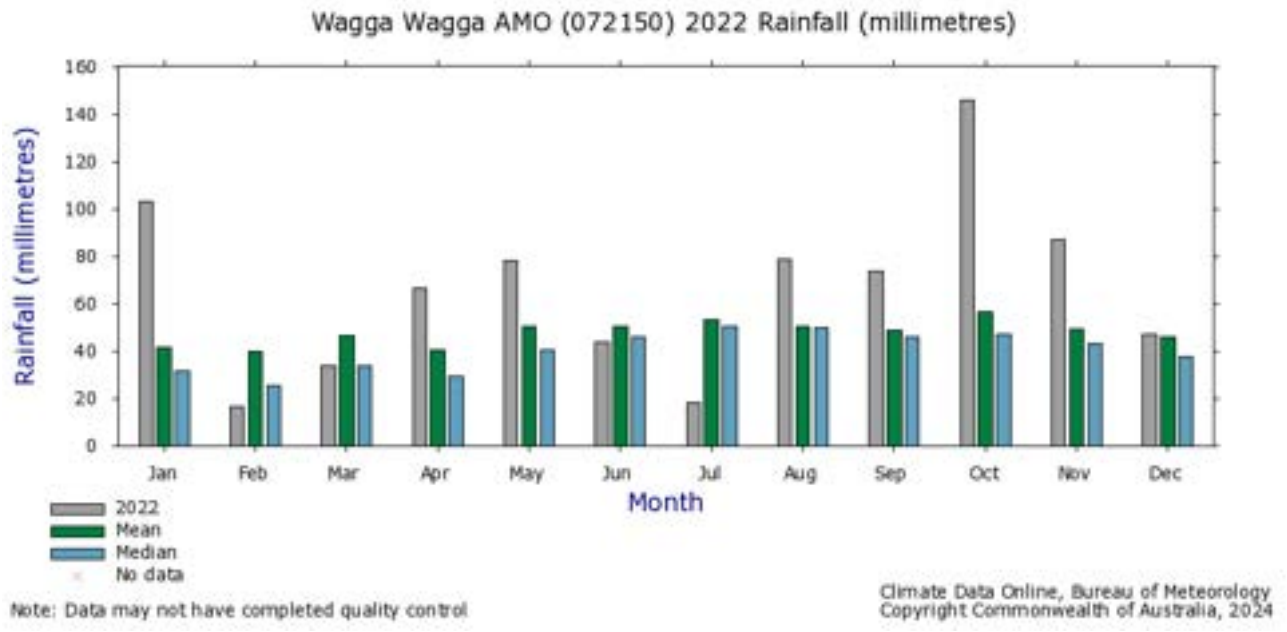

Figure 7-4 Mean monthly rainfall data (Station 072150) and rainfall data per month for 2022 (BoM, 2023).

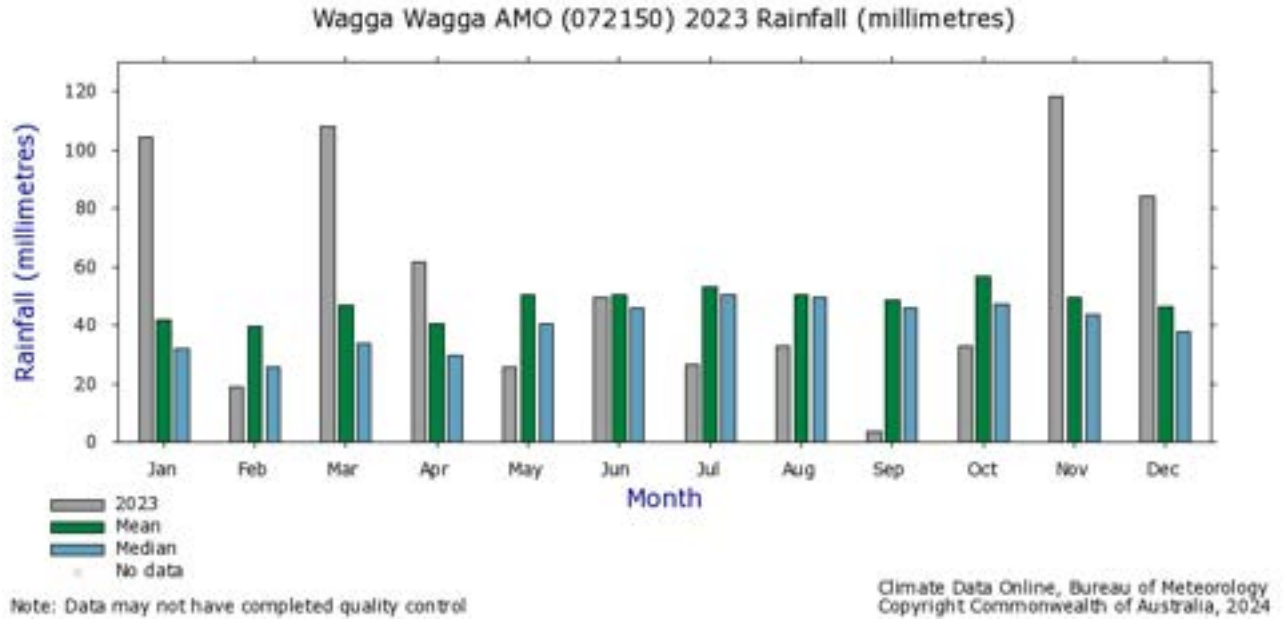

Figure 7-5 Mean monthly rainfall data (Station 072150) and rainfall data per month for 2023 (BoM, 2023).

In summary, the mean monthly rainfall results indicate the following:

- Sampling events throughout 2021 were completed in months which reported below-average rainfall. However, it is noted that March 2021 reported more than double the average rainfall prior to April 2021 (E3).
- October 2023 (E8) was the only other event within the monitoring period to be conducted in a period of below average rainfall.
- Sampling events in April/May 2022 (E5), November 2022 (E6) and April 2023 (E7) were completed in periods of above-average rainfall.

Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, and are presented in Table B2b, Appendix B, and summarised in Table 7-10 to Table 7-15. PFOS+PFHxS concentrations for surface water are mapped in Figures 7A to 7H, Appendix A.

Laboratory reports are included in the Factual Reports, presented in Appendix E through to Appendix J .

7.2.3.1 Surface Water Outflow – Drains Discharging from the Site Results Summary

This section presents results for drains discharging directly from the Site. Location SW104 is adjacent to the Former STP on the Site and the Site stormwater discharge point into the Council underground stormwater network. While SW206 is the discharge point of the Council underground stormwater network into Gumly Gumly Wetland, located down-stream of SW104. A summary of the PFOA and PFOS+PFHxS concentrations for the reporting period and the pre-OMP concentration ranges for the drainage channel discharging from the Site are presented in Table 7-10.

Table 7-10 Surface Water Outflow – Drains Discharging from the Site PFOS+PFHxS and PFOA Concentrations (µg/L)

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring					
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0
SW104	PFOS+PFHxS	0.15 – 4.61	0.48[2]	0.91	1.09[2]	4.88	4.2[2]	0.67
	PFOS	0.05 – 2.83	0.28[2]*	0.61[2]	0.83[2]	3.34	3.0[2]	0.30
	PFOA	<0.01 – 0.17	0.02	0.02	0.02[2]	0.11	0.09[2]	<0.01
SW206	PFOS+PFHxS	0.34 – 1.87	0.25	0.03	0.23	3.07^	1.51	0.16
	PFOS	0.23 – 1.21	0.13	0.01*	0.15	2.01^	1.05	0.10*
	PFOA	<0.01 – 0.06	0.01	<0.01	<0.01	0.09	0.03	<0.01

New Maximum | New Minimum | New Exceedance | First-Time Detection

Notes:

1. Historical range from January 2018 during the DSI to September/October 2020 as part of the OMP.
2. Duplicate or triplicate result adopted.

* Order of magnitude decrease
^ Order of magnitude increase
<0.01 – Limit of Reporting

Review of Table 7-10 indicates the following:

> Several new maximums were reported during the November 2022 (E6) event at SW104 and SW206. Order of magnitude increases were also reported for SW206 within the same event. Concentrations were observed to decrease within subsequent events.

> Two new minimums (PFOS+PFHxS and PFOS) and an order of magnitude decrease (PFOS) were reported for SW206 during October 2021 (E4).

7.2.3.2 *Elizabeth Avenue Stormwater Outflow Results Summary*

This section presents results for the Elizabeth Avenue stormwater outflow. Location SW218 is the point where the Council stormwater pipe, which runs parallel to Elizabeth Avenue, discharges to the canal that leads to the Gumly Gumly Wetland. Stormwater from the area around the Forest Hill Rural Fire Service discharges at this point, which was identified as a potential PFAS source during the development of the preliminary CSM for the DSI (Department of Defence, 2019). A surface water sample was collected from SW218 during the DSI and PFAS was reported below LOR. As such, the Forest Hill Rural Fire Service was not confirmed as a source of PFAS in the DSI.

A summary of the PFOA and PFOS+PFHxS concentrations for the reporting period and the pre-OMP concentration ranges for Elizabeth Avenue stormwater outflow are presented in Table 7-11.

Table 7-11 Elizabeth Avenue Stormwater Outflow: PFOS+PFHxS and PFOA Concentrations (µg/L)

Location ID	Analyte	Historical Concentration Range[1]	E April 0 1	OMP Monitoring E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0
SW218	PFOS+PFHxS	<0.01 – 0.39	0.05	0.51	0.36	0.97	0.03[3]*	<0.01
	PFOS	<0.01 – 0.10	0.01	0.27[2]	0.24	0.63	<0.01*	<0.01
	PFOA	<0.01 – 0.02	<0.01	0.01	0.01	0.04	<0.01	<0.01
New Maximum			New Minimum		New Exceedance		First-Time Detection	

Notes:

1. Historical range from January 2018 during the DSI to September/October 2020 as part of the OMP.
2. New exceedance of 95% ecological criteria

* Order of magnitude decrease

<0.01 – Limit of Reporting;

Review of Table 7-11 indicates the following for SW218:

- A new exceedance of ecological criteria was reported for PFOS in October 2021 (E4).
- A new maximum was reported for PFOS+PFHxS, PFOS and PFOA during November 2022 (E6). Subsequent events reported decreased concentrations, with results reported below LOR during October 2023 (E8).

7.2.3.3 *Marshalls Creek Surface Water Results Summary*

A summary of the PFOA and PFOS+PFHxS concentrations for the reporting period and the pre-OMP concentration ranges for Marshalls Creek are presented in Table 7-12.

Table 7-12 Marshalls Creek Downstream of Gumly Gumly Wetland, PFOS+PFHxS and PFOA Concentrations (µg/L)

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring					
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0
SW234	PFOS+PFHxS	<0.01 – 0.39	0.02*	0.04	0.02[2]	0.02	0.22^	0.02*
	PFOS	<0.01 - 0.28	0.02*	0.04	0.02[2]	0.02	0.16	0.02
	PFOA	0.01 – 0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW262	PFOS+PFHxS	<0.01 – 0.05	<0.01	0.01	<0.01	<0.01	0.07	0.02
	PFOS	<0.01 – 0.05	<0.01	0.01	<0.01	<0.01	0.05	0.02
	PFOA	<0.01 – 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW294	PFOS+PFHxS	<0.01 – 0.02	<0.01	0.01	<0.01	NS – Inaccessible in flood water	<0.01	0.01
	PFOS	<0.01 – 0.02	<0.01	0.01	<0.01		<0.01	0.01
	PFOA	<0.01 – 0.07	0.01	<0.01	<0.01		<0.01	<0.01
SW310	PFOS+PFHxS	0.82 – 2.11	1.36[2]	1.47	0.04*	0.83[2]	2.01	0.91
	PFOS	0.58 – 1.60	1.0[2]	1.21	0.04*	0.71[2]	1.48	0.63
	PFOA	0.02 – 0.05	0.03[2]	0.02	<0.01	0.01	0.03	0.02

New Maximum | New Minimum | New Exceedance | First-Time Detection

Notes:

1. Historical range from January 2018 during the DSI to September/October 2020 as part of the OMP.
2. Duplicate or triplicate result adopted.

* Order of magnitude decrease
^ Order of magnitude increase

<0.01 – Limit of Reporting; NS – Not sampled

Review of Table 7-12 indicates the following:

- PFAS concentrations fluctuated across the monitoring period and no obvious trends are observed.
- SW234 reported a new minimum for PFOA in April 2021 (E3).
- SW262 reported a new maximum for PFOS+PFHxS in April 2023 (E7).
- SW310 reported multiple new minimums and in April/May 2022 (E5). An order of magnitude decrease was also reported for PFOS+PFHxS and PFOS in the same event, with concentrations rebounding by an order of magnitude (i.e. increase) in the subsequent event (November 2022).

7.2.3.4 Murrumbidgee River Results Summary

A summary of the PFOA and PFOS+PFHxS concentrations for the reporting period and the pre-OMP concentration ranges for the Murrumbidgee River are presented in Table 7-13.

Table 7-13 Murrumbidgee River PFOS+PFHxS and PFOA Concentrations (µg/L)

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring					
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0
SW212	PFOS+PFHxS	<0.01 – 0.09	<0.01	<0.01	<0.01	NS – Inaccessible in flood water	<0.01	<0.01
	PFOS	<0.01 – 0.09	<0.01	<0.01	<0.01		<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01
SW261	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	NS – Inaccessible in flood water	<0.01	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01
SW286	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW309	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

New Maximum | New Minimum | New Exceedance | First-Time Detection

Notes:

1. Historical range from January 2018 during the DSI to September/October 2020 as part of the OMP.

<0.01 – Limit of Reporting

Review of Table 7-13 indicates the following:

> All reported concentrations were below the LOR.

7.2.3.5 Kyeamba Creek Surface Water Results Summary

A summary of the PFOA and PFOS+PFHxS concentrations for the reporting period and the pre-OMP concentration ranges for the Kyeamba Creek are presented in Table 7-14.

Table 7-14 Kyeamba Creek, PFOS+PFHxS and PFOA Concentrations (µg/L)

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring					
			E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0
SW236	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW2	PFOS	<0.01	<0.01	<0.01	<0.01	0.01	<0.	<0.01

Location ID	Analyte	Historical Concentration Range[1]	E April 01	E Oct 01	E Apr/May 0	OMP Monitoring E Nov 0	E Apr 0	E Oct 0
40	+PFHxS						01	
	PFOS	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

New Maximum	New Minimum	New Exceedance	First-Time Detection

Notes:

1. Historical range from January 2018 during the DSI to September/October 2020 as part of the OMP.

<0.01 – Limit of Reporting

Review of Table 7-14 indicates the following:

> A first-time detection of PFOS+PFHxS and PFOS was reported at SW240 in November 2022 (E6). Concentrations were reported at the LOR. PFAS concentrations were reported below LOR in subsequent events.

> All other reported concentrations were below the LOR.

7.2.3.6 Forest Hill STP Surface Water Results Summary

A summary of the PFOA and PFOS+PFHxS concentrations for the reporting period and the pre-OMP concentration ranges for the Forest Hill STP are presented in Table 7-15.

Table 7-15 Forest Hill STP PFOS+PFHxS and PFOA Concentrations (µg/L)

Location ID	Analyte	Historical Concentration Range[1]	OMP Monitoring E April 0 1	E Oct 0 1	E Apr/May 0	E Nov 0	E Apr 0	E Oct 0
SW228	PFOS+PFHxS	0.53 – 4.33	2.19	2.13	1.41	1.93	1.60	1.57
	PFOS	0.30 – 2.90	1.10	1.41	0.86	1.17	1.08	1.03
	PFOA	0.03 – 0.17	0.06	0.06	0.04	0.06	0.04	0.04
SW288	PFOS+PFHxS	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
	PFOS	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
	PFOA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW289	PFOS+PFHxS	0.34 – 1.24	0.58	1.84	0.94	2.68	1.52	1.56
	PFOS	0.05 – 0.79	0.24	1.15	0.65	1.54	1.03	0.98
	PFOA	0.01 – 0.03	0.02	0.04	0.02	0.08	0.03	0.03

New Maximum | New Minimum | New Exceedance | First-Time Detection

Notes:

1. Historical range from January 2018 during the DSI to September/October 2020 as part of the OMP.

<0.01 – Limit of Reporting

Review of Table 7-15 indicates the following:

- A first-time detection of PFOS+PFHxS and PFOS was reported at SW288 in November 2022 (E6). PFAS concentrations were reported below LOR in subsequent events.
- A new maximum for PFOS+PFHxS, PFOS and PFOA were reported at SW289 in November 2022 (E6). A new exceedance of recreational water criteria for PFOS+PFHxS was also reported in this event.
- All other reported concentrations for the monitoring period are generally consistent and within the same order of magnitude as historical results.

Summary

A summary of the maximum PFOS+PFHxS concentrations historically recorded and the maximum concentrations recorded during the monitoring period are presented in Table 7-16 for each media assessed and associated monitoring area.

Table 7-16 Maximum detected PFOS+PFHxS concentrations in Cowra Aquifer, Lachlan Aquifer and Surface Water Locations

PFOS PFH S Ma imum concentrations				
Monitoring Area	**Phase**	**Groundwater Cowra (µg/L)**	**Groundwater Lachlan (µg/L)**	**Surface Water (µg/L)**
On-Site	Historical	0.04 (MW311)		-
	E3 (April 2021)	0.04 (MW309)		-
	E4 (October 2021)	-	0.07 (MW300)	-
	E5 (April/May 2022)	-	0.13 (MW300)	-
	E6 (November 2022)	0.49 (MW311)		-
	E7 (April 2023)	0.43 (MW311)		-
	E8 (October 2023)	0.48 (MW311)		-
Gumly Gumly Wetland	Historical	0.44 (MW233)	3.36 (MW200)	-
	E3 (April 2021)	0.38 (MW233)	1.39 (MW200)	-
	E4 (October 2021)	0.52 (MW233)	0.86 (MW200)	-
	E5 (April/May 2022)	0.39 (MW233)	0.92 (MW200)	-
	E6 (November 2022)	0.47 (MW233)	0.92 (MW200)	-
	E7 (April 2023)	0.41 (MW233)	0.96 (MW200)	-
	E8 (October 2023)	0.36 (MW233)	0.90 (MW200)	-
Downgradient of Gumly Gumly Wetland	Historical	0.41 (MW240)	0.04 (MW255)	-
	E3 (April 2021)	0.30 (MW256)	0.14 (MW255)	-
	E4 (October 2021)	0.19 (MW240)	0.06 (MW253)	-

		PFOS PFH S Ma imum concentrations		
	E5 (April/May 2022)	0.33 (MW254)	0.03 (MW253)	-
	E6 (November 2022)	0.21 (MW240)	0.07 (MW255)	-
	E7 (April 2023)	0.19 (MW240)	0.07 (MW255)	-
	E8 (October 2023)	0.40 (MW254)	0.11 (MW253)	-
Off-Site to the North and North-West Sentinel	Historical	-	<0.01 (All Locations)	-
	E3 (April 2021)	-	<0.01 (All Locations)	-
	E4 (October 2021)	-	<0.01 (All Locations)	-
	E5 (April/May 2022)	-	<0.01 (All Locations)	-
	E6 (November 2022)	-	<0.01 (All Locations)	-
	E7 (April 2023)	-	<0.01 (All Locations)	-
	E8 (October 2023)	-	<0.01 (All Locations)	-
Drinking Water Supply Bores	Historical	-	0.03 (MW210)	-
	E3 (April 2021)	-	<0.01 (All Locations)	-
	E4 (October 2021)	-	<0.01 (All Locations)	-
	E5 (April/May 2022)	-	<0.01 (All Locations)	-
	E6 (November 2022)	-	<0.01 (All Locations)	-
	E7 (April 2023)	-	<0.01 (All Locations)	-
	E8 (October 2023)	-	<0.01 (All Locations)	-
Property to the East of the Site Monitoring Well	Historical	-	<0.01 (All Locations)	-
	E3 (April 2021)	-	<0.01 (All Locations)	-
	E4 (October 2021)	-	<0.01 (All Locations)	-

PFOS PFH S Ma imum concentrations				
	E5 (April/May 2022)	-	<0.01 (All Locations)	-
	E6 (November 2022)	-	<0.01 (All Locations)	-
	E7 (April 2023)	-	<0.01 (All Locations)	-
	E8 (October 2023)	-	<0.01 (All Locations)	-
Surface Water Outflow – Drains Discharging from the Site	Historical	-	-	4.61 (SW104)
	E3 (April 2021)	-	-	0.48 (SW104)
	E4 (October 2021)	-	-	0.91 (SW104)
	E5 (April/May 2022)	-	-	1.09 (SW104)
	E6 (November 2022)	-	-	4.88 (SW104)
	E7 (April 2023)	-	-	4.2 (SW104)
	E8 (October 2023)	-	-	0.67 (SW104)
Elizabeth Avenue Stormwater Outflow	Historical	-	-	0.39 (SW218)
	E3 (April 2021)	-	-	0.05 (SW218)
	E4 (October 2021)	-	-	0.51 (SW218)
	E5 (April/May 2022)	-	-	0.36 (SW218)
	E6 (November 2022)	-	-	0.97 (SW218)
	E7 (April 2023)	-	-	0.03 (SW218)
	E8 (October 2023)	-	-	<0.01 (SW218)
Marshalls Creek	Historical	-	-	2.11 (SW310)
	E3 (April 2021)	-	-	1.36 (SW310)
	E4 (October 2021)	-	-	1.47 (SW310)

		PFOS	PFHS	Maximum concentrations
	E5 (April/May 2022)	-	-	0.04 (SW310)
	E6 (November 2022)	-	-	0.83 (SW310)
	E7 (April 2023)	-	-	2.01 (SW310)
	E8 (October 2023)	-	-	0.91 (SW310)
Murrumbidgee River	Historical	-	-	0.09 (SW212)
	E3 (April 2021)	-	-	<0.01 (All Locations)
	E4 (October 2021)	-	-	<0.01 (All Locations)
	E5 (April/May 2022)	-	-	<0.01 (All Locations)
	E6 (November 2022)	-	-	<0.01 (All Locations)
	E7 (April 2023)	-	-	<0.01 (All Locations)
	E8 (October 2023)	-	-	<0.01 (All Locations)
Kyeamba Creek	Historical	-	-	<0.01 (All Locations)
	E3 (April 2021)	-	-	<0.01 (All Locations)
	E4 (October 2021)	-	-	<0.01 (All Locations)
	E5 (April/May 2022)	-	-	<0.01 (All Locations)
	E6 (November 2022)	-	-	0.01 (SW240)
	E7 (April 2023)	-	-	<0.01 (All Locations)
	E8 (October 2023)	-	-	<0.01 (All Locations)
Forest Hill STP	Historical	-	-	4.33 (SW228)
	E3 (April 2021)	-	-	2.19 (SW228)
	E4 (October 2021)	-	-	2.13 (SW228)

		PFOS	PFH S	Ma imum concentrations
	E5 (April/May 2022)	-	-	1.41 (SW228)
	E6 (November 2022)	-	-	2.68 (SW289)
	E7 (April 2023)	-	-	1.60 (SW228)
	E8 (October 2023)	-	-	1.57 (SW228)

It is noted that concentration maximums are of the same order of magnitude as historical data.

Interpretive Analysis

This section discusses the results of the monitoring events undertaken at RAAF Base Wagga up to, and including, the October 2023 (E8) monitoring event in the context of observed trends (quantitative or qualitative) in concentrations or contaminant migration patterns. Data was reviewed and observed from a qualitative perspective, based on results presented in Section 7. Further quantitative trend analysis was assessed (using Mann-Kendall analysis) and was calculated for each groundwater and surface water monitoring location with sufficient temporal data (i.e. 8-10 sampling events, Department of Defence 2021). Mann-Kendall linear trend analysis results for PFOS+PFHxS, PFOS and PFOA are provided in Section 8.1.2. Detailed linear trend analysis reports are provided in Appendix C.

1 Groundwater

Changes in the Groundwater Flow Regime

Groundwater elevations measured over the eight data logging events have been assessed for potential trends. Table 8-1 summarises the potential changes.

Table 8-1 Groundwater flow regime

Locations	Assessment
MW239, MW245, MW248 & MW250 (Cowra)	The loggers have consistently indicated an overall elevation increase over the monitoring period. This rise could be partially attributed to the heightened rainfall associated with the most recent La Niña event, which emerged in July 2020. La Niña typically brings above-average rainfall and cooler temperatures to eastern Australia. Additionally, the increased precipitation may have led to reduced pumping in the area, contributing to the rising water levels.
MW245 & MW250 (Lachlan)	In November 2022 the loggers recorded their highest groundwater levels before subsequently decreasing by approximately 2.5 meters each. This rise coincided with observed increases in rainfall, which resulted in significant flooding throughout the region during the November 2022 event, as detailed within the associated factual report provided in Appendix H. Continued monitoring after the dissipation of La Niña may provide further insights into groundwater levels during a relatively dry period.
MW245 (Cowra) & MW244 (Lachlan)	Standing Water Levels at these locations also indicate that there is potentially an upward vertical gradient, with recharge of the Cowra aquifer potentially occurring from the underlying Lachlan, supported by modelling work completed by O'Neil (2007), which found enhanced connectivity between the two aquifers in the vicinity of the RWCC water supply bores.
MW239 (Cowra) & MW238 (Lachlan)	Groundwater elevations reported for paired wells also indicates an upward gradient from the deeper Lachlan Formation into the shallower Cowra Formation.
MW248 (Cowra) & MW247 (Lachlan)	
MW215 (Lachlan)	Exhibited long periods of consistent groundwater levels interspersed with long periods of regular, cyclical patterns of drawdown, approximately 4 meters in depth. Given that nearby well MW214 is also screened within the Lachlan aquifer and serves as the production bore for supplying irrigation water to the Base, it is likely that these cycles correlate with nearby pumping activities when irrigation begins for the summer season. Overall, groundwater levels appear relatively stable, and there is no anticipation of significant impact on the regional groundwater flow network.

Locations	Assessment
MW249 (Lachlan) & MW250 (Cowra)	Located about 400 meters away from the RWCC bores, MW249 has consistently exhibited daily drawdown impacts. These impacts are most likely due to pumping activities in the area from the RWCC bores. MW250, a nested well, shows very small but regular fluctuations in groundwater levels daily. The overall trend over time in groundwater elevation for MW250 mirrors that of MW249, thereby suggesting interconnectedness between the two aquifers in the region. Between February 2023 and June 2023, MW249 had a stable groundwater level, possibly due to recent rains. However, after June 2023, water levels rapidly dropped by approximately 3.5 meters, when pumping resumed at the nearby RWCC bores, confirmed by RWCC. MW244 follows a similar trend to MW249 but to a lesser extent, potentially due to its greater distance from the East Wagga Borefield and RWCC bores.

In summary, groundwater elevation within the Cowra aquifer displayed overall increasing trends throughout the monitoring period, with groundwater elevation within the Lachlan aquifer to the north-west of the Base exhibiting a sharp increase between August and November 2022. Water levels within bores screened in the Lachlan aquifer were generally stable and did not exhibit short term fluctuations, with the exception of MW215, MW244 and MW249. It appears that the overall water table elevation within the Cowra has increased between May 2020 and October 2023, whilst the water table elevation within the Lachlan on and near the Base were stable over the same period but generally increased for locations closer to the Murrumbidgee River. Groundwater has consistently flowed in a north-westerly direction toward the Murrumbidgee River, with the exception of the Lachlan aquifer during the November 2022 event, which saw modified flow pathways potentially as a result of floodwaters, which has resulted in localised mounding and depressions/troughs.

1 Groundwater PFAS Time Series and Linear Trend Analysis

8.1.2.1 PFAS Time Series Summary

Groundwater PFAS concentrations from 2017-2018, 2020, April 2021, October 2021, April/May 2022, November 2022, April 2023 and October 2023 are presented in Figures 6A to 6I, respectively, Appendix A.

8.1.2.2 Mann-Kendall Trend Analysis Overview

Mann-Kendall linear trend analyses are to be read in conjunction with the associated confidence limit and spatial location of the monitoring locations (per respective Onsite source area or grouping of locations if not associated with a specific source area). The overall plume stability condition can then be characterised by interpreting the linear concentration trends at individual locations and plume length vs time (T.Chambers, *et.al.*, 2022).

Linear trends were assessed using Open UCL (T.Chambers,*et.al.*, 2022) and a minimum of eight results per monitoring location were required to calculate each trend (i.e. increasing, stable, decreasing and no clear trend), using a 95% confidence limit.

The Mann-Kendall linear trend analysis relies on several statistical metrics; Mann-Kendall statistic (S), p-value, which is associated with S and the coefficient of variation (CoV) (T.Chambers,*et.al.*, 2022). The relationship of these metrics to define a linear trend are:

- If S > 0 and p <0.05 “Increasing” trend.
- If S < 0 and p <0.05 “Decreasing” trend.
- If S > 0 and p <0.1 “Possibly Increasing” trend.
- If S < 0 and p <0.1 “Possibly Decreasing” trend.
- If S > 0 AND p >0.1 “No Clear Trend”.
- If S <= 0 AND p >0.1 and CoV >= 1 “No Clear Trend”.
- If p > 0.1 and CoV < 1 “Stable” trend.

The following assumptions were considered (T.Chambers,*et.al.*, 2022):

- Data wasn’t collected seasonally, or no seasonality exists. For example, seasonality wasn’t considered present if only a small fraction of analytes or locations exhibited a linear regression R2 >0.7 (i.e. a majority rules basis was applied):

Groundwater – See Section 8.1.2.3 to 8.1.2.9.

- The data has no covariates, meaning no additional variables impacted the data set. From the current data, the only variables considered were time, PFAS concentrations and standing water level elevations, the latter being addressed in the point above.
- There was only one data point per monitoring round.

The highest value of the primary, duplicate and split was used.

- Assumption of independence, meaning observations were not serially correlated over time.

8.1.2.3 Testing the Mann-Kendall Assumption - Seasonality

Prior to undertaking the Mann-Kendall analysis, a pre-processing step was performed to confirm if there was a relationship between PFAS concentrations (per analyte) and standing water levels (SWL) (mAHD). This was performed using the Pearson correlation coefficient (R^2) analysis (linear correlation) to test the Mann-Kendall assumption that no seasonality was present.

Analytes with an R^2 >0.7 were considered seasonally affected (SWL fluctuations correlated with PFAS concentration fluctuations), and an R^2 <0.7 was not considered to be seasonally affected (SWL fluctuations did not correlate with PFAS concentration fluctuations).

Table 8-2 below provides the linear regression seasonality results for wells associated with source areas to meet the no seasonality assumption. This was determined by performing linear regression analysis on PFOA and PFOS+PFHxS against corrected groundwater elevations (mAHD) for locations with eight or more primary samples.

Given that no locations per analyte exhibited these trends (R^2>0.7), seasonality was not considered present, and the linear Mann-Kendall trend analysis was able to proceed.

Table 8-2 Testing the Assumption of Seasonality

Monitoring Location Details		**R-S uare RSQ**		
Source Area	**Well ID**	**PFOA**	**PFOS**	**PFOS PFH S**
Onsite	MW300	-	-	0.04
	Seasonality %	**-**	**-**	**0%**
	Seasonality Occurring	**-**	**-**	**No**
Gumly Gumly	MW312	-	0.15	0.04
	Seasonality %	**-**	**0%**	**0%**
	Seasonality Occurring	**No**	**No**	**No**
Downgradient o Gumly Gumly	MW240	-	0.00	0.00
	MW245	-	-	0.53
	MW248	0.36	0.07	0.27
	MW250	-	-	0.57
	MW253	-	0.07	0.00
	MW254	0.14	0.17	0.03
	MW255	-	0.09	0.10
	Seasonality %	**0%**	**0%**	**0%**
	Seasonality Occurring	**No**	**No**	**No**

Notes: Seasonality is occurring when RSQ = >0.7 (shaded); 1/2 LOR used where ND (i.e. 0.005); '-' unable to run regression due to more than 5 non-detects.

8.1.2.4 On-Site Monitoring Area

Mann-Kendall trend analysis results for the groundwater location MW300 in the On-Site Monitoring Area is presented in Table 8-3 below. Mann-Kendall analysis outputs are presented in Appendix C.

Table 8-3 Mann-Kendall Linear Trend Analysis - On-Site Monitoring Area

Location	PFOA Trend	PFOS Trend	PFOS PFH S Trend
MW300 (Lachlan)	N/A	N/A	**Increasing**

Note: 95% Confidence limits were adopted. N/A non-detectable or not undertaken for locations containing less than four samples with detectable concentrations and more than 80% of non-detectable concentrations.

Review of Table 7-3 and Table 8-3 indicated the following:

- The highest concentrations of PFAS were reported at MW311 (0.49 µg/L), which is a well screened in the Cowra formation and located directly south-east of the former Fire Training Area in the east of the Airport (RMV0093), one of three key PFAS source areas on the Base (Jacobs, 2018a). Although insufficient data points are available for Mann-Kendall trend analysis, concentrations throughout the November 2022 (E6) to October 2023 (E8) monitoring events have been an order of magnitude greater than those observed historically (prior to the April 2021 - E3 event), and consistently above the adopted drinking water human health criterion, yet below recreational and ecological criteria. As per section 4.3 of the OMP (Department of Defence, 2019a), the three-year rolling average for PFOS+PFHxS results at MW311 has been calculated at 0.36 µg/L, which is above the adopted drinking water human health criterion. As such, a review of the CSM and potential risks to human health and the environment is required.
- Since results within paired well MW310 are below LOR, impacts appear to be contained to the upper Cowra aquifer. As MW311 is associated with key potential primary source areas, with no detections of PFAS above the LOR within MW310, there is not considered to be a change to the CSM, or increased risk to human health or the environment.
- MW302, MW304, MW306, MW308 and MW310, which are all screened within the Lachlan aquifer, reported no detections of PFAS above the LOR to date, which is generally consistent with historical OMP monitoring results. As these locations were installed to monitor vertical PFAS migration from source areas on- Base into underlying groundwater. The absence of PFAS in these wells potentially indicates that the extent of any PFAS contamination and vertical migration in groundwater within this area is currently limited, supporting results reported as part of the DSI, which found it 'difficult to conceptualise a vertical migration pathway from the surface to the Lachlan Formation on the Base' (Jacobs, 2018a). The Cowra Formation in this area likely has low permeability and is limiting vertical migration, as inferred based on most of the On-Site wells screened in the Cowra being dry throughout the monitoring period.
- MW309 (Cowra) has been consistently dry from October 2021 (E4) to October 2023 (E8), consistent with observations throughout the DSI and OMP. As MW309 is paired with water-bearing well MW308 screened in the Lachlan aquifer (which reported results below LOR during both events), and was installed to monitor vertical PFAS migration from source areas on the Base into underlying groundwater, results do not indicate a change in the risk profile from the HHERA (EnRisks, 2018).
- MW300, which is screened within the Lachlan aquifer to monitor vertical PFAS migration and located in the north-western portion of the Base, has reported an increasing trend of PFOS+PFHxS. The shallow nested well MW301, adjacent to MW300, has been consistently dry throughout the OMP, and as such the Cowra formation in this area is not likely to be water bearing. Both wells are directly adjacent to the former STP area, and directly downgradient of several potential primary and secondar source areas including the former Fire Training Area in the east of the Airport, the current Fire Station on-Base and the Fire Extinguisher Concrete Pad and Former Fire Station area (Department of Defence, 2019b). This increasing trend may also potentially be an indication that vertical migration is occurring from the Cowra aquifer into the Lachlan, as enhanced vertical migration at MW300 relative to other on-Base locations was a finding reported within the DSI (Jacobs, 2018a), which may be partially attributable to a gravel horizon encountered at MW300 and a shallower depth to water here than compared to the southern portion of the Base. Further, from major ion analysis MW300 exhibited a water type closely related to the typical Cowra Formation water, consistent with enhanced vertical connectivity encountered in the vicinity of the Gumly Gumly Wetland (Jacobs, 2018a). PFOS+PFHxS was first detected above the adopted drinking water human health criterion in April/May 2022 (E5), remaining above the human health criterion in subsequent events throughout November 2022 (E6), April 2023 (E7) and October 2023 (E8). As per section 4.3 of the OMP, the three-year rolling average for PFOS+PFHxS results at MW300 has been calculated at 0.13 µg/L, which is above the adopted drinking water human health criterion. As such, a review of the CSM and potential risks to human health and the environment is required.
- The increasing trend at MW300 is most likely associated with surface water infiltration from the former STP area, a known source area. The CSM (Jacobs, 2018a) outlines that surface water infiltration On-Base is limited. This increasing trend suggests that surface water infiltration is occurring and should be

considered in the updates to the CSM. These impacts are delineated to below the adopted drinking water human health criterion or LOR by down-gradient wells (MW246, MW312) screened in the Lachlan aquifer. Therefore, while there have been changes to the CSM, the associated risk has not been altered.

- As such, changes are not considered to be associated with a new source area or transport pathway, and are not considered to represent a change to the CSM or the risk profile.
- PFOS+PFHxS was first detected at 0.01 µg/L within the November 2022 (E6) event in MW243, which acts as a sentinel well for flow to the north-north-east of the Base. However, this detection was only reported when adopting the higher triplicate results instead of the primary or duplicate results, which were both below LOR. PFAS concentrations were not reported above LOR within the subsequent April 2023 (E7) or October 2023 (E8) events. As only the triplicate result reported a detectable concentration of PFOS+PFHxS during the November 2022 (E6) event, this result may be potentially anomalous or a one-off detection.

8.1.2.5 Gumly Gumly Wetland

Mann-Kendall trend analysis results for the groundwater locations MW200, MW233 and MW312 in Gumly Gumly Wetland is presented in Table 8-4 below. Mann-Kendall analysis outputs are presented in Appendix C.

Table 8-4 Mann-Kendall Linear Trend Analysis – Gumly Gumly Wetland

Location	PFOA Trend	PFOS Trend	PFOS PFH S Trend
MW200 (Lachlan)	**Decreasing**	**Decreasing**	**Decreasing**
MW233 (Cowra)	N/A	No Clear Trend	No Clear Trend
MW312 (Lachlan)	N/A	**Decreasing**	**Decreasing**

Note: 95% Confidence limits were adopted. N/A non-detectable or not undertaken for locations containing less than four samples with detectable concentrations and more than 80% of non-detectable concentrations.

Review of Table 7-4 and Table 8-4 indicated the following:

- Quantitative trend analysis indicates a decreasing trend for both PFOS and PFOS+PFHxS at MW312, with MW312 consistently reporting all results below LOR since the April/May (E5) event, when both PFOS+PFHxS and PFOS reported a new minimum concentration. PFOA concentrations have consistently remained below the LOR throughout the monitoring period. It was noted during the DSI that MW312 exhibits a water type similar to typical Cowra Formation water, despite being screened within the Lachlan aquifer. MW312 was also noted as being dominated by sands and gravels with minimal clay horizons, resulting in a conductivity greater than that observed on-Base (Jacobs, 2018a). As a result, MW312 may be more susceptible to vertical migration of PFAS and fluctuations of PFAS concentrations in the Gumly Gumly Wetland (a known secondary source) than other wells screened within the Lachlan aquifer, and should continue to be monitored.
- MW313 (Cowra) has historically been dry throughout both the DSI and OMP. As groundwater wells are screened within the Cowra aquifer downgradient of Base and around the Gumly Gumly Wetland, with the majority of Cowra screened bores on-Base also consistently dry throughout the monitoring period, the continued absence of groundwater at MW313 indicates that the clay unit of the upper Cowra Formation in this area and on the Base is predominantly unsaturated
- A decreasing trend of PFOA, PFOS and PFOS+PFHxS was reported at MW200 (Lachlan). However, concentrations remain in exceedance of the adopted human health drinking water criterion, but below recreational and ecological criteria.
- MW204 (Lachlan) has consistently reported no detections of PFAS above the LOR. This is consistent with previous monitoring events; however, this location is screened within the Lachlan aquifer on the Murray Cod Hatchery to the south of MW200, which has consistently shown PFAS impacts, and as such should continue to be monitored. Within the DSI (Jacobs, 2018a), it was noted that MW204 displayed a different major ion composition to MW200, despite both wells being screened within the Lachlan aquifer. This may be a result of groundwater abstraction at the hatchery, resulting in a preferential pathway for contaminant migration and the increased PFAS results reported at MW200, relative to MW204. As the hatchery is no longer in operation, this preferential pathway may no longer be present, and as such this location should continue to be monitored. It is also possible that MW200 is screened shallower than

MW204, which is screened from approximately 34 – 43 mBGL, but construction details for MW200 is not known. It is noted that groundwater EC at MW200 is consistently slightly more brackish than MW204.

- No clear trend for PFOS or PFOS+PFHxS has been able to quantitatively be established at MW233, with further monitoring required. New maximum concentrations were observed during the October 2021 (E4) event; however, results have remained generally consistent throughout subsequent events with PFOS+PFHxS concentrations less than 0.5 µg/L. Concentrations are in exceedance of the adopted human health drinking water criteria; however, have remained below recreational and ecological criterion. As concentrations remain generally consistent, results do not indicate a change in the risk profile from the HHERA (EnRisks, 2018).

8.1.2.6 Downgradient of Gumly Gumly Wetland

Mann-Kendall trend analysis results for the groundwater locations MW240, MW245, MW248, MW250, MW253, MW254 and MW255, which are Downgradient of Gumly Gumly Wetland, is presented in Table 8-5 below. Mann-Kendall analysis outputs are presented in Appendix C.

Table 8-5 Mann-Kendall Linear Trend Analysis – Downgradient of Gumly Gumly Wetland

Location	PFOA Trend	PFOS Trend	PFOS PFH S Trend
MW240 (Cowra)	N/A	**Possibly Increasing**	Stable
MW245 (Cowra)	N/A	N/A	**Decreasing**
MW248 (Cowra)	No Clear Trend	No Clear Trend	No Clear Trend
MW250 (Cowra)	N/A	N/A	**Decreasing**
MW253 (Lachlan)	N/A	No Clear Trend	No Clear Trend
MW254 (Cowra)	Stable	**Increasing**	No Clear Trend
MW255 (Lachlan)	N/A	Stable	Stable

Note: 95% Confidence limits were adopted. N/A non-detectable or not undertaken for locations containing less than four samples with detectable concentrations and more than 80% of non-detectable concentrations.

Review of Table 7-5 and Table 8-5 indicated the following:

- MW238 (Lachlan) and MW239 (Cowra) are located down-gradient and semi-cross-gradient of the Gumly Gumly wetland and consistently reported results below the LOR throughout the monitoring period, consistent with historical monitoring results.
- Nested wells MW255 (Lachlan) and MW256 (Cowra), alongside MW257 (Cowra), form the first “line” of wells immediately down-gradient of the perceived extent of the Gumly Gumly wetland. MW257 has consistently reported PFAS concentrations below the LOR. MW255 (Lachlan), located to the north of MW257, reported stable concentrations of PFOS and PFOS+PFHxS. Insufficient data exists for quantitative statistical analysis to be completed at adjacent MW256 (Cowra). However, there is an apparent decreasing trend and new minimum concentrations were reported in April 2023 for PFOS+PFHxS, and April/May 2022 for PFOS, at MW256, with concentrations of PFOS+PHFxS reported below drinking water criteria since April/May 2022. Overall, it appears that groundwater PFAS concentrations within the Gumly Gumly wetland and immediately down-gradient are either stable or decreasing for both the Cowra and Lachlan formations.
- Surface water location SW310 is located directly to the south-west of MW257 in the Marshalls Creek drainage pathway and has consistently returned PFAS concentrations above the LOR throughout the OMP. Currently, surface water migration into the Cowra aquifer does not appear to be occurring near MW257. However, it should be noted that based on contours of the Cowra aquifer from the April 2021 (E5) and April 2022 (E7) events, provided in Appendix A, SW310 is slightly cross-gradient to MW257.
- A ‘possibly increasing’ PFOS trend was reported at MW240 (Cowra), with a stable PFOS+PFHxS trend also reported. MW240 is screened within the Cowra aquifer and was installed to provide coverage in the direction of the RWCC East Wagga Borefield. MW240 is noted as outside of the predicted extent of PFAS contaminant plume from the Gumly Gumly wetland, based upon modelling conducted by Jacobs in 2018 (Jacobs, 2018c). From reported results and the increasing trend observed at this location, it is likely that the initial predicted PFAS plume extent from the Gumly Gumly wetland was smaller than the true extent of the plume at the time. Observed trends indicate that lateral migration of PFAS impacts from the

upgradient Gumly Gumly wetland is relatively gradual, as concentrations of PFOS only increased from 0.04 µg/L to 0.06 µg/L over a period of three years whilst PFOS+PFHxS remained stable. It is noted that concentrations of PFOS+PHFxS at MW240 have been consistently higher than concentrations at MW256 since October 2021 (E4), and that the possibly increasing trend is in contrast to stable/decreasing trends up-gradient of MW240. Further monitoring is required to assess the future trajectory of this trend, and whether the impacts are associated with a new PFAS source or pathway.

- Nested wells MW253 (Lachlan) and MW254 (Cowra) are located semi-down-gradient/cross-gradient of MW240. MW253 reported no clear trend for PFOS or PFOS+PFHxS. Insufficient data is available for quantitative statistical analysis to be completed for PFOA. However, PFOA was detected for the first-time during resampling conducted during August 2023, and was confirmed during the October 2023 (E8) event. MW254 reported a stable PFOA trend, an increasing PFOS trend, and no clear trend for PFOS+PFHxS. However, it is noted that MW253 exceeded drinking water criteria for the first time in August 2023, with a new maximum concentration for PFOS and PFOS+PFHxS reported during resampling conducted during December 2023. As per the OMP, the three-year rolling average has been calculated for MW253, with concentrations at the drinking water criteria. As such, a review of the CSM is not required as per the OMP. Both MW253 and MW254 provide spatial coverage downgradient of Gumly Gumly wetland and upgradient of the RWCC bores. It should be noted that MW253 and MW254 were both installed in July 2020, after the Stage 1 Groundwater Modelling Report had been finalised. From reported PFAS concentrations at MW253 and MW254, the inferred current extent of PFAS contamination from Gumly Gumly wetland extend further to the north-west than that presented in the 2020 Annual Interpretive Report (Cardno, 2021d) and the Stage 1 Groundwater Modelling Report (Jacobs, 2018c), which had a more limited monitoring network at the time. However, new maximums and increases in concentrations were reported at these locations in the E7 and E8 monitoring events compared to the E6 event. It is unclear what the cause of this increase was. However, it is noted that MW253/MW254 are located adjacent to a drainage channel running north-south, with surface water appearing to flow southwards from a commercial/industrial area. Ad-hoc sampling of this drainage channel in December 2023 by Jacobs reported PFOS+PFHxS above LOR (0.03 µg/L). It is possible that this channel is contributing some PFAS to groundwater in this area.
- No clear trend was observable at MW248, screened within the Cowra aquifer, despite new maximum concentrations reported for PFOS and PFOS+PFHxS during resampling conducted in August 2023. It is noted that MW247, nested with MW248 and screened within the Lachlan aquifer, has not reported PFAS concentrations above the LOR throughout the OMP. Despite the new maximum PFAS concentrations reported at MW248, concentrations may not be attributable to groundwater plume migration, as surface water sampling was completed during the DSI within this reach of Marshalls Creek (a significant pathway for PFAS transport), with the DSI suggesting that there may be 'groundwater and surface water interaction with the perched/Cowra systems' within this area (Jacobs, 2018a). As such, new maximum concentrations may be a result of fluctuations within Marshalls Creek. Further monitoring is required to determine any long-term trends.
- In July 2023, wells MW258 and MW259 were installed within the Lachlan and Cowra aquifers, respectively, to increase spatial coverage downgradient of the Gumly Gumly wetland and to understand the potential for Marshalls Creek to act as a potential secondary source of PFAS to groundwater in this area. Although Marshalls Creek was not considered a potential secondary Off-Site source of PFAS during the DSI, multiple surface water samples analysed for major ions within Marshalls Creek during the DSI were Sodium and Chloride dominated, plotting closely to Perched/Cowra system water (Jacobs, 2018a). This may suggest groundwater and surface water interaction between Marshalls Creek, which is referred to in the DSI as a 'significant PFAS pathway' (Jacobs, 2018a), and the Cowra aquifer. O'Neil (2007) also suggests that there is enhanced connectivity between the Cowra and Lachlan Formations in the region of the RWCC water supply bores, particularly in the East Wagga Borefield. Furthermore, the continued detection of PFAS at MW248 upstream along Marshalls Creek further supports this source-pathway. Both MW258 and MW259 reported first-time detections during sampling undertaken in July 2023 immediately following bore installation, with results confirmed in subsequent monitoring rounds. Although results at both MW258 and MW259 are below drinking water criteria, these detections represent a potential change to the CSM, with the addition of a potential new pathway and source area. Further investigation of this source-pathway is ongoing.
- MW244, MW245, MW247, MW249, MW251, and MW252 reported results below the LOR throughout the monitoring period, consistent with historical monitoring results. These wells are monitored to assess concentrations of PFAS down-gradient of environmentally sensitive areas (such as the Gumly Gumly wetland) and are situated up-gradient of drinking water supply bores and the Murrumbidgee River. As a result, these wells should continue to be monitored, with the trigger levels and responses outlined within Section 4 of the OMP followed if a change in PFAS concentration is reported.

- It is noted that MW245 reported a decreasing trend for PFOS+PFHxS; however, concentrations have been below the LOR from the October 2021 (E4) event onwards.
- MW250 (Cowra) has consistently reported PFOS+PFHxS concentrations at or slightly above the LOR, but below drinking water criteria, throughout the monitoring period. A decreasing trend for PFOS+PFHxS was reported at MW250, however due to the proximity of MW250 to the RWCC bores downgradient, this location should continue to be closely monitored. MW249 (Lachlan) is nested with MW250, and alongside nested wells MW251 and MW252, are located closest (immediately upgradient) to the East Wagga Borefield and furthest (downgradient) from the Base along this north-west pathway. As noted above, MW249, MW251 and MW252 all reported results below the LOR throughout the monitoring period.

8.1.2.7 Off-Site to the North and North-West Sentinel

Review of Table 7-6 indicated the following:

- Samples collected from Off-Site wells to the north and north-west (MW214, MW231, MW235, MW246), all screened in the Lachlan aquifer, reported PFOS+PFHxS, PFOS and PFOA concentrations below LOR, consistent with historical monitoring results. As these wells are monitored to provide spatial coverage, and to act as sentinel monitoring wells for drinking water supply bores within the area, it is recommended that ongoing monitoring of these locations continues.

8.1.2.8 Drinking Water Supply Bores

Review of Table 7-7 indicated the following:

- Samples collected from drinking water supply bores reported PFOS+PFHxS, PFOS, and PFOA concentrations below LOR, consistent with historical monitoring results. Although MW211 was unable to be sampled during the April/May 2022 event due to an electrical fault, and MW213 was unable to be sampled during the November 2022 event because of floodwaters, this is not considered to represent a significant data gap. Alternate wells sampled during E7 in lieu of MW211, MW212 and MW213 also reported results below LOR.

8.1.2.9 Property to the East of the Site Monitoring Well Results Summary

Review of Table 7-8 indicated the following:

- Both MW241 and MW242 (located to the east of the site), and screened within the Wantabadgery Granite and Lachlan formation respectively, reported all results below LOR, consistent with historical monitoring results. It is noted that the purpose of these wells is to both investigate the PFAS detected in the well screened in the granite during the DSI (MW223), and to also target a dyke with north-south orientation at the point where the Kyeamba Creek drainage pathway from the Base crosses the Sturt Highway (Department of Defence, 2019a). Although PFAS results were reported within MW223 (which is to the east of the Base and is similarly screened within the granitic aquifer) during the DSI, results may be a result of overland drainage pathways from Base (Jacobs, 2018a). The lack of PFAS concentrations also indicates that PFAS is not currently travelling throughout the north-south oriented dyke at the point where the Kyeamba Creek drainage pathway from the Base crosses the Sturt Highway.

1 Conditions Impacting Groundwater Interpretive Analysis

As discussed in Section 3.2, and presented within Appendix D, a number of shallow Cowra formation monitoring wells in the vicinity of the Site were dry or unable to be accessed. As a result, they could not be sampled or gauged. Overall, these wells have been consistently dry or inaccessible since the DSI (Jacobs, 2018a). They are paired with water bearing wells installed in the deeper Lachlan formation, which allows for an evaluation of vertical migration of PFAS impacts between formations occurring on the Site. As discussed in Section 8.1.2.4, the prevailing unsaturated nature of the Cowra Formation On-Site indicates that this part of the formation has low permeability and thus limits vertical migration of PFAS, which is corroborated by multiple On-Site Lachlan wells consistently reporting PFAS <LOR.

Due to the anomalous rainfall observed preceding/during the November 2022 (E6) event, as noted within the associated factual report presented in Appendix H, floodwaters may have potentially impacted both the reported groundwater levels and flow regime during this event.

Sur ace Water

1 Sur ace Water – Groundwater Interaction

During the DSI (Jacobs, 2018) three surface water drainage pathways from the Base were identified: drainage to the east to Kyeamba Creek, drainage to the west to Gregadoo Creek, and drainage to the north-west to the Gumly Gumly wetland and on to Marshalls Creek. Although surface water and groundwater interaction was not noted as a transportation mechanism within the DSI, major ion analysis conducted on samples collected within reaches of both Kyeamba Creek and Marshalls Creek suggests groundwater and surface water interaction with the perched/Cowra systems in these areas (Jacobs, 2018a). Major ion analysis collected from MW210 during the DSI also indicated that recharge to the Lachlan Formation from the Murrumbidgee River may be occurring in this area (Jacobs, 2018a). This is supported by findings within the Stage 1 Groundwater Modelling Report (Jacobs, 2018c), which found that 'leakage from the (Murrumbidgee) river (river recharge) dominates over groundwater discharge to the river'.

The PMAP CSM indicated that the Gumly Gumly Wetland is considered a secondary source of PFAS contamination (Department of Defence, 2019b). The Cowra formation is inferred to be unsaturated beneath the Gumly Gumly Wetland, while groundwater samples collected from wells screened within the Lachlan Formation on the perimeter of the Gumly Gumly Wetland have reported PFAS impacts. Water level monitoring at the Murray Cod Hatcheries indicates connectivity between the Cowra and Lachlan Formations and therefore a higher potential for vertical migration of contaminants in the area (Department of Defence, 2019b) compared to on-Base.

As discussed in Section 8.1.2.6, Marshalls Creek is potentially also a secondary source of PFAS, with vertical migration into the Cowra and Lachlan formations occurring. Further investigation of this source-pathway is ongoing.

Sur ace Water PFAS Concentrations Time Series and Linear Trend Analysis

8.2.2.1 Surface Water outflows - Drains Discharging from the Site

Upon review of Table 7-10 and the locality of surface water monitoring locations within the Drains Discharging from the Site, the following evaluations were made:

- Recreational water criteria were exceeded for PFHxS+PFOS at SW104 during September 2020 (E2), before decreasing below recreational criteria in April 2021 (E3). Recreational water criteria were again exceeded during November 2022 (E6) and April 2023 (E7), before similarly decreasing below the recreational criteria during the October 2023 (E8) event. Mass flux assessment by the LC was undertaken at SW104 between November 2021 and August 2022, the results are presented in Table B2C, Appendix B. Results were generally consistent with or lower than OMP concentrations, with all results below recreational criteria. It is noted that this surface water location is located on-Base, with SW206 being further downstream and more representative of water quality being discharged to Gumly Gumly wetland.
- SW206 recorded an order of magnitude increase for PFOS+PFHxS (3.07 µg/L) within the November 2022 (E6) event compared to the April/May 2022 event (0.23 µg/L). PFHxS+PFOS results during this event were reported above the adopted recreational water criteria for the first time. This increase coincides with the increased PFAS concentrations at SW104, upstream of SW206, and both locations reported new maximum concentrations during this event. It is noted that surface water conditions were noted to vary from historical water quality results and observations, with the water body depth raised considerably from the previous event (0.1m to 1.5m), and a positive redox result noted for the only event within the monitoring period. These conditions and the elevated PFAS concentrations observed in November 2022 are likely a result of the significant rainfall and associated flooding experienced in the region at the time.
- Despite PFHxS+PFOS concentrations reported below recreational water criteria in the subsequent April 2023 (E7) and October 2023 (E8) events, a first-time exceedance of the recreational water guideline values in surface water triggers a need to calculate the rolling average over a three year period for sample results from the same location, and compare with the appropriate guideline value. As the three-year period rolling average is 0.88 µg/L, and below the recreational water guideline values, as per the OMP, a review of the CSM is not required. No clear trend in PFAS concentrations is evident at SW104 or SW206, with PFAS concentrations fluctuating over time and changes likely driven predominantly by rainfall.
- PFAS concentrations are generally slightly higher at SW104 relative to SW206. This is anticipated, as SW104 is the point at which stormwater on-Base discharges to the Council network, and is one of the

primary points of PFAS discharge from the Base, while SW206 is the point at which the Council stormwater network discharges to a canal. It is evident that there is some attenuation of PFAS concentrations between SW104 and SW206, and it is expected that concentrations will further attenuate (e.g. through dilution) to some extent after discharge to the Gumly Gumly wetland. Whilst surface water within the Gumly Gumly wetland is not currently monitored under the OMP, results from SW310 (discharge from Gumly Gumly wetland towards Marshalls Creek) are below recreational criteria. However, the absence of direct monitoring results from surface water within the Gumly Gumly wetland appears to be a data gap.

- Overall, the risk profile presented in the HHERA (EnRisks, 2018) and as summarised in Section 9.2, has not changed. An exposure concentration of 4.62 µg/L PFHxS+PFOS (maximum concentration detected in the wetland during the DSI) was used in the HHERA to assess human exposure via recreation, and it was found that risks were considered low. As concentrations during the monitoring period at SW206 are all below this, there is no change to the risk profile.

8.2.2.2 Elizabeth Avenue Stormwater Outflow

Upon review of Table 7-11 and the locality of the surface water monitoring location (SW218) within the Elizabeth Avenue Stormwater Outflow, the following evaluations were made:

- SW218 reported a new maximum for PFOS+PFHxS, PFOS and PFOA within the November 2022 (E6) event, coinciding with new maximums reported at SW104/SW206 and significant rainfall in the region. It is also noted that the maximum concentrations at SW218 are in the same order of magnitude as SW104 and SW206, albeit slightly lower. Although sampling of stormwater from SW218 did not identify PFAS concentrations above the LOR during the DSI (Jacobs, 2018a), this is not considered to represent a new source area, as SW218 is the point at which stormwater from the Forest Hill Rural Fire Service area discharges, and was identified as a potential PFAS source during the DSI. Results from the monitoring period suggest the Forest Hill Rural Fire Service is a likely source of PFAS which contributes to PFAS entering the Gumly Gumly wetland. In June 2023 a DSI was conducted on behalf of the Royal Fire Service and the NSW EPA which confirmed the presence of PFAS in soil samples around the Fire Station. Further investigation is currently being planned and is expected to include sampling of surface water and soil (NSW Rural Fire Service, 2024).

8.2.2.3 Marshalls Creek downstream of Gumly Gumly Wetland

Upon review of Table 7-12 and the locations of surface water monitoring locations within Marshalls Creek downstream of Gumly Gumly Wetland Monitoring Area, the following evaluations were made:

- SW310 reported new minimum concentrations for both PFOS+PFHxS (0.04 µg/L) and PFOA (<0.01 µg/L) during the April/May 2022 (E5) event. Concentrations increased by an order of magnitude in the subsequent November 2022 (E6) event but was still within historical range (0.83 µg/L for PFOS+PFHxS and 0.01 µg/L for PFOA). Variability in PFAS concentrations is expected to be partially attributable to seasonal and climatic conditions, with increases reported within the November 2022 (E6) event coinciding with increased rainfall and widespread flooding, as detailed within the associated factual report presented in Appendix H. As concentrations have not exceeded historical concentrations throughout the monitoring period and are mostly below the recreational water criteria, results do not indicate a change in the risk profile from the HHERA (EnRisks, 2018). Whilst SW310 provides a good indication of PFAS concentrations in surface water leaving Gumly Gumly wetland and discharging towards Marshalls Creek, the absence of surface water monitoring locations within the wetland is a potential data gap.
- PFOS+PFHxS concentrations at SW234 saw an order of magnitude increase during the April 2023 (E7) event (0.22 µg/L) compared to the November 2022 event (0.02 µg/L), with results in exceedance of drinking water and ecological criteria, but below recreational criteria. As concentrations are within historical concentration ranges, results do not indicate a change in the risk profile from the HHERA (EnRisks, 2018). As SW234 is located at the point where water is extracted from the creek for irrigation of playing fields at the Equex facility operated by Council, it is recommended that ongoing monitoring at this location continues, to assess for any potential changes. PFOS+PFHxS concentrations at SW234 are at least one order of magnitude lower than SW310, indicating attenuation of PFAS concentrations along Marshalls Creek from upstream to downstream.
- SW294 reported PFAS concentrations below or at the LOR throughout the monitoring period. This is generally consistent with historical monitoring results and indicate that concentrations of PFAS continue to attenuate further downstream of SW310 and SW234.
- SW262, located near the confluence of Marshalls Creek and the Murrumbidgee River, recorded a new maximum concentration for PFOS+PFHxS during the April 2023 (E7) event, however, concentrations

were equal to drinking water criteria and only slightly above the previous maximum. This increase also coincides with the order of magnitude increase reported for PFOS+PFHxS concentration at SW234, located upstream of SW262 in the Marshalls Creek pathway, and a slight exceedance of recreational water criteria at SW310, also located within the Marshalls Creek drainage pathway. Although multiple locations reported increases within the same monitoring event, PFAS concentrations are otherwise consistent with historical results and also decreased in the subsequent event.

- PFAS concentrations throughout Marshalls Creek have been observed to fluctuate throughout the monitoring period, however, have generally remained within historical concentration ranges. As Marshalls Creek is a complex system, with PFAS inputs from Gumly Gumly wetland, seasonal fluctuations and potential interaction with the Cowra aquifer, trends are difficult to identify. Further monitoring and investigation is required for potential trends to be understood. Results from the monitoring period indicate that the Gumly Gumly wetland continues to act as a secondary source of PFAS to both groundwater and surface water (i.e. Marshalls Creek). The upper portions of Marshalls Creek consistently report PFOS+PHFxS above LOR and may be acting as a secondary source of PFAS to groundwater, as discussed in Section 8.1.2.6. However, PFAS concentrations appear to attenuate along the creek flowpath and generally approaches LOR downstream of SW234. Overall, the results do not indicate a change to the risk profile.

8.2.2.4 Murrumbidgee River

Upon review of Table 7-13 and the locality of surface water monitoring locations within the Murrumbidgee River, the following evaluations were made:

- All sampling locations within the Murrumbidgee River reported PFAS concentrations below the LOR throughout the monitoring period, which is generally consistent with historical results. Spatially, these locations provide coverage of the Murrumbidgee River, and its associated confluences with both Kyemba and Marshalls Creek. As such, results do not indicate a change in the risk profile from the HHERA (EnRisks, 2018).

8.2.2.5 Kyeamba Creek

Upon review of Table 7-14 and the locations of surface water monitoring locations within Kyemba Creek, the following evaluations were made:

- SW236 reported PFAS results below the LOR throughout the monitoring period, consistent with historical results. As SW236 is monitored to provide spatial coverage of Kyemba Creek, results potentially indicate that PFAS migration throughout the Kyemba Creek pathway is not a significant PFAS transport pathway, consistent with findings from the DSI (Jacobs, 2018a).
- SW240 reported a first-time detection of PFOS+PFHxS within the November 2022 (E6) event, however results were both at the LOR, and below adopted criteria. Concentrations were reported to decrease below the LOR within the subsequent event. As this location is where overland flow from the Base would discharge to Kyeamba Creek (Department of Defence, 2019b), this detection is likely correlated with higher than monthly rainfall reported in October and November 2022, as residual PFAS mobilisation is highly influenced by rainfall. As outlined within the OMP, it was noted that this location may be removed from the OMP once the absence of PFAS is confirmed, as PFAS was not detected during the DSI (Department of Defence, 2019b).
- Considering PFAS has been consistently reported below LOR at SW240 and SW236, with the exception of an one-off minor detect in November 2022 during a period of significant rainfall, the Kyeamba Creek pathway is considered to be an insignificant pathway for PFAS moving off-Base and further monitoring is considered unnecessary.

8.2.2.6 Forest Hill Sewage Treatment Plant

Upon review of Table 7-15, and the locations of surface water monitoring locations within the Forest Hill STP, the following evaluations were made:

- SW288 saw a first-time detection for PFOS+PFHxS within the November 2022 event, however reported results below the LOR in subsequent events. As SW288 is sampled at the point at which sewage from the municipal area flows into the Forest Hill STP, results from the monitoring period indicates that sewage from the municipal area is not a significant source of PFAS. Although concentrations have returned to below the LOR in subsequent events, it is recommended that sampling at this location continues in case conditions change in the future.

- During the November 2022 event, SW289, which monitors PFAS in sewage discharges from RAAF Base Wagga, reported new maximum concentrations for PFOA and PFOS+PFHxS. However, results were still within the same order of magnitude as historical concentrations. Although concentrations appear to vary seasonally, there is no overall change in PFAS concentrations within sewage from the Base, with concentrations within the same order of magnitude of historical results. As per the OMP, as SW289 reported PFOS+PFHxS concentrations above the recreational water criterion during the November 2022 event, the rolling three-year average was calculated at 1.52 µg/L, with results below the recreational water criterion. As such, a review of the CSM is not required.
- SW228 reported PFAS results within the historical range throughout the monitoring period, with no discernible trends. As this location has been included to provide an indication of treated effluent quality, fluctuations may be related to concentrations within the influent stream. Overall, results from the STP do not indicate a change in the risk profile.

Conditions Impacting Sur ace Water Interpretive Analysis

There were several surface water locations where data could not be collected due to drains being dry or conversely, inaccessible, due to unsafe working conditions from high water levels during sampling events. However, sufficient water was present during the majority of monitoring events.

Variability in PFAS concentrations was expected due to seasonal and climatic conditions, particularly within drainage pathways.

Discussion

1 Conceptual Site Model

Jacobs developed a CSM (Jacobs 2018a) for the Site as part of the DSI, which has been reviewed by Cardno considering the new datasets available. The following has been considered:

- Is there evidence of new PFAS source areas?
- Is there evidence of new pathways via groundwater or surface water?
- Is there evidence of new receptors?

The CSM has been reviewed with consideration to the DQOs presented in the SAQP (Cardno, 2023b).

1 1 New PFAS Source Areas

A number of first-time detections and new exceedances of adopted criteria in groundwater and surface water have been recorded since the DSI. First-time detections reported at MW258 and MW259 and subsequent detections indicate that Marshalls Creek may be acting as a secondary source of PFAS for underlying groundwater. Cardno understands that further investigation in regards to this is currently being undertaken.

Results suggest the Forest Hill Rural Fire Service is a likely source of PFAS which contributes to PFAS entering the Gumly Gumly wetland.

1 New Pathways

It was initially hypothesised in the 2020 Annual Interpretive Report (Cardno, 2021d) that surface water and sediment along Marshalls Creek would periodically contribute PFAS to groundwater. Recently installed (i.e. 2023) groundwater monitoring wells, MW258 and MW259, reported PFAS concentrations above the LOR. These results provide additional evidence to support that Marshalls Creek, located nearby these wells, may be acting as a secondary source of PFAS contamination to the underlying groundwater. Cardno understands that further investigation of this pathway is currently being undertaken.

Increasing concentration trend at MW300 indicates surface water infiltration from the former STP area, a known source area. This increasing trend suggests that surface water infiltration is occurring and should be considered in the updates to the CSM.

1 New Receptors

No new receptors have been identified.

1 CSM Revisions

It is recommended that the CSM is revised to take into consideration the above mentioned potential new source areas and transport pathway. Additionally, the observed groundwater PFAS plume extent is larger than what was originally predicted within the Stage 1 Groundwater Model, which was based on a more limited monitoring network at the time. Several assumptions were made in the development of the groundwater model including the lateral extent of the area where PFAS impacted surface water migrated downward to the Lachlan Formation and that Marshalls Creek was not acting as a source of PFAS to groundwater. The groundwater model report recommended the installation of additional groundwater monitoring wells downgradient of the wetland and along Marshalls Creek in order to test these assumptions and validate the model findings.

Since the completion of the groundwater model, 20 new groundwater wells have been installed as part of the PMAP and monitored as part of the OMP, with additional information suggesting that Marshalls Creek may be acting as an additional secondary source of PFAS to groundwater, and that PFAS is present outside of the predicted extent of the plume in the Stage 1 Groundwater Model.

Risk Pro ile

1 Summary o Risk Pro ile

The PMAP (Department of Defence, 2019b) includes the following summary of elevated risks which were originally identified in the DSI (Jacobs, 2018a) and/or the *Human Health and Ecological Risk Assessment for the RAAF Base Wagga PFAS Investigation* (HHERA; EnRisks, 2018):

- High consumption of certain fish and yabbies sourced from local waterways around the Site.
- Direct toxicity to aquatic ecology at farm dams in the Gumly Gumly Wetland and in Marshalls Creek.
- Effects on terrestrial or aquatic ecology due to bioaccumulation in higher order consumers at various Off-Site locations.
- Potential risks to the significant East Wagga Borefield (groundwater resource extraction), due to PFAS migration over time.
- Potential risks to groundwater users due to PFAS migration in the future (for example East Wagga Borefield).
- Cardno notes that drinking water risks were not quantitatively assessed within the HHERA, as the pathway was considered incomplete.
- Potential risks if PFAS impacted groundwater is used for drinking water or home food production in the future.
- Potential future risks if residents at certain properties commence home consumption of food produced with PFAS impacted water or soil.
- Discharge of PFAS impacted sewage from the Site at concentrations that would present an elevated risk if treated sewage is recycled for irrigation of land close to Kyeamba Creek (potential ecological risk) or irrigation of crops for home consumption (potential human health risk).

A potential new secondary source area and transport pathway, whereby PFAS within the Marshalls Creek drainage pathway is vertically migrating into the groundwater, has been identified. Further investigation is currently underway in this area to understand surface water and groundwater interactions and hydrogeological conditions influencing groundwater migration.

9.2.1.1 Groundwater

The rolling average over a three year period for PFHxS+PFOS was calculated at MW311 (Cowra) as 0.30 µg/L, in exceedance of the relevant drinking water guidelines. As per the OMP, the CSM and potential risks to human health and the environment were assessed. As MW311 is associated with key potential primary source areas, with no detections of PFAS above the LOR within nested well MW310 (Lachlan), these results are not considered to represent a change to the CSM, or increased risk to human health or the environment, than what was assessed under the HHERA (EnRisks, 2018).

Linear trend analysis (Mann-Kendall statistics) undertaken at groundwater monitoring locations with eight or more sampling events, indicated the majority of groundwater well locations reported stable, decreasing or no clear trends.

PFOS+PFHxS concentrations at MW300 were noted as increasing from linear trend analysis. Further, the rolling average over a three year period for PFHxS+PFOS was also calculated as 0.13 µg/L, in exceedance of the relevant drinking water guidelines. Trends are likely associated with surface water infiltration from the former STP area, which is directly adjacent. As such, changes are not considered to be associated with a new source area or transport pathway, and are not considered to represent a change to the CSM or the risk profile.

PFOS concentrations at MW240 and MW254 were respectively noted as “possibly increasing”, and “increasing”. These changes in PFOS concentrations at MW240 and MW254 are likely a result of gradual lateral migration of PFAS impacts associated with the Gumly Gumly wetland source area. Results from this monitoring period also indicate that the PFAS contaminant plume associated with the Gumly Gumly wetland is present further to the north-west than presented in the 2020 Annual Interpretive Report (Cardno, 2021d) and the predicted plume extent presented within the Stage 1 Modelling Report (Jacobs, 2018c). This is unlikely a result of PFAS moving at a faster rate, but is more likely due to the limited monitoring network available at the time. It is noted that the HHERA considered that the potential risk to human health as low and acceptable when considering ingestion of PFAS in potable water including from RWCC, but recommended the OMP to validate the findings of the groundwater model. The PMAP considered the consequence of the PFAS migration to drinking water supply bores as major, yet not an immediate risk. The PFAS impacts are currently delineated prior to the RWCC bores and ongoing monitoring of the RWCC bores has reported concentrations <LOR, so there is no complete exposure pathway to human health receptors at this stage.

In August 2023, wells MW258 and MW259 were installed in the Lachlan and Cowra aquifers, respectively. The purpose was to expand spatial coverage downstream of the Gumly Gumly wetland and investigate whether Marshalls Creek could be acting as a secondary source of PFAS to groundwater. Although Marshalls Creek was not initially considered a secondary off-site PFAS source, surface water samples from

the creek showed high levels of Sodium and Chloride, similar to the Perched/Cowra system water, suggesting there is interaction between Marshalls Creek and the Cowra aquifer. Both monitoring locations reported detections of PFAS when they were sampled for the first time in July 2023, immediately after bore installation. Results were confirmed in subsequent monitoring rounds. Although results at both MW258 and MW259 are below drinking water criteria, these detections represent a potential change to the CSM, with the addition of a potential new pathway and secondary source area. These impacts are not delineated and are located approximately 625 m up-gradient of MW212, which is closer to the RWCC East Wagga Borefield than the extent of PFAS impacts presented in the 2020 Annual Interpretive Report (Cardno, 2021d). In January 2024 Jacobs installed an additional monitoring bore (MW261), near MW258/MW259, screened in the deeper portions of the Lachlan aquifer, where the RWCC bores extract water from. Concentrations were reported <LOR. At this location, a clay layer of approximately 11 meters thickness was observed to be separating the upper permeable zone of the Lachlan Formation and a lower permeable zone in this formation, above the granite bedrock. The extent and continuity of this clay layer is currently not known. Cardno understands that further investigation is currently underway throughout this area.

Overall, as PFAS concentrations within the RWCC bores remain below LOR, there is no complete exposure pathway to human health receptors at this stage.

9.2.1.2 Surface Water

Concentrations reported for surface water locations were generally consistent with historical results. Monitoring locations SW206, SW289 and SW310 have reported exceedances of recreational water criteria in a singular event (November 2022). However, as per the OMP the three-year rolling average has been calculated for each location, with results below recreational water criteria. Multiple new maximums and first-time exceedances were also reported during the November 2022 (E6) event. This is likely attributable to the higher-than-average rainfall received during this period, which saw widespread flooding throughout the wider area. All surface water monitoring locations which reported a new maximum or first-time detection during this event reported a decrease in subsequent events. As discussed above, Marshalls Creek was identified as a potential new secondary source of PFAS for local groundwater via vertical migration.

Results from the Forest Hill Rural Fire Service suggest it is a likely source of PFAS which contributes to PFAS entering the Gumly Gumly wetland.

Assessment o Current OMP

Cardno assessed the OMP (Department of Defence, 2019a) in consideration of the findings of this interpretive report to identify if a review of the OMP is required. As outlined in the Defence Annual Interpretive Report Guidance (Defence, 2021b), the following are triggers which may require an OMP Review:

Policy:

- Internal or external policy changes.
- Updates to guidance.
- Regulations or stakeholder considerations:
- Changes to regulatory requirements.
- Changes to regulator advice on exposure-minimisation behaviours e.g. precautionary advice.
- Feedback and information received as a result of community consultation.

Site conditions:

- Changes or refinements to the monitoring network, frequency and parameters.
- Interpretive analysis presented in the OMR.
- Changes to the CSM or risk profile.
- Significant changes of land use within the MA or adjoining land.
- The impact of remediation works.
- The requirements of a post-remediation Site Management Plan.

Based on the evaluations from this OMR and potential changes to the CSM identified, a review of the OMP is recommended.

10 Conclusions

Cardno undertook the April 2021 (E3) to October 2023 (E8) biannual groundwater and surface water monitoring events at RAAF Base Wagga, as part of the PFAS OMP. Results from these events have been compared against adopted assessment criteria and historical data to address the objectives of the PFAS OMP ongoing monitoring report:

- To provide a succinct summary of the April 2021 (E3) to October 2023 (E8) monitoring data;
- To assess changes in the distribution, concentration, and transport of PFAS;
- To confirm or update the current understanding of risk for the purpose of protecting human health and environmental receptors; and
- To provide supporting data for the PMAP delivery and evaluation of management actions, where relevant.

The April 2021 (E3) to October 2023 (E8) monitoring and interpretive assessment have met the overall objective of the OMP to assess the changes in the nature and extent of PFAS in the environment, specifically where there is a potential risk to a receptor associated with Defence's historical use of legacy AFFF. While there have been some deviations from the original OMP program as explained in Section 3.2, and Appendix D, monitoring has been carried out in general accordance with the SAQP (Cardno, 2023b) to the extent possible.

Per the requirements outlined in the Defence Annual Interpretive Report Guidance (Defence, 2021), quantitative trend analysis of groundwater was undertaken where sufficient data was available.

10 1 1 Groundwater

Trend analysis of PFAS concentrations within groundwater indicated that a minority of groundwater well locations reported increasing or possibly increasing trends:

- On-Base, PFOS+PFHxS concentrations at MW300 (Lachlan) was noted as increasing.
- Off-Base, PFOS concentrations at MW240 (Cowra) and MW254 (Cowra) were noted as possibly increasing, and increasing, respectively. These changes in PFOS concentrations at MW240 and MW254 are considered associated with the Gumly Gumly wetland source area.

Results from this monitoring period also indicate that the PFAS contaminant plume associated with the Gumly Gumly wetland is present further to the north-west than presented in the 2020 Annual Interpretive Report (Cardno, 2021d). This is likely because MW253 (Lachlan) and MW254 were only installed in June 2020. MW240 and MW254 are located near the leading edge of the PFAS plume associated with the wetland, and results indicate that lateral migration of PFAS impacts from the upgradient wetland is occurring, but at a relatively gradual rate.

PFAS impacts associated with the Gumly Gumly wetland is delineated towards the East Wagga Borefield, with PFOS+PFHxS concentrations at MW245 (Cowra) and MW250 (Cowra) also reporting decreasing trends. Decreasing trends were also reported within the wetland itself, at MW200 (Lachlan) and MW312 (Lachlan).

The detection of PFAS in MW258 (Lachlan) and MW259 (Cowra) near Marshalls Creek since August 2023, and the ongoing detection of PFAS in MW248 (Cowra), suggests Marshalls Creek is potentially acting as a secondary source of PFAS to local groundwater. Further investigation is underway to better understand these pathways.

10 1 Sur ace Water

Concentrations reported for surface water locations were generally consistent with historical results. Monitoring locations SW206, SW289 and SW310 have reported exceedances of recreational water criteria in a singular event (November 2022). However, as per the OMP the three-year rolling average has been calculated for each location, with results below recreational water criteria. Multiple new maximums and first-time exceedances were also reported during the November 2022 (E6) event. This is likely attributable to the higher-than-average rainfall received during this period, which saw widespread flooding throughout the wider area. All surface water monitoring locations which reported a new maximum or first-time detection during this event reported a decrease in subsequent events. As discussed above, Marshalls Creek was identified as a potential new secondary source of PFAS for local groundwater via vertical migration.

Results from the Forest Hill Rural Fire Service suggest it is a likely source of PFAS which contributes to PFAS entering the Gumly Gumly wetland.

10 Conceptual Site Model Risk Pro ile

A number of changes to the CSM as presented in the PMAP and the 2020 Annual Interpretive Report are inferred based on the findings of this ongoing monitoring report:

- The PFAS contaminant plume associated with Gumly Gumly wetland is greater than the extent presented in the 2020 Annual Interpretive Report (Cardno, 2021d), with PFOS+PHFxS concentrations within the Lachlan aquifer exceeding drinking water criteria as far north-west as MW253 since August 2023.
- The detection of PFAS in MW258 (Lachlan) and MW259 (Cowra) near Marshalls Creek since August 2023, and the ongoing detection of PFAS in MW248 (Cowra), suggests Marshalls Creek is potentially acting as a secondary source of PFAS to local groundwater via vertical migration. PFAS concentrations at MW258 currently do not exceed Drinking Water criteria. However, impacts are not delineated and located approximately 625 m up-gradient of MW212. This is closer to the RWCC East Wagga Borefield than the extent of PFAS impacts presented in the 2020 Annual Interpretive Report (Cardno, 2021d). Cardno understands that further investigation is currently underway throughout this area.
- Forest Hill Rural Fire Service appears to be a likely source of PFAS which contributes to PFAS entering the Gumly Gumly wetland.

Overall, as PFAS concentrations within the RWCC bores remain below LOR, there is no complete exposure pathway to human health receptors at this stage.

References

General Re erences

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2. Australian Standard (2005) AS 4482-2005 *Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 – Non-volatile and semi-volatile compounds*.
3. Department of Defence (2019), *Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring*.
4. Department of Defence (2021a), *Contamination Management Manual – Annex L Data Management*, August 2018, amended June 2021.
5. Department of Defence (2021b), *PFAS OMP Annual Interpretive Report Guidance, Version 3.0,* November 2021.
6. Department of Defence, Department of Energy (2018), *Quality System Manual Schedule B15 USEPA DQO Process.*
7. Heads of Environmental Protection Authority's Australia and New Zealand (HEPA; 2020), *National Environmental Management Plan (NEMP),* Version 2.0, January 2020.
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APPENDIX

A

FIGURES

Cardno

now

Stantec

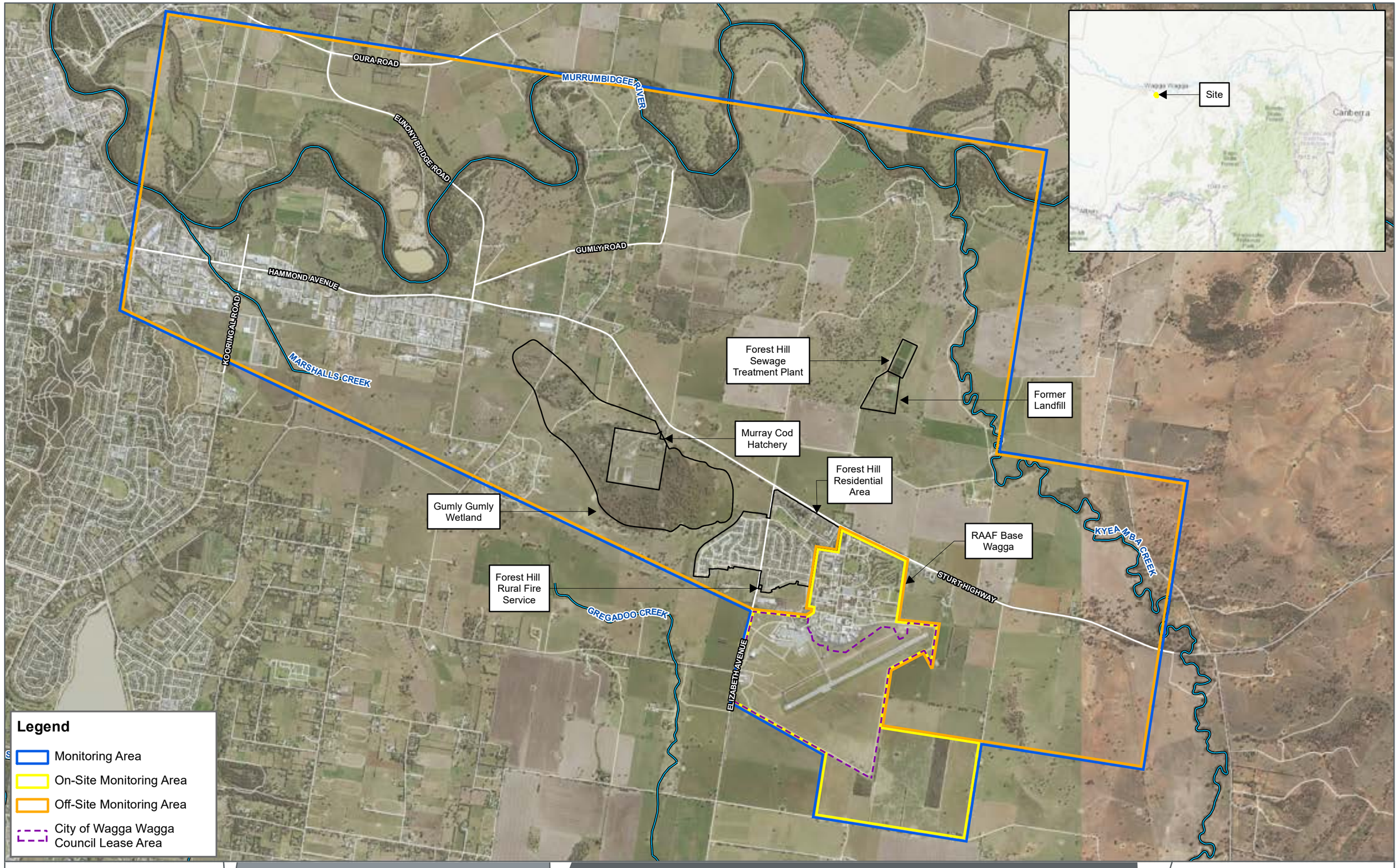

FIGURE 1

1:40,000 Scale at A3

Metres

0 1,000 2,000

Site Locality Plan

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno

Map Produced by Cardno
Date: 2022-02-21 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-032-SiteLocalityPlan_WW_.mxd 06
Aerial Imagery Supplied by Metromap (April, 2021)

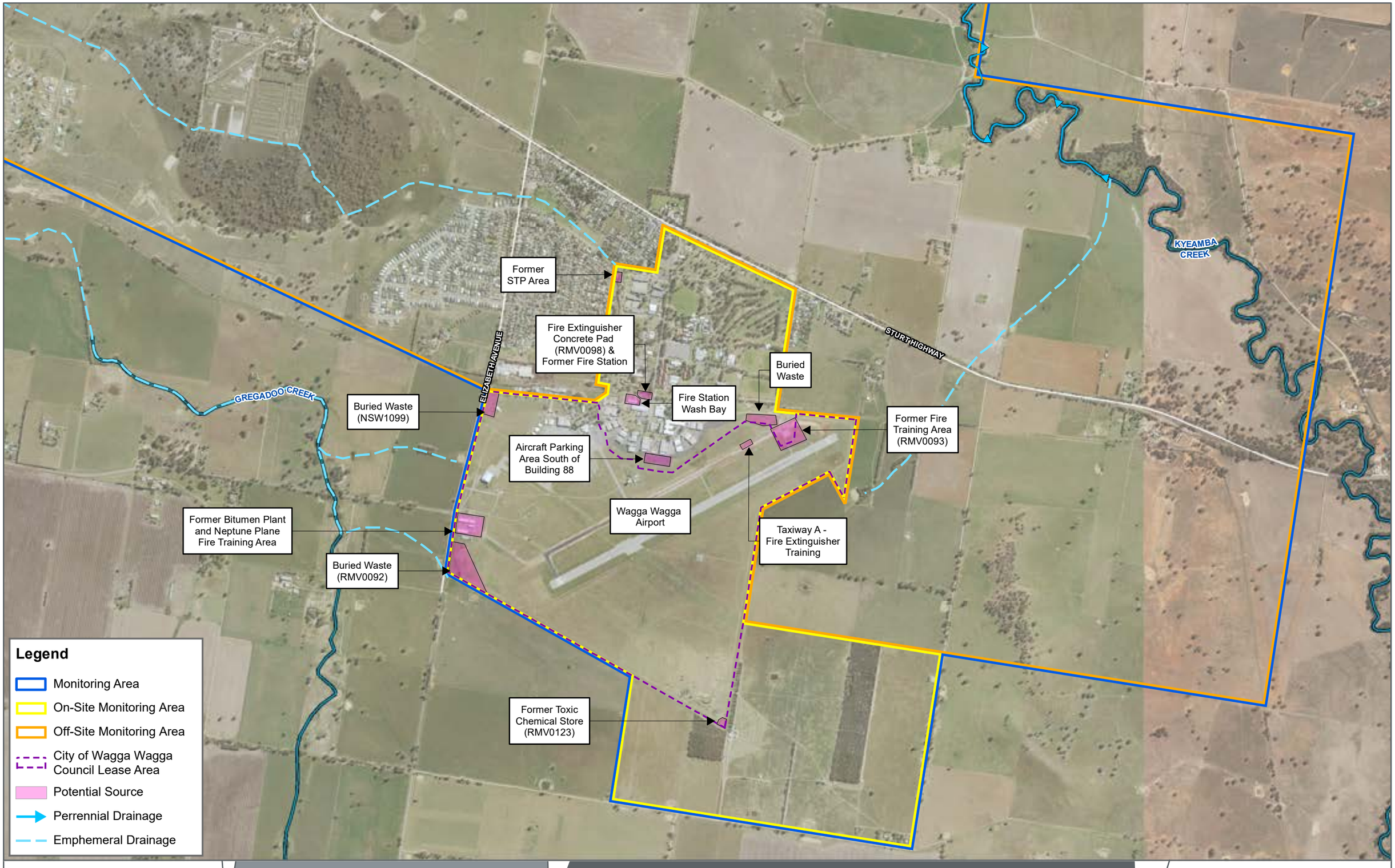

FIGURE 2

1:20,000 Scale at A3

Metres

0 500 1,000

Site Features

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2022-02-21 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-033-SiteFeatures_WW.mxd 02
Aerial Imagery Supplied by Metromap (April, 2021)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
STURT HIGHWAY
GREGADOO CREEK
ELIZABETH AVENUE
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK

MW213
MW210
MW209
MW211
MW252
MW251
MW249
MW212
MW250
MW231
MW258
MW244
MW245
MW259
MW248
MW247
MW253
MW254
MW240
MW233
MW255
MW256
MW238
MW239
MW257
MW214
MW200
MW204
MW246
MW243
MW300
MW301
MW303
MW302
MW242
MW241
MW308
MW309
MW310
MW311
MW304
MW305
MW306
MW307

Legend

- Monitoring Area
- On-Site Monitoring
- Off-Site Monitoring

Groundwater Monitoring Well

- Cowra Formation
- Lachlan Formation
- Wantabadgery Granite

Some monitoring locations are not shown due to privacy reasons

FIGURE 3

1:40,000 Scale at A3

Metres
0 1,000 2,000

Groundwater Monitoring Locations

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno – Stantec

Map Produced by Cardno now Stantec
Date: 2024-02-16 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0380-GWBoreLocations_WW.mxd 03
Aerial Imagery Supplied by Metromap

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY

SW261
SW262
SW309
SW294
SW234
SW212
SW286
SW289
SW228
SW236
SW288
SW310
SW218
SW206
SW107
SW104
SW240

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Surface Water Monitoring Locations

FIGURE 4

1:40,000 Scale at A3

Metres

0 800 1,600

Surface Water Monitoring Locations

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2022-03-01 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-035-SWBoreLocations_WW.mxd 01
Aerial Imagery Supplied by Nearmap (March, 2020)

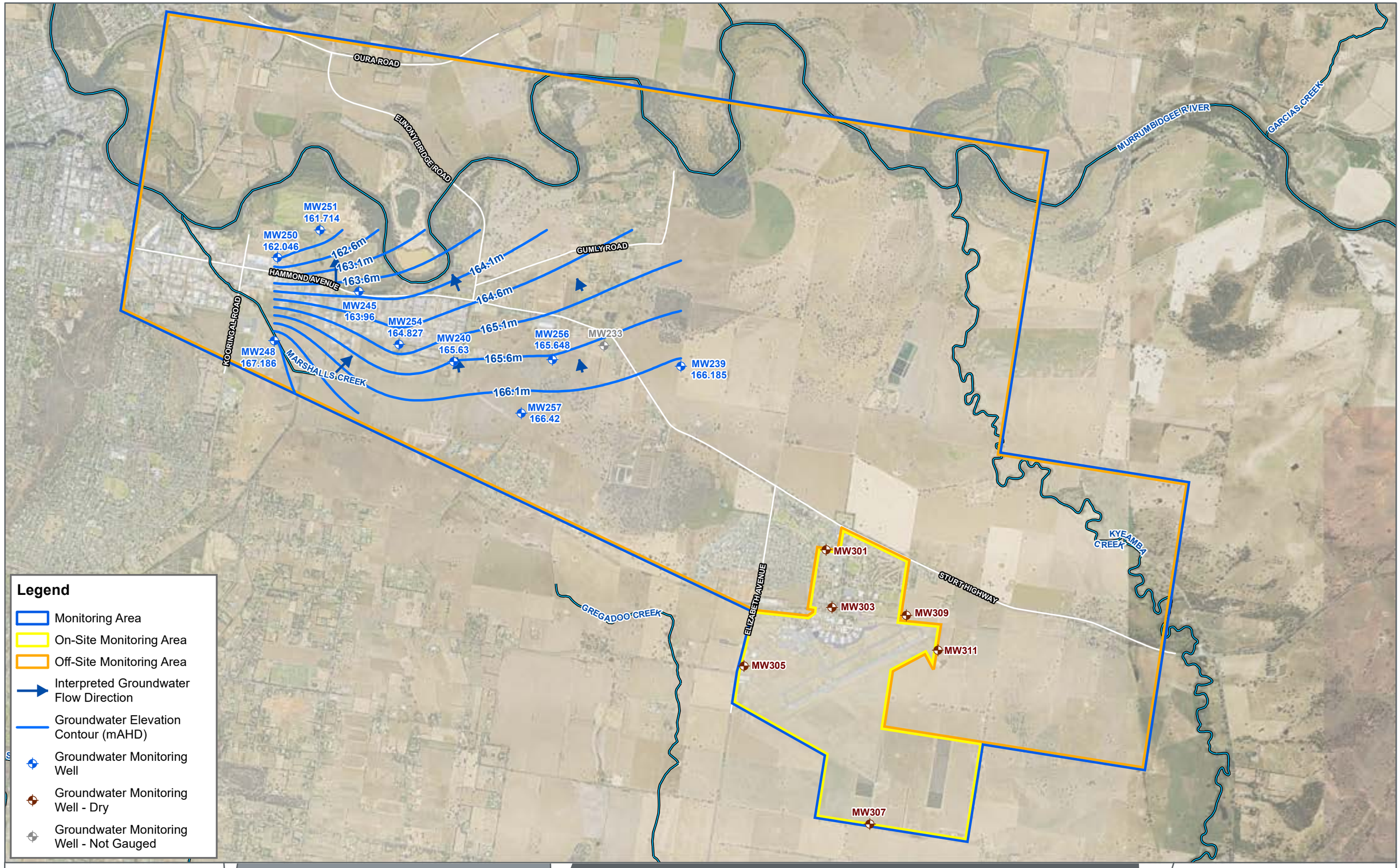

FIGURE 5A

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours – Shallow Aquifer (E3)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno – Stantec

Map Produced by Cardno now Stantec
Date: 2024-02-08 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0135-GWContours_SA_Cowra_WW.mxd 04
Aerial Imagery Supplied by Metromap (April, 2021)

OURA ROAD
ELLIOTT WAY
EUNONYERIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
KYEAMBA CREEK
GARCIAS CREEK
MURRUMBIDGEE RIVER
ELIZABETH AVENUE
STURT HIGHWAY
GREGADOO CREEK

MW213
MW252 162.377
MW211
MW249 161.268
MW212
MW244 164.6
MW247 167.223
MW253 163.811
MW255 165.614
MW238 165.59
MW208
MW210
MW209
MW231
MW200
MW204 168.734
MW246 170.354
MW215 171.498
MW300 170.598
MW243 172.04
MW302 170.777
MW308 172.006
MW242 185.535
MW304 172.714
MW310 186.774
MW306 188.138

163m
164m
165m
166m
167m
168m
169m
170m
171m
172m
173m
174m
175m
176m
177m
178m
179m
180m
181m
182m
183m
184m
185m
186m
187m
188m
189m
190m

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Groundwater Elevation Contour (mAHD)
- Interpreted Groundwater Flow Direction
- Groundwater Monitoring Well
- Groundwater Monitoring Well - Not Gauged

Some monitoring locations are not shown due to privacy reasons

FIGURE 5B

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Lachlan Aquifer (E3)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno – Stantec

Map Produced by Cardno now Stantec
Date: 2024-02-16 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0136-GWContours_Lachlan_WW.mxd 03
Aerial Imagery Supplied by Metromap

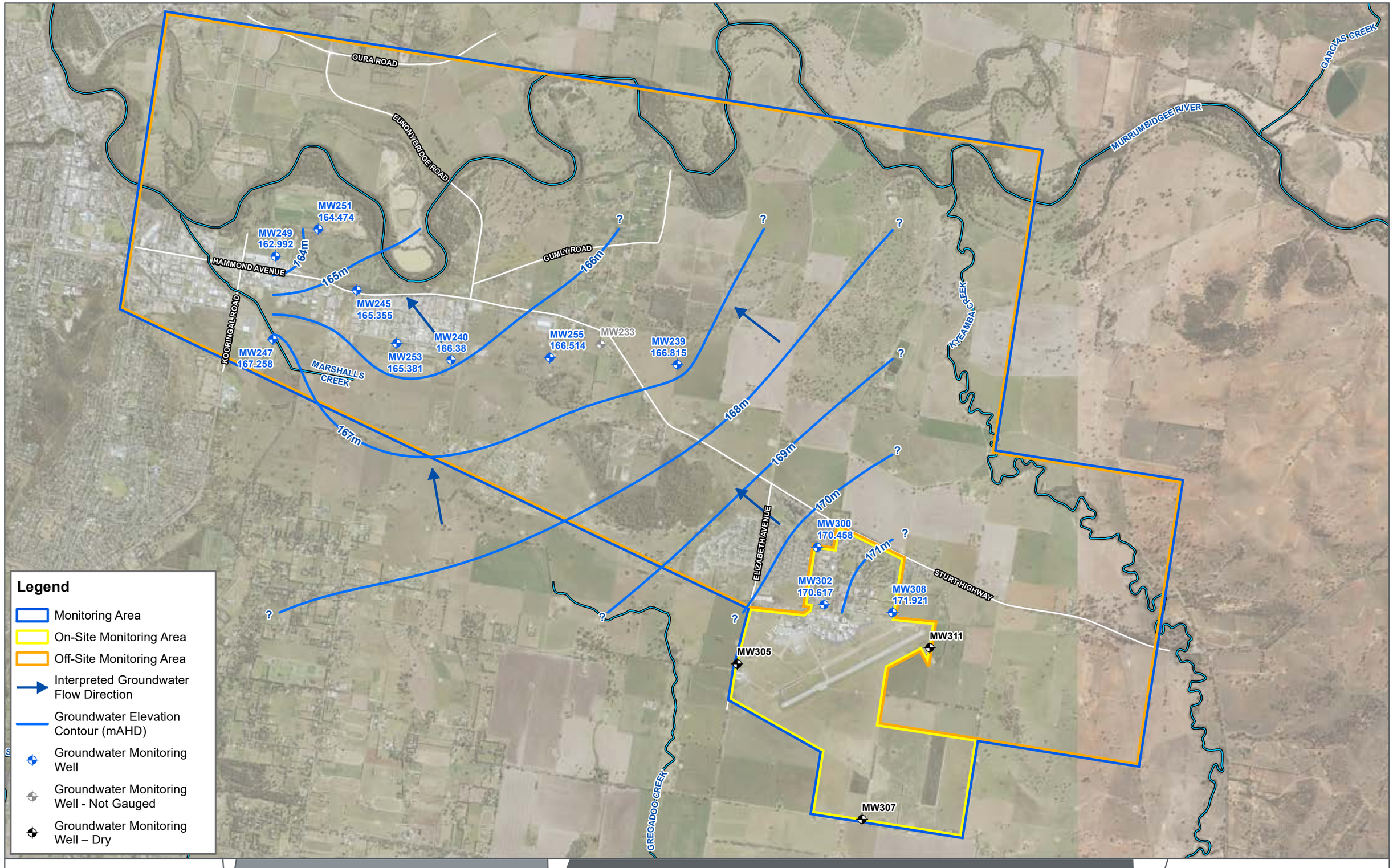

FIGURE 5C

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Shallow Aquifer (E4)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2021-11-25 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0171-GWContoursSA_Cowra_WW.mxd 01
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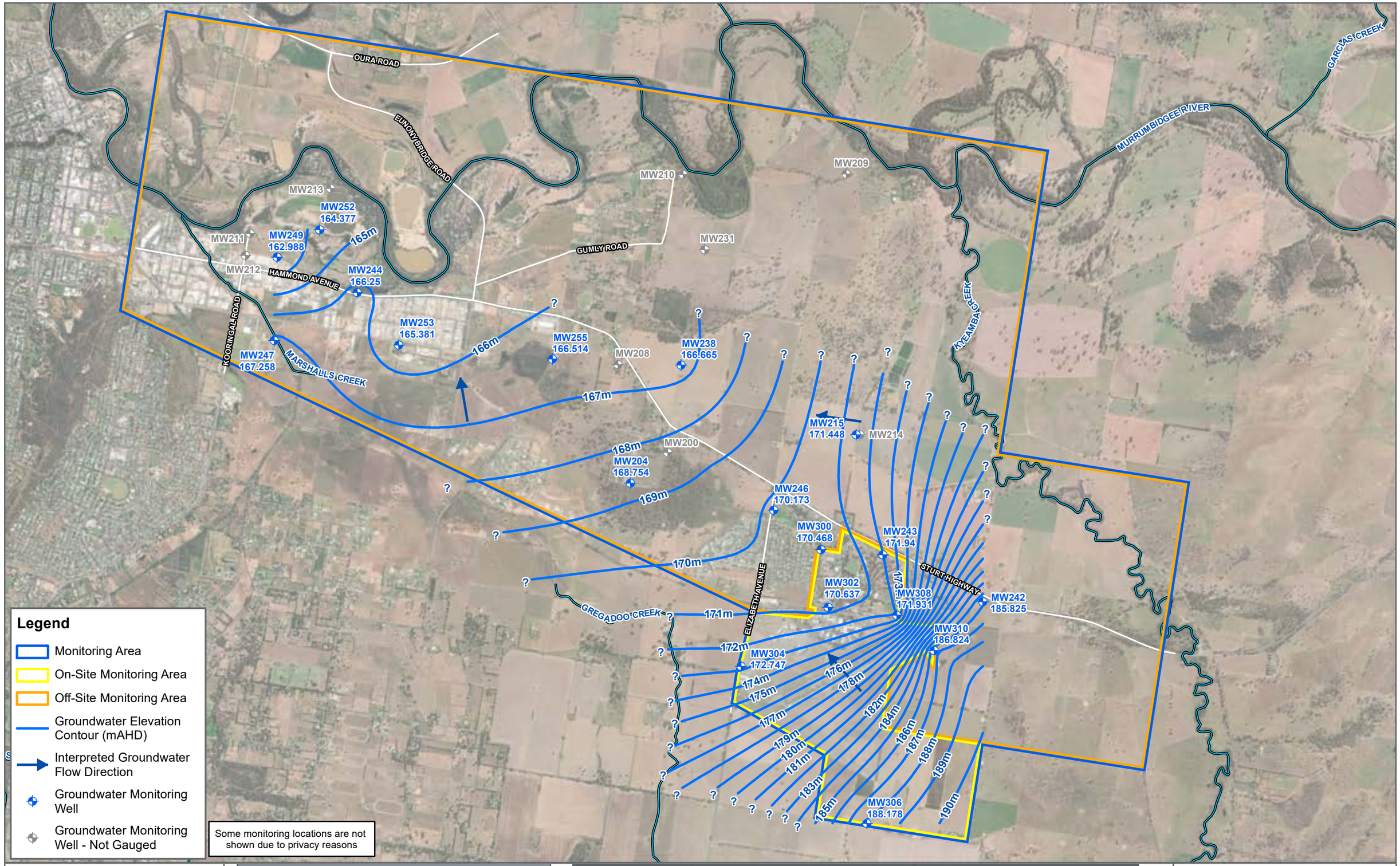

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Groundwater Elevation Contour (mAHD)
- Interpreted Groundwater Flow Direction
- Groundwater Monitoring Well
- Groundwater Monitoring Well - Not Gauged

Some monitoring locations are not shown due to privacy reasons

FIGURE 5D

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours – Lachlan Deep Aquifer (E4)

INTERPRETIVE MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno – Stantec

Map Produced by Cardno now Stantec
Date: 2024-02-16 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0138-GWContours_Lachlan_WW.mxd 04
Aerial Imagery Supplied by Metromap

OURA ROAD
EUNONY/ERIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK

MW213
MW252 163.809
MW211
MW250 164.377
MW212
MW244 166.394
MW254 166.33
MW248 167.711
MW256 166.878
MW210
MW209
MW231
MW238
MW200
MW204 167.769
MW246 170.263
MW214
MW215
MW301
MW243 171.84
MW303
MW309
MW242 185.77
MW241
MW310
MW304 172.747
MW306 187.208

165m
166m
167m
168m
169m
170m
171m
172m
173m
174m
175m
176m
177m
178m
179m
180m
181m
182m
183m
184m
185m
186m
188m

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Groundwater Flow Direction
- Groundwater Elevation Contour (mAHD)
- Groundwater Monitoring Well - Gauged
- Groundwater Monitoring Well - Not Gauged
- Groundwater Monitoring Well – Dry

Some monitoring locations are not shown due to privacy reasons

FIGURE 5E

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Deep Aquifer (E5)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2022-07-06 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0225-GWContoursDA_LachlanE5_WW.mxd 03
Aerial Imagery Supplied by Metromap

OURA ROAD
ELLIOTT WAY
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK
GREGADOO CREEK
ELWOOD AVENUE
STURT HIGHWAY

MW251 164.882
MW249 162.236
MW245 166.44
MW253 165.457
MW247 167.618
MW240 167.077
MW255 166.844
MW233
MW239
MW257 167.06
MW300
MW302 170.607
MW308 171.911
MW311
MW305
MW307

165m
166m
166m
167m
168m
169m
170m
171m
?

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Groundwater Flow Direction
- Groundwater Elevation Contour (mAHD)
- Groundwater Monitoring Well - Not Gauged
- Groundwater Monitoring Well - Gauged
- Groundwater Monitoring Well – Dry

FIGURE 5F

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Shallow Aquifer (E5)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2022-7 n7-06 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0224-GWContoursSA_CowraE5_WW.mxd 02
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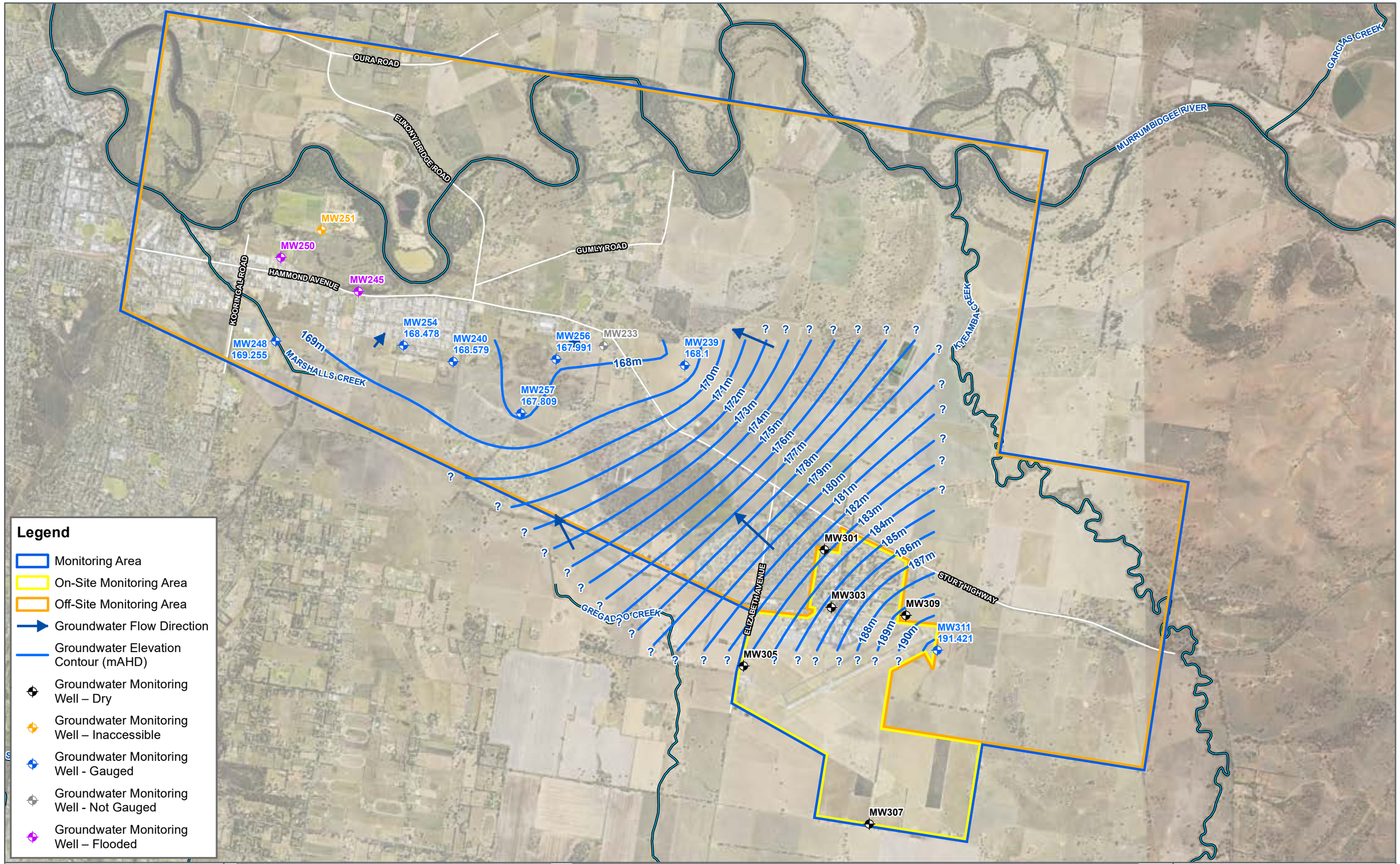

FIGURE 5G

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours Without Flood Impacted Wells - Cowra Aquifer (E6)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-1 n1-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0264-GWContoursSA_CowraE6_WW.mxd 01
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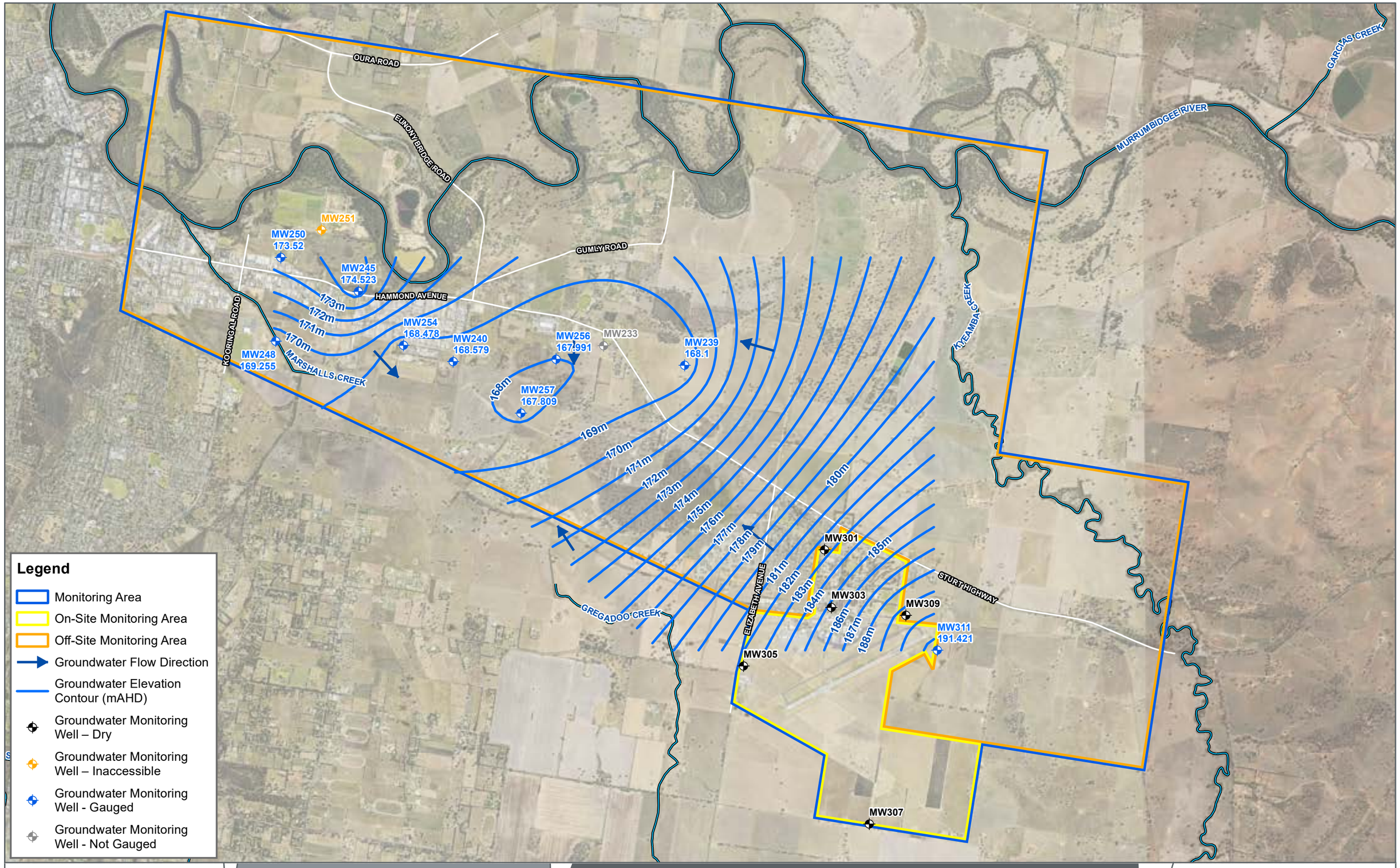

FIGURE 5H

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Cowra Aquifer (November, 2022)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-1 n1-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
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Aerial Imagery Supplied by Metromap

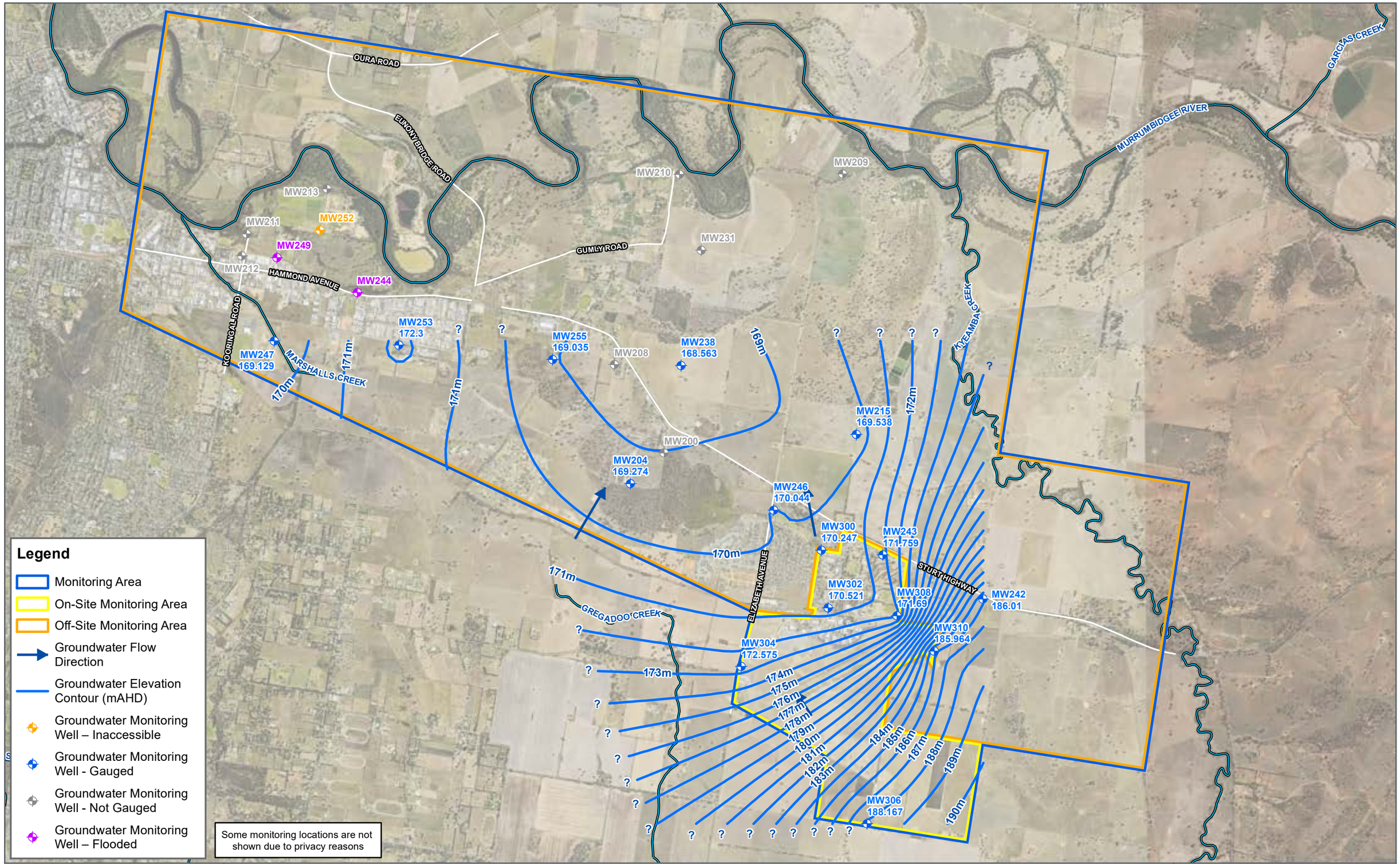

FIGURE 5I

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours Without Flood Impacted Wells - Lachlan Aquifer (E6)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-01-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0266-GWContoursDA_LachlanE6_WW.mxd 03
Aerial Imagery Supplied by Metromap

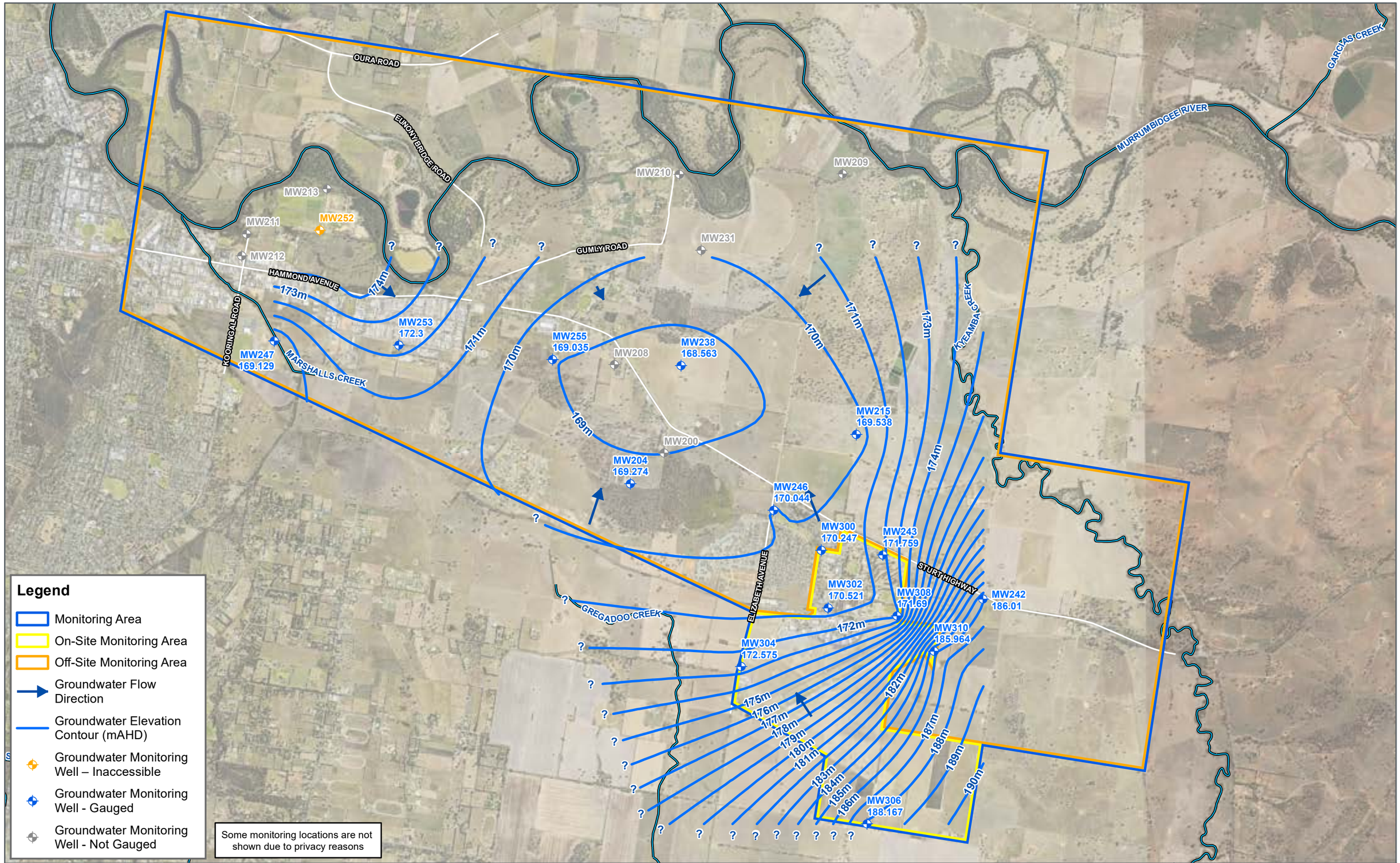

FIGURE 5J

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours With Flood Impacted Wells- Lachlan Aquifer (E6)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2023-01-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0265-GWContoursDA_LachlanE6_WW.mxd 03
Aerial Imagery Supplied by Metromap

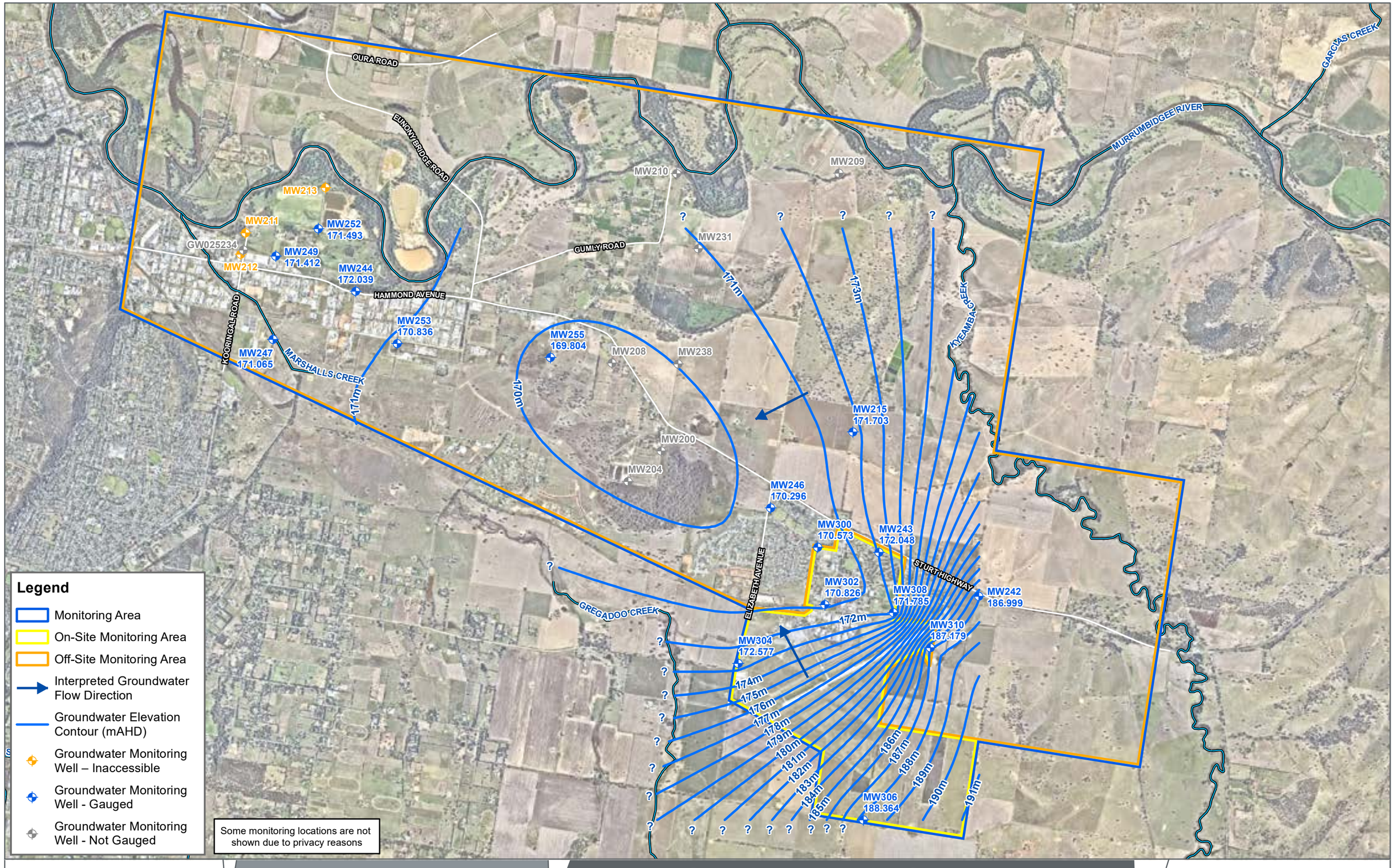

FIGURE 5K

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Lachlan Aquifer (E7)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2023-05-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0332-GWContoursDA_LachlanE7_WW.mxd 02
Aerial Imagery Supplied by Nearmap

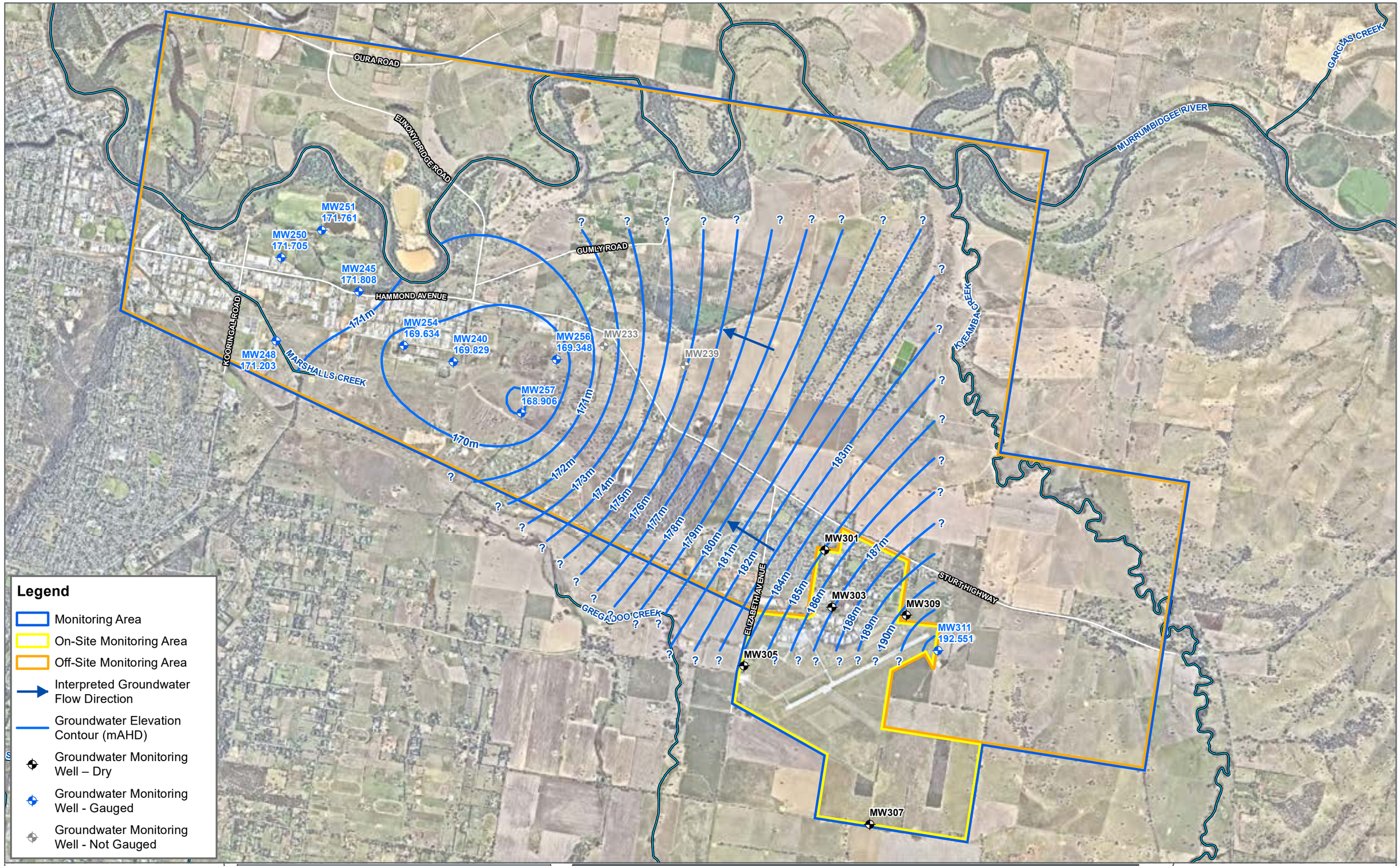

FIGURE 5L

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Cowra Aquifer (E7)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2023-05-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0331-GWContoursSA_CowraE7_WW.mxd 02
Aerial Imagery Supplied by Nearmap

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK

MW251 167.594
MW250 167.656
MW245 169.506
MW259 171.344
MW248 171.334
MW254 169.379
MW240 169.955
MW256 169.808
MW233
MW239 169.495
MW257 169.62
MW301
MW303
MW309
MW311
MW305
MW307 202.386

168m
169m
170m
171m
172m
173m
174m
175m
176m
177m
178m
179m
180m
181m
182m
183m
184m
185m
186m
187m
189m
190m
191m
192m

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Interpreted Groundwater Flow Direction
- Groundwater Elevation Contour (mAHD)
- Groundwater Monitoring Well – Dry
- Groundwater Monitoring Well - Gauged
- Groundwater Monitoring Well - Not Gauged

Some monitoring locations are not shown due to privacy reasons

FIGURE 5M

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Cowra Aquifer (E8)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2024-02-19 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0387-GWContoursSA_CowraE8_WW.mxd 01
Aerial Imagery Supplied by Nearmap (February, 2023)

OURA ROAD
EUNONY ERIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
STURT HIGHWAY
ELIZABETH AVENUE
GREGADOO CREEK
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK

MW213
MW252 167.357
MW211 GW025234
MW249 166.098
MW212
MW244 169.49
MW258 170.057
MW253 169.521
MW247 171.251
MW255 169.788
MW210
MW231
MW238 169.34
MW209
MW215 171.923
MW200
MW204 169.923
MW246 170.577
MW300 171.231
MW243 172.236
MW242 186.978
MW302 170.808
MW308 188.455
MW310 171.831
MW304 171.097
MW306 172.717

168m
169m
170m
171m
172m
173m
174m
175m
176m
177m
178m
179m
180m
181m
182m
183m
184m
185m
186m
187m
188m
189m

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Interpreted Groundwater Flow Direction
- Groundwater Elevation Contour (mAHD)
- Groundwater Monitoring Well - Gauged
- Groundwater Monitoring Well - Not Gauged

Some monitoring locations are not shown due to privacy reasons

FIGURE 5N

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Lachlan Aquifer (E8)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2024-02-19 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0388-GWContoursDA_LachlanE8_WW.mxd 01
Aerial Imagery Supplied by Nearmap (February, 2023)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK

MW213
MW211
MW212
MW210
MW209
MW231
MW244
MW245
MW233
MW240
MW238
MW239
MW214
MW215
MW200
MW204
MW300
MW301
MW243
MW302
MW303
MW242
MW241
MW309
MW308
MW310
MW311
MW304
MW305
MW307
MW306

Legend

- Management Area
- On-Site Monitoring Area
- Off-Site Monitoring Area

Groundwater Monitoring Well Locations Sum of PFHxS and PFOS Results (Cowra Aquifer)

- Below LOR
- LOR to 0.07 µg/L
- 0.07 to 0.7 µg/L
- Not Sampled

Groundwater Monitoring Well Locations Sum of PFHxS and PFOS Results (Lachlan Aquifer)

- Below LOR
- LOR to 0.07 µg/L
- 0.07 to 0.7 µg/L
- 0.7 to 7 µg/L
- Not Sampled

Some monitoring locations are not shown due to privacy reasons

FIGURE 6A

1:40,000 Scale at A3

Metres

0 1,000 2,000

Sum of PFHxS & PFOS in Groundwater (2017-2018)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2022-02-22 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0139-SumOfPFHxS&PFOS_2017_2018_GW.mxd 02
Aerial Imagery Supplied by Metromap (April, 2021)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK

MW213
MW211
MW252
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MW212
MW250
MW245
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MW253
MW254
MW240
MW255
MW256
MW233
MW238
MW239
MW257
MW210
MW209
MW231
MW215
MW214
MW200
MW204
MW246
MW301
MW300
MW243
MW242
MW303
MW302
MW308
MW309
MW241
MW310
MW311
MW304
MW305
MW306
MW307

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area

Sum of PFHxS & PFOS in Groundwater - Cowra Aquifer

- Not Sampled
- Below LOR
- LOR to 0.07 µg/L
- 0.07 to 0.7 µg/L

Sum of PFHxS & PFOS in Groundwater - Lachlan Aquifer

- Not Sampled
- Below LOR
- LOR to 0.07 µg/L
- 0.07 to 0.7 µg/L
- 0.7 to 7 µg/L

Sum of PFHxS & PFOS in Groundwater - Wantabadgery Aquifer

- Below LOR

Some monitoring locations are not shown due to privacy reasons

FIGURE 6B

1:40,000 Scale at A3

Metres

0 1,000 2,000

Sum of PFHxS & PFOS in Groundwater (E1/E2, 2020)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-06-06 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0352-GW_PFAS_Summary_AIR_2020_WW.mxd 01
Aerial Imagery Supplied by Nearmap (February, 2023)

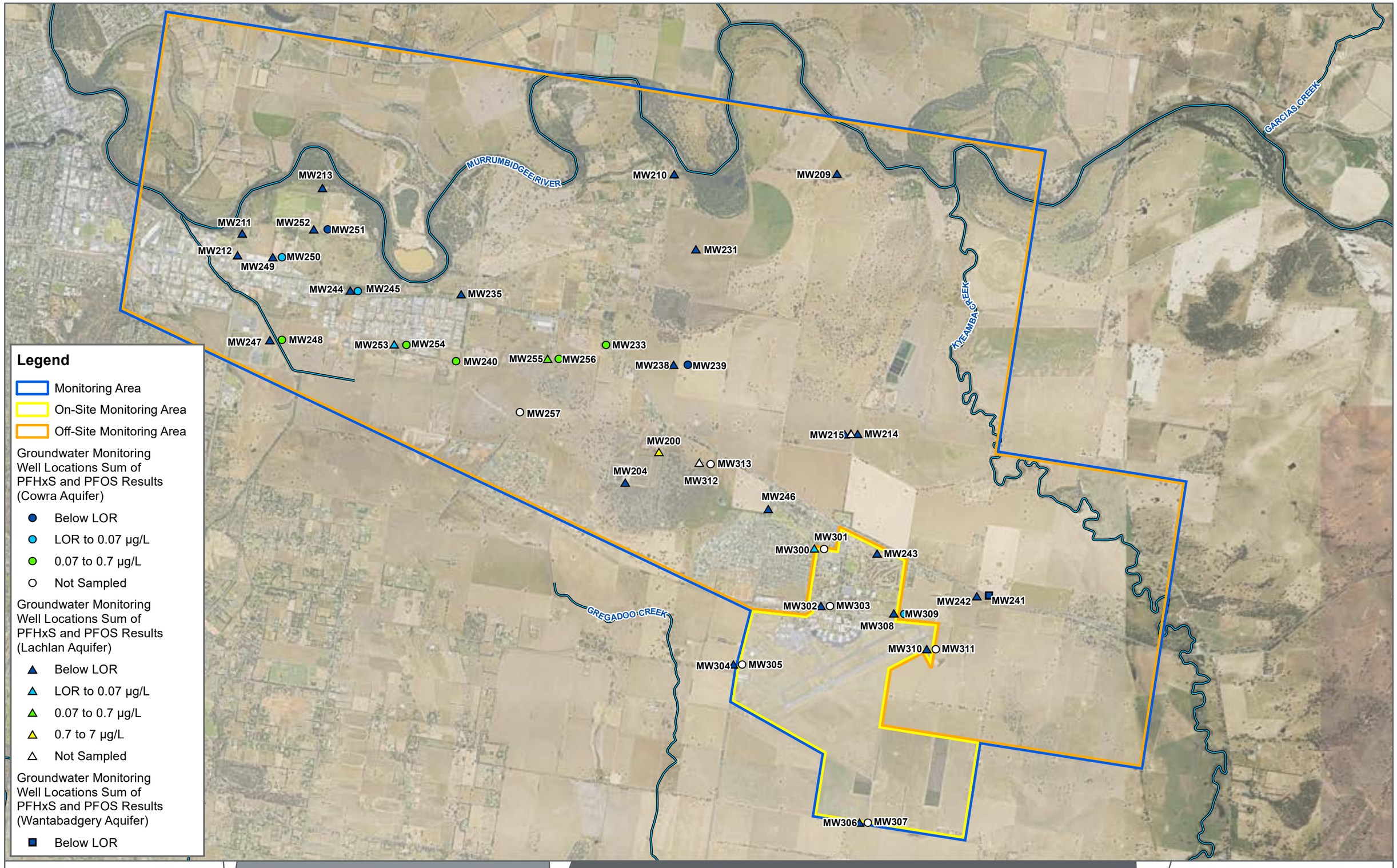


FIGURE 6C

1:40,000 Scale at A3

Metres

0 1,000 2,000

Sum of PFHxS & PFOS in Groundwater (April 2021)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2024-03-28 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0200-GW_PFAS_April21_WW.mxd 03
Aerial Imagery Supplied by Metromap (November, 2020)

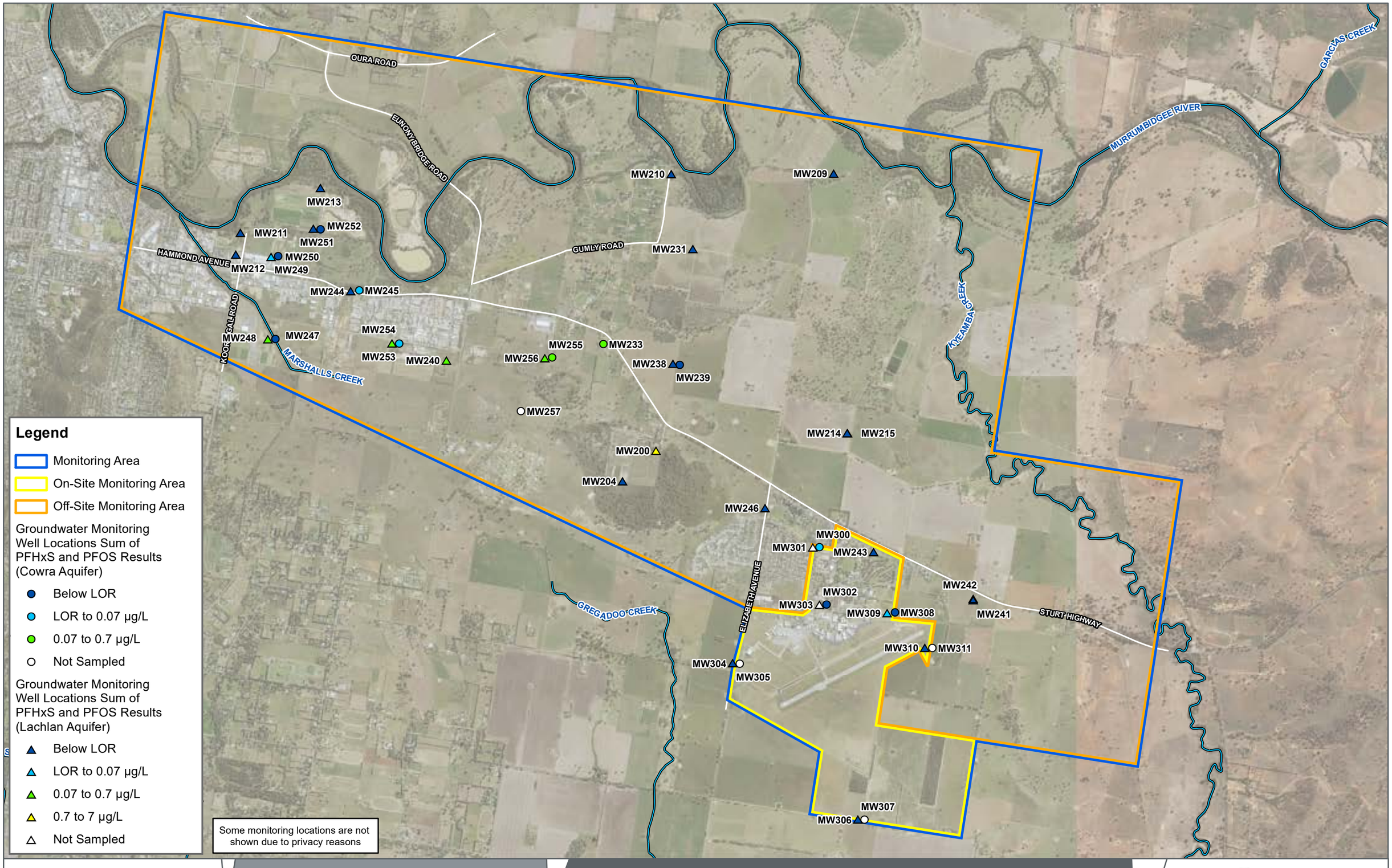


FIGURE 6C

1:40,000 Scale at A3

Metres

0 1,000 2,000

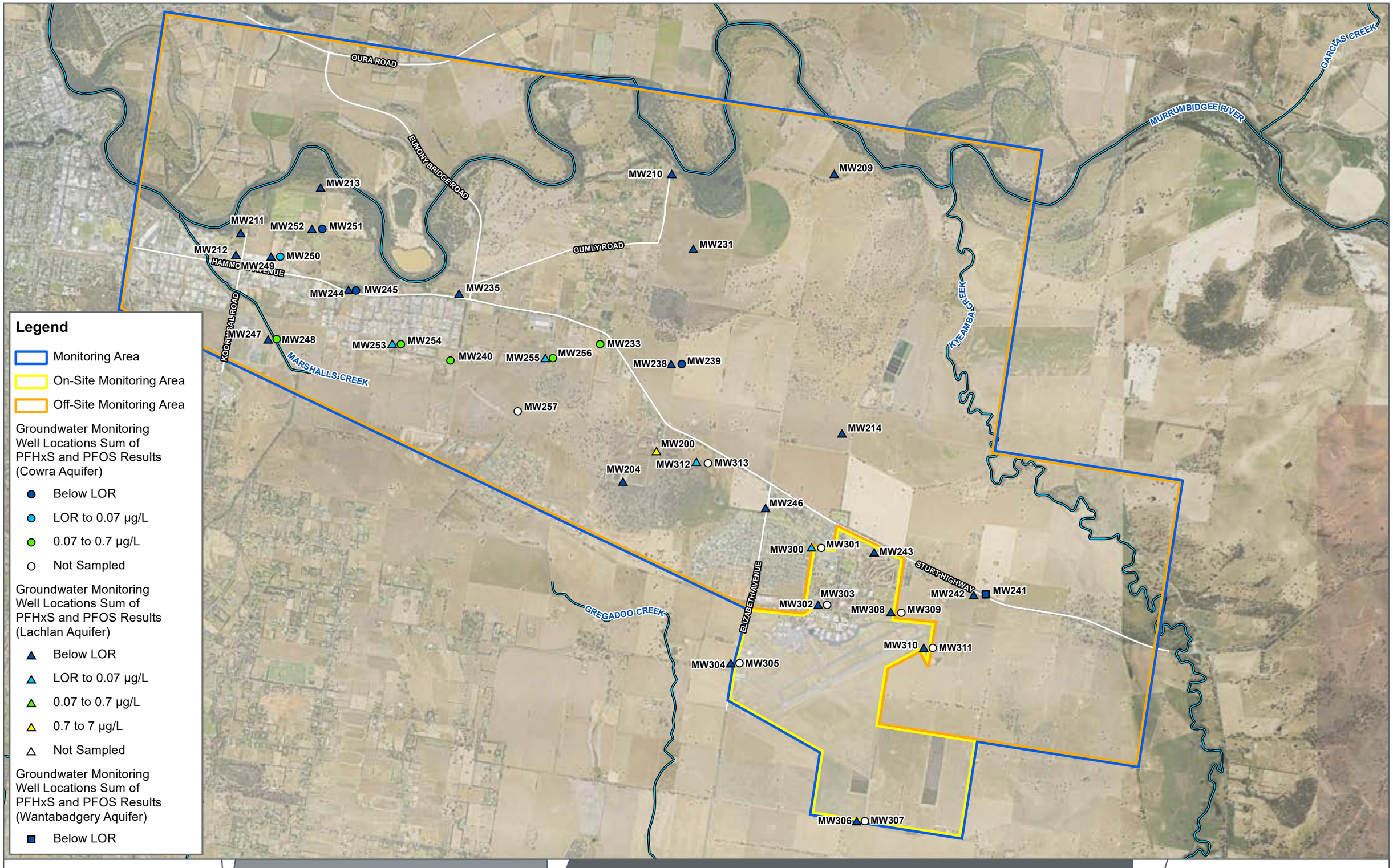
Sum of PFHxS & PFOS in Groundwater (E3, April 2021)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2022-03-10 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0200-GW_PFAS_April21_WW.mxd 01
Aerial Imagery Supplied by Metromap (November, 2020)



Legend

Monitoring Area

On-Site Monitoring Area

Off-Site Monitoring Area

Groundwater Monitoring Well Locations Sum of PFHxS and PFOS Results (Cowra Aquifer)

- Below LOR
- LOR to 0.07 µg/L
- 0.07 to 0.7 µg/L
- Not Sampled

Groundwater Monitoring Well Locations Sum of PFHxS and PFOS Results (Lachlan Aquifer)

- Below LOR
- LOR to 0.07 µg/L
- 0.07 to 0.7 µg/L
- 0.7 to 7 µg/L
- Not Sampled

Groundwater Monitoring Well Locations Sum of PFHxS and PFOS Results (Wantabadgery Aquifer)

- Below LOR

FIGURE 6D

1:40,000 Scale at A3

0 1,000 2,000

Sum of PFHxS & PFOS in Groundwater (October 2021)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2024-03-28 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0201-GW_PFAS_Oct21_WW.mxd 03
Aerial Imagery Supplied by Metromap (November, 2020)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK

MW213
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MW300
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MW242
MW241
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MW311
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MW305
MW306
MW307

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area

Sum of PFHxS & PFOS in Groundwater - Cowra Aquifer
- Not Sampled
- Below LOR
- LOR to 0.07 µg/L
- 0.07 to 0.7 µg/L

Sum of PFHxS & PFOS in Groundwater - Lachlan Aquifer
- Not Sampled
- Below LOR
- 0.07 to 0.7 µg/L
- 0.7 to 7 µg/L

Sum of PFHxS & PFOS in Groundwater - Wantabadgery Aquifer
- Below LOR

Some monitoring locations are not shown due to privacy reasons

FIGURE 6E

1:40,000 Scale at A3

Metres

0 1,000 2,000

Sum of PFHxS & PFOS in Groundwater (E5 - May, 2022)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-06-06 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0354-GW_PFAS_Summary_AIR_May2022_WW.mxd 01
Aerial Imagery Supplied by Nearmap (February, 2023)

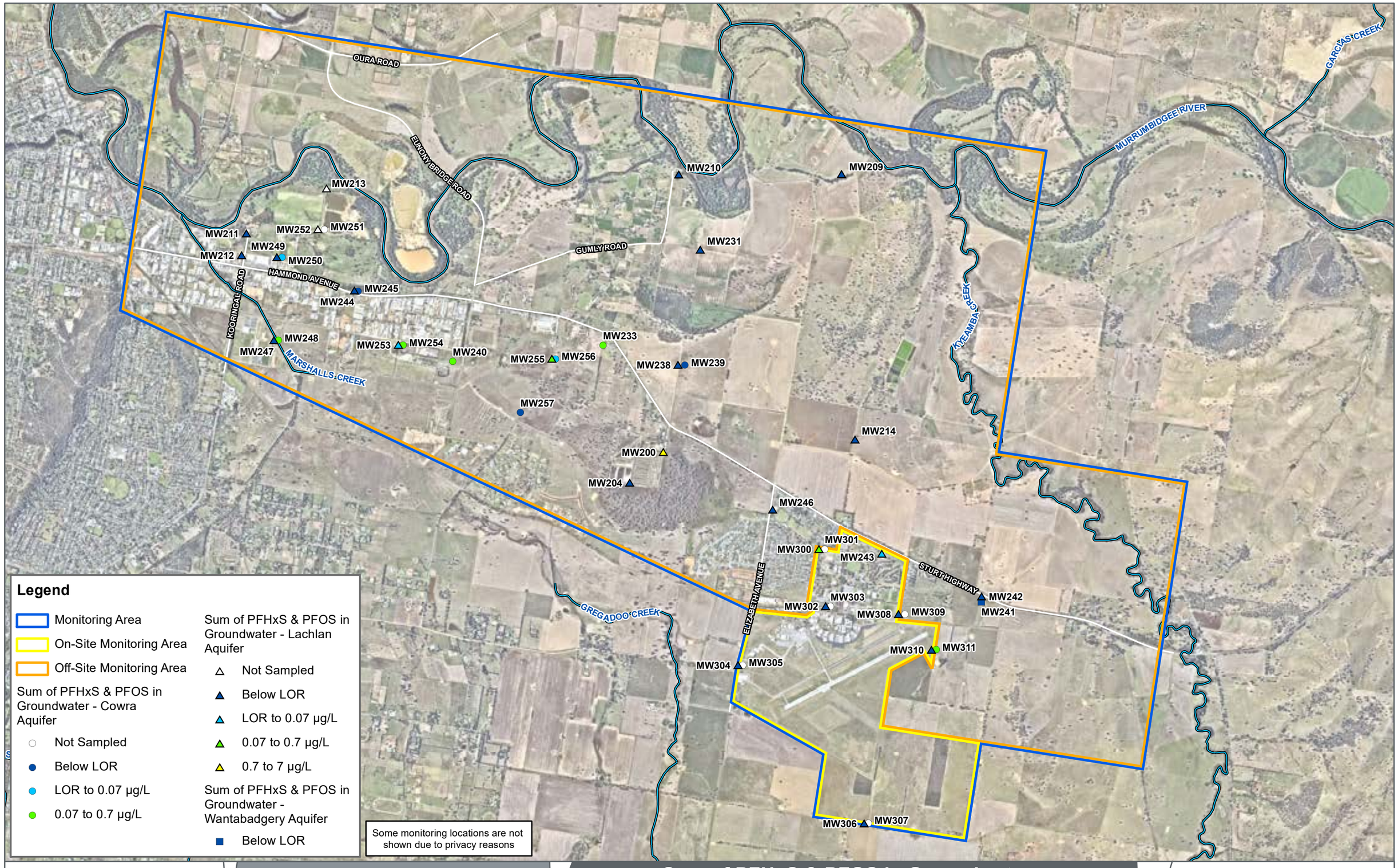


FIGURE 6F

1:40,000 Scale at A3

Metres

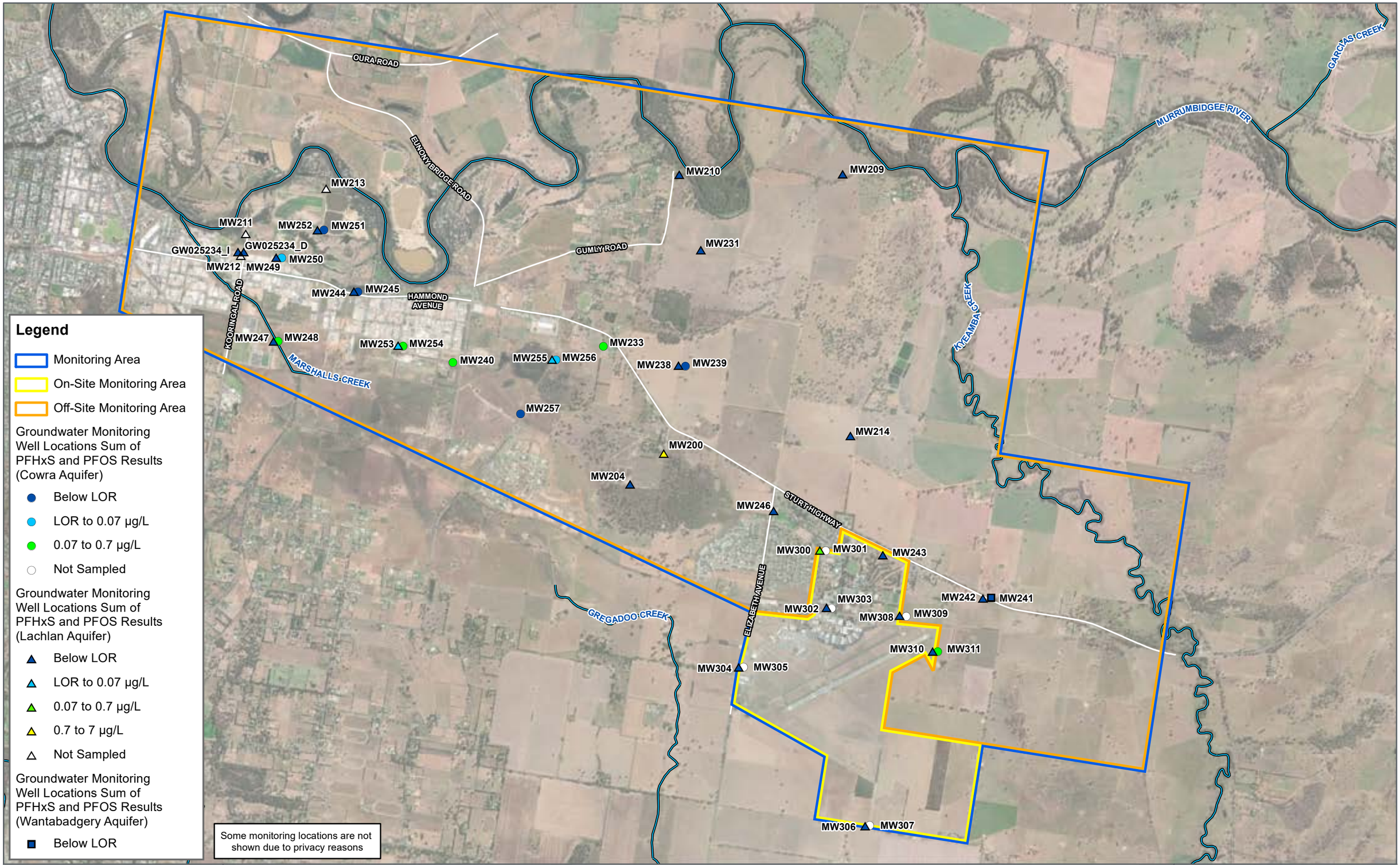
0 1,000 2,000

Sum of PFHxS & PFOS in Groundwater (E5 - November, 2022)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-06-06 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0355-GW_PFAS_Summary_AIR_Nov2022_WW.mxd 01
Aerial Imagery Supplied by Nearmap (February, 2023)



Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area

Groundwater Monitoring Well Locations Sum of PFHxS and PFOS Results (Cowra Aquifer)

- Below LOR
- LOR to 0.07 µg/L
- 0.07 to 0.7 µg/L
- Not Sampled

Groundwater Monitoring Well Locations Sum of PFHxS and PFOS Results (Lachlan Aquifer)

- Below LOR
- LOR to 0.07 µg/L
- 0.07 to 0.7 µg/L
- 0.7 to 7 µg/L
- Not Sampled

Groundwater Monitoring Well Locations Sum of PFHxS and PFOS Results (Wantabadgery Aquifer)

- Below LOR

FIGURE 6G

1:40,000 Scale at A3

Metres

0 1,000 2,000

Sum of PFHxS & PFOS in Groundwater (E7, April 2023)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno – Stantec

Map Produced by Cardno now Stantec
Date: 2024-02-08 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0419-SumOfPFHxS&PFOS_E7_GW.mxd 01
Aerial Imagery Supplied by Metromap

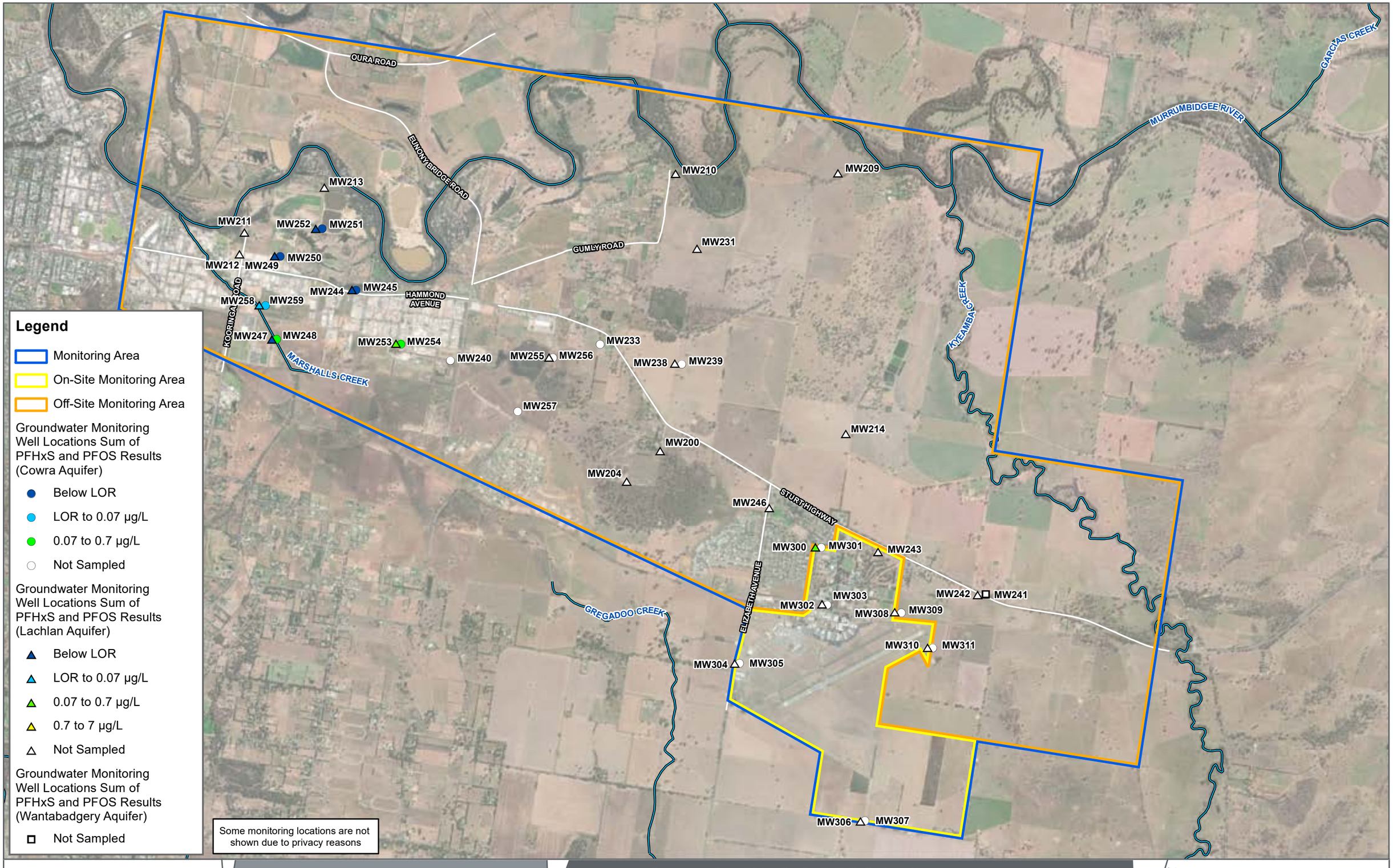


FIGURE 6H

1:40,000 Scale at A3

Metres

0 1,000 2,000

Sum of PFHxS & PFOS in Groundwater (August 2023 Resampling Event)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2024-02-08 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0420-SumOfPFHxS&PFOS_RE_GW.mxd 01
Aerial Imagery Supplied by Metromap

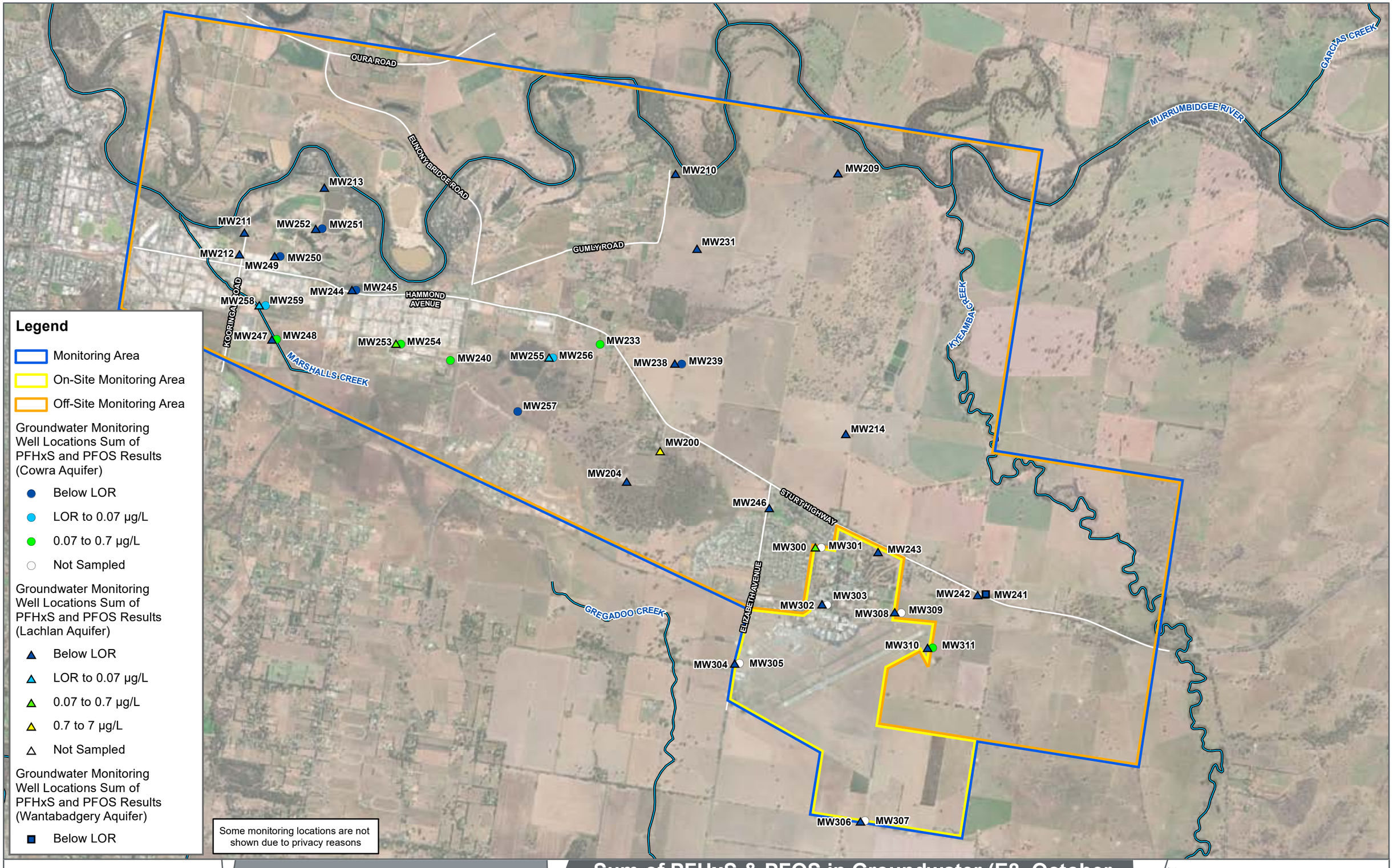


FIGURE 6I

1:40,000 Scale at A3

Metres

0 1,000 2,000

Sum of PFHxS & PFOS in Groundwater (E8, October 2023)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno – Stantec

Map Produced by Cardno now Stantec
Date: 2024-02-08 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0421-SumOfPFHxS&PFOS_E8_GW.mxd 01
Aerial Imagery Supplied by Metromap

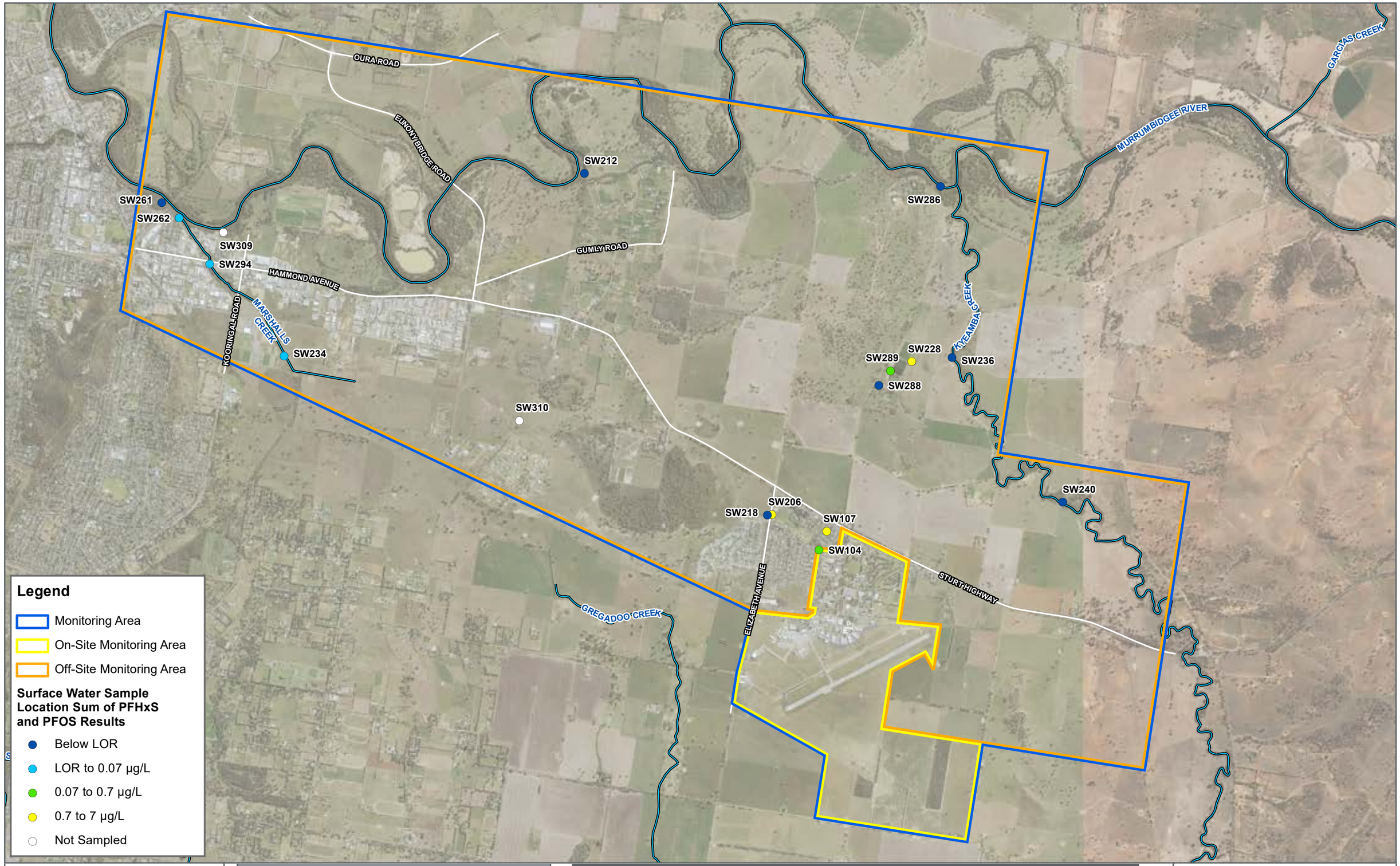


FIGURE 7A

1:40,000 Scale at A3

Metres

0 800 1,600

Sum of PFHxS & PFOS in Surface Water (2017-2018)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2022-02-22 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0142-SumOfPFHxS&PFOS_2017_2018_SW.mxd 02
Aerial Imagery Supplied by Metromap (April, 2021)

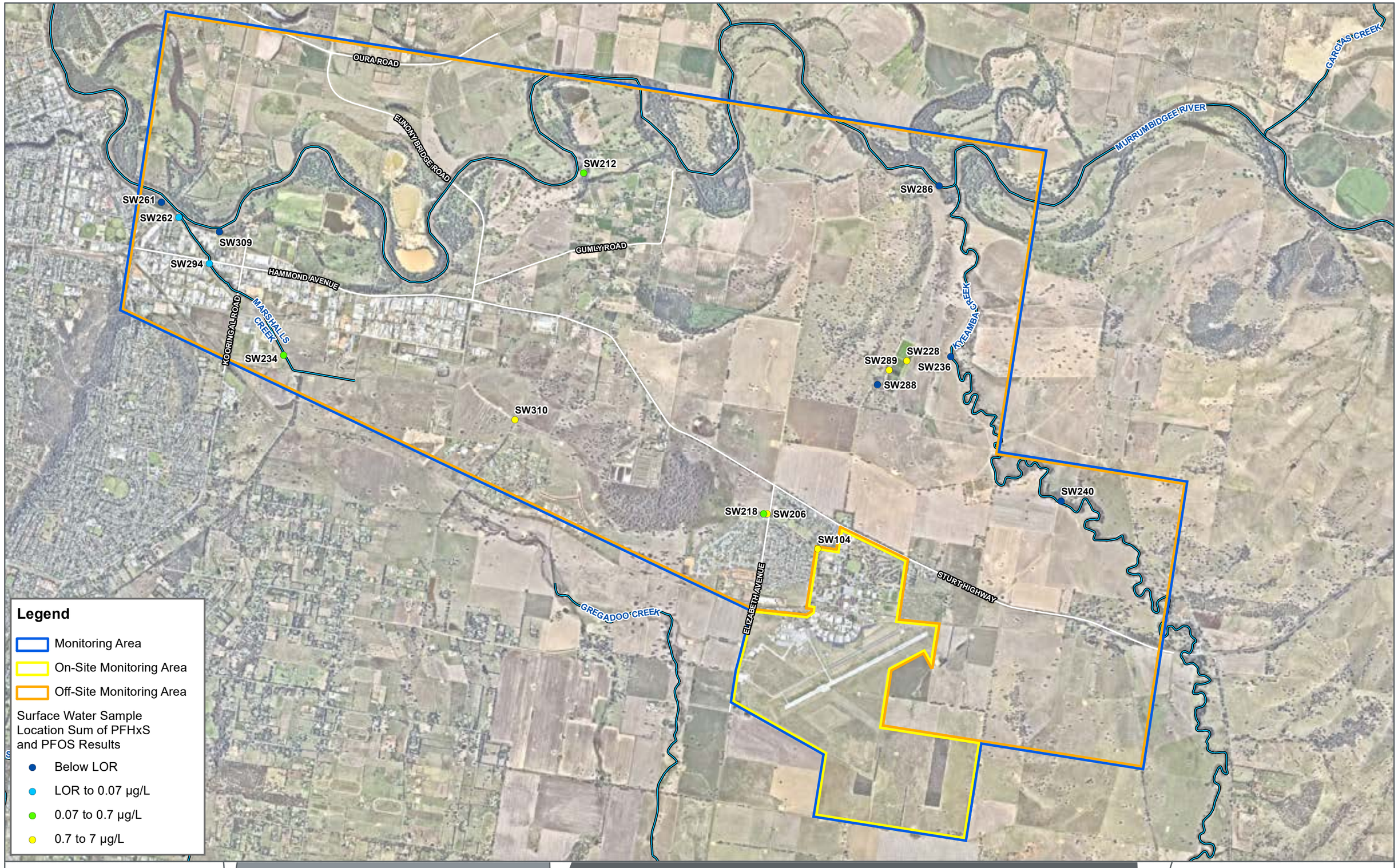


FIGURE 7B

1:40,000 Scale at A3

Metres

0 800 1,600

Sum of PFHxS & PFOS in Surface Water (2020)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-06-07 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0356-SW_PFAS_Summary_AIR_2020_WW.mxd 01
Aerial Imagery Supplied by Nearmap (February, 2023)

OURA ROAD

EUNONY BRIDGE ROAD

SW212

SW286

MURRUMBIDGEE RIVER

GARCIAS CREEK

SW261

SW262

SW309

SW294

HAMMOND AVENUE

GUMLY ROAD

KOORINGAL ROAD

MARSHALLS CREEK

SW234

KYEAMBA CREEK

SW289

SW228

SW236

SW288

SW310

STURT HIGHWAY

SW240

MW218

MW206

SW104

ELIZABETH AVENUE

GREGADOO CREEK

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Below LOR
- LOR to 0.07 µg/L
- 0.07 to 0.7 µg/L
- 0.7 to 7 µg/L

FIGURE 7C

1:40,000 Scale at A3

Metres

0 800 1,600

Sum of PFHxS & PFOS in Surface Water (E3)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2022-03-11 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0202-SW_PFAS_April21_WW.mxd 01
Aerial Imagery Supplied by Nearmap (April, 2021)

OURA ROAD

EUNONY BRIDGE ROAD

GUMLY ROAD

HAMMOND AVENUE

KOORINGAL ROAD

MARSHALLS CREEK

STURT HIGHWAY

ELIZABETH AVENUE

GREGADOO CREEK

KYEAMBA CREEK

MURRUMBIDGEE RIVER

GARCIAS CREEK

SW261

SW262

SW309

SW294

SW234

SW212

SW286

SW289

SW228

SW236

SW288

SW310

SW240

MW218

MW206

SW104

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Below LOR
- LOR to 0.07 µg/L
- 0.07 to 0.7 µg/L
- 0.7 to 7 µg/L

FIGURE 7D

1:40,000 Scale at A3

Metres

0 800 1,600

Sum of PFHxS & PFOS in Surface Water (E4)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2022-03-11 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0203-SW_PFAS_Oct21_WW.mxd 01
Aerial Imagery Supplied by Nearmap (April, 2021)

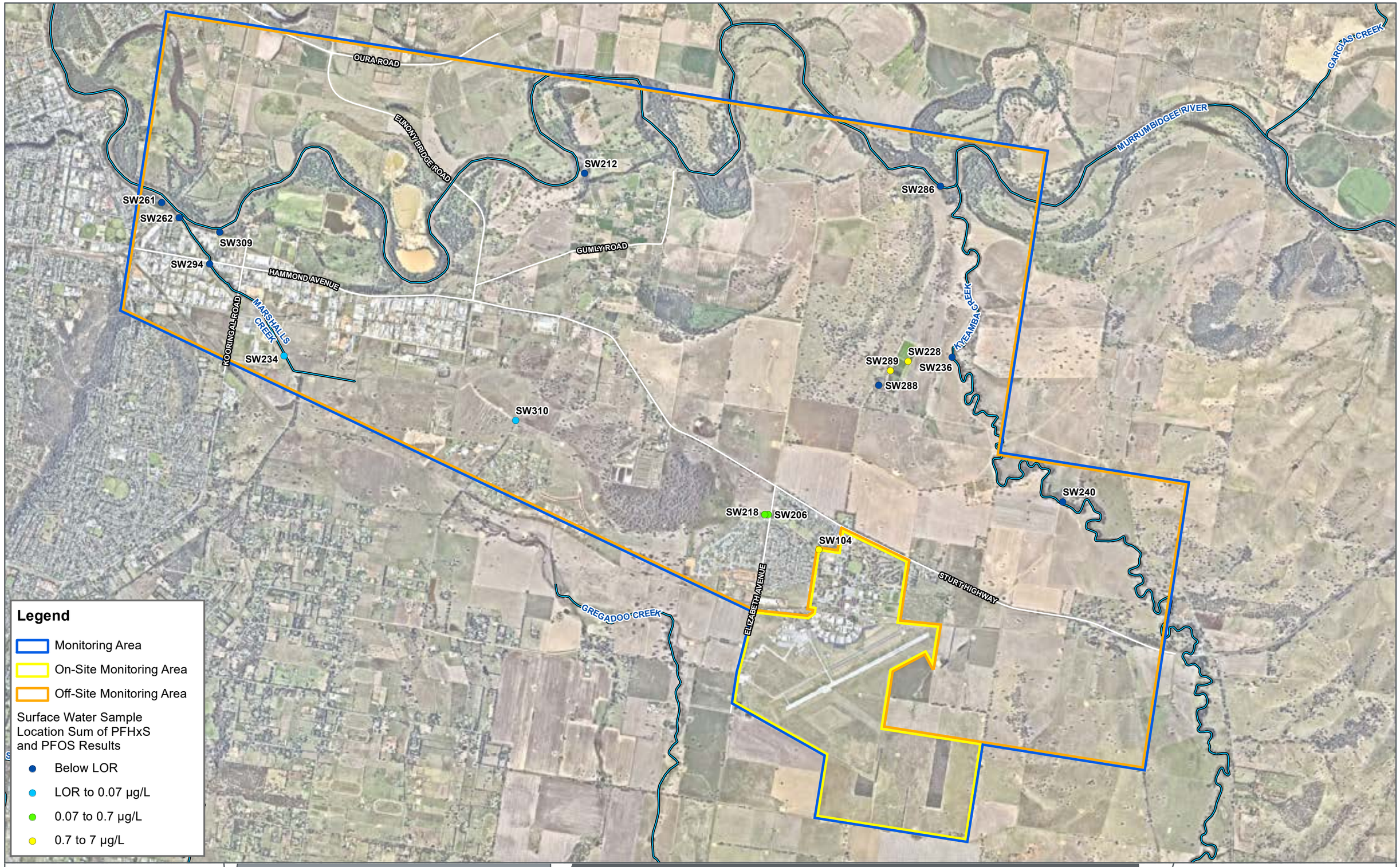


FIGURE 7E

1:40,000 Scale at A3

Metres

0 800 1,600

Sum of PFHxS & PFOS in Surface Water (E5)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-06-07 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0358-SW_PFAS_Summary_AIR_May2022_WW.mxd 01
Aerial Imagery Supplied by Nearmap (February, 2023)

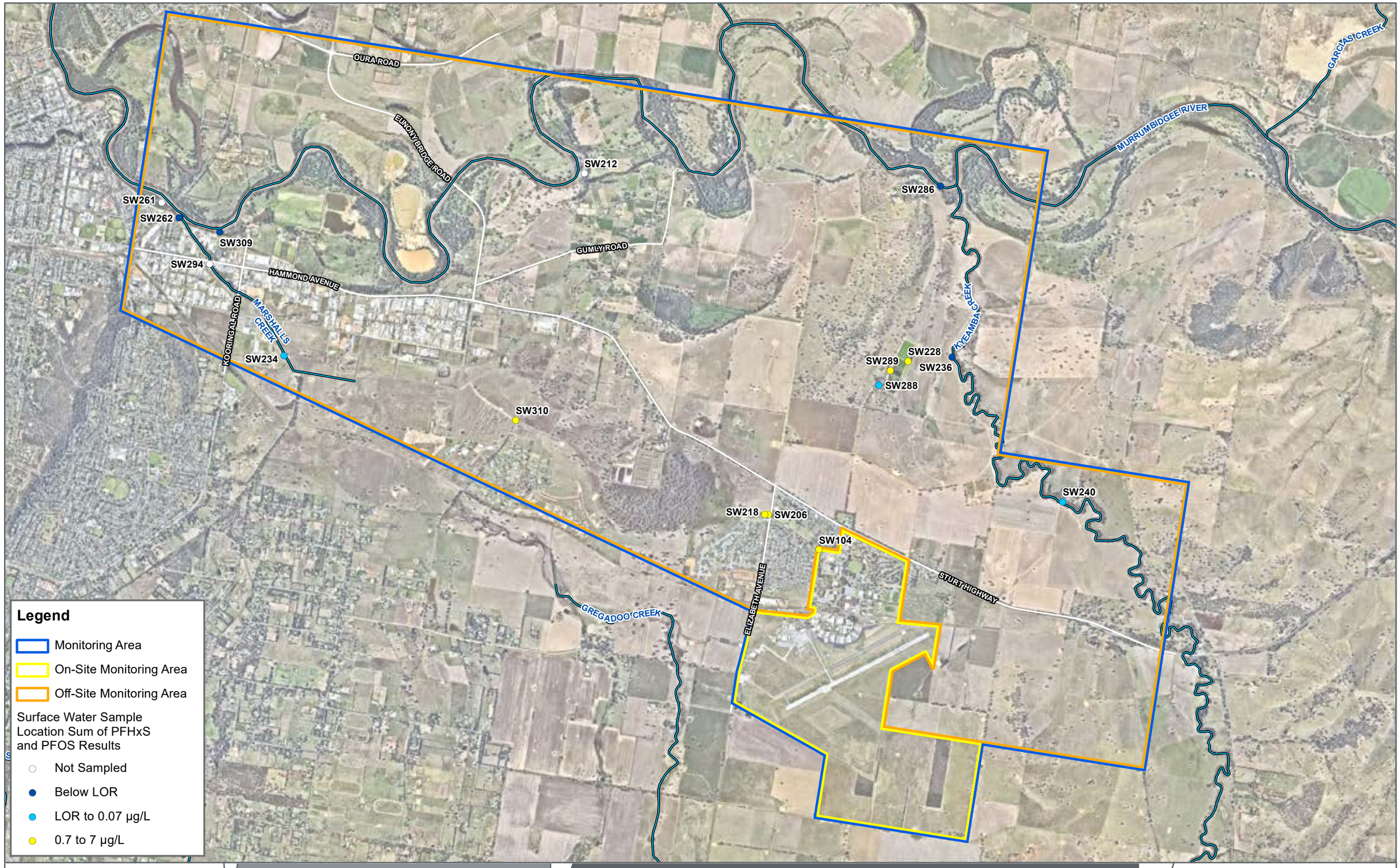


FIGURE 7F

1:40,000 Scale at A3

Metres

0 800 1,600

Sum of PFHxS & PFOS in Surface Water (E6)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-06-07 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0359-SW_PFAS_Summary_AIR_Nov2022_WW.mxd 01
Aerial Imagery Supplied by Nearmap (February, 2023)

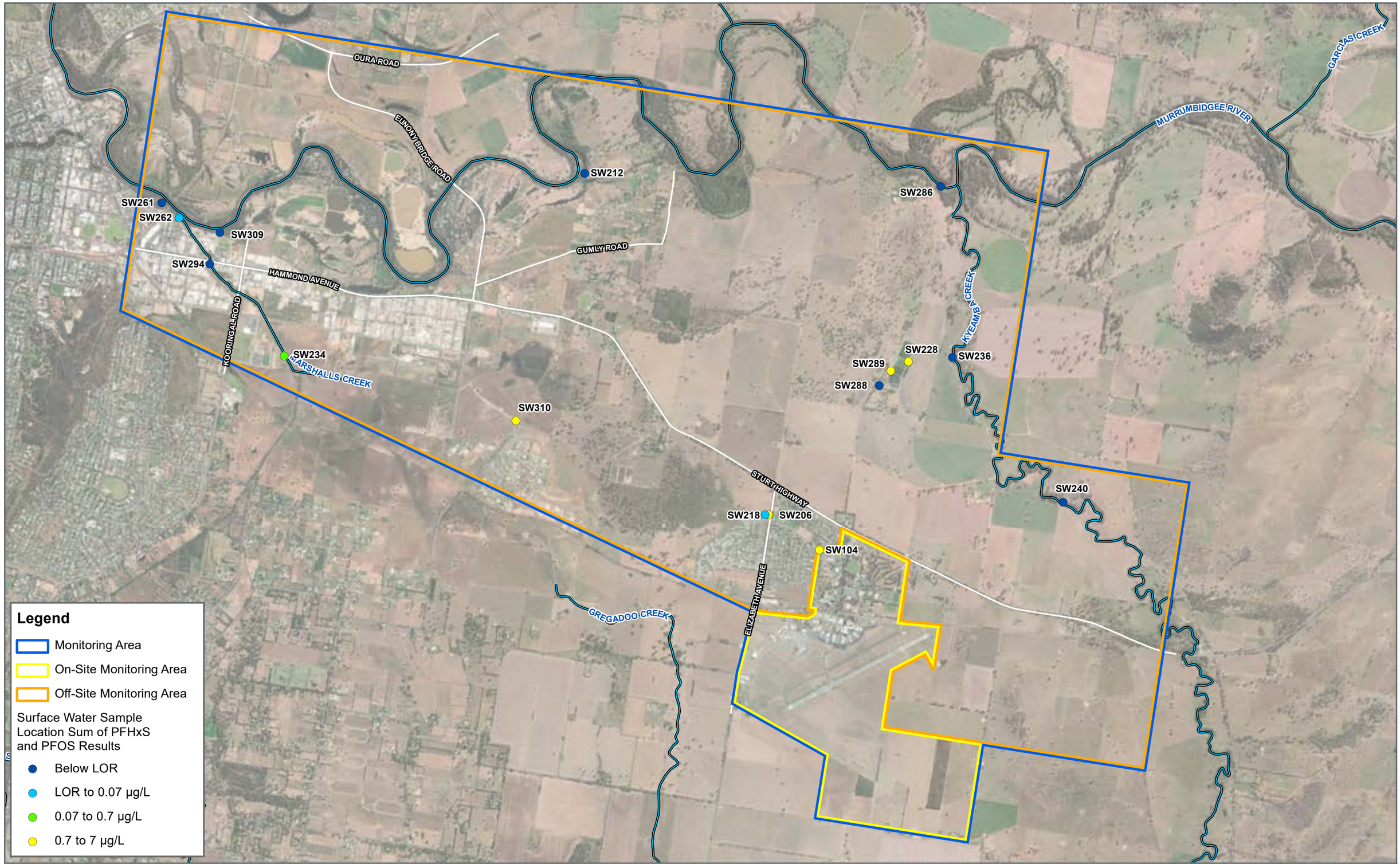


FIGURE 7G

1:40,000 Scale at A3

Metres

0 800 1,600

Sum of PFHxS & PFOS in Surface Water (E7)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2024-02-08 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0422-SumOfPFHxS&PFOS_E7_SW.mxd 01
Aerial Imagery Supplied by Metromap

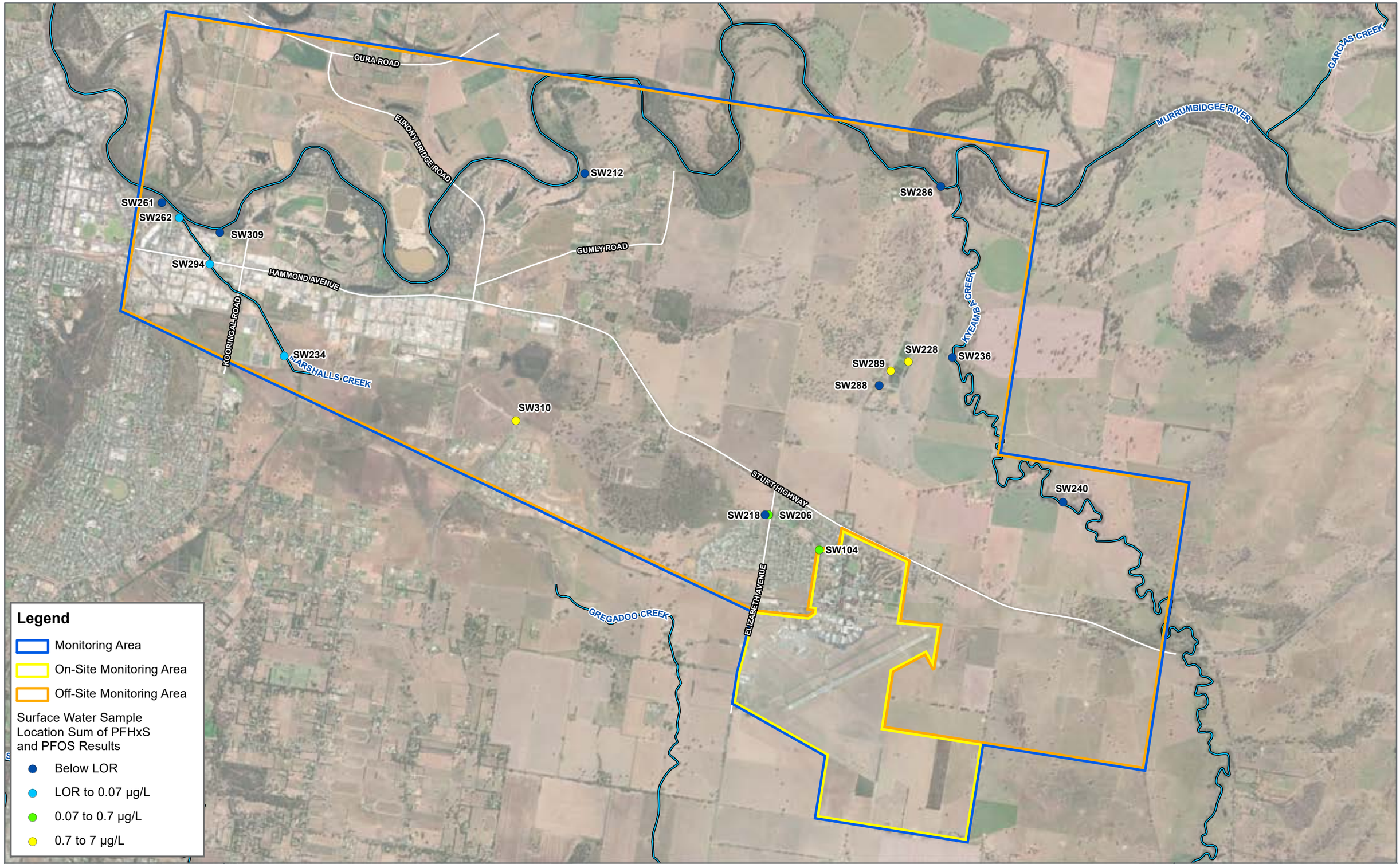


FIGURE 7H

1:40,000 Scale at A3

Metres

0 800 1,600

Sum of PFHxS & PFOS in Surface Water (E8)

ONGOING MONITORING REPORT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno – Stantec

Map Produced by Cardno now Stantec
Date: 2024-02-08 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0423-SumOfPFHxS&PFOS_E8_SW.mxd 01
Aerial Imagery Supplied by Metromap

APPENDIX

B

DATA ASSESSMENT TABLES

Cardno

now

Stantec

Event	Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Hydrasleeve Deployment Depth (mBTOC)[1]	Temp (C°)	DO (mg/L)	EC (uS/cm)	TDS (calculated mg/L)	pH	Eh (mV)	Aquifer
E7	GW025234_D	Off-site	535713.39	6113522.88	19-04-23	75.94	181.707	7.57	174.137	Cloudy	Low	Black suspended solids throughout hydrasleeve. Excluded from sample matrix as much as practicable. Strong sulphur smell.	73.9	19	0.57	267.48	173.86	6.52	-176.6	Lachlan
E7	GW025234_I	Off-site	535713.39	6113522.88	19-04-23	56.2	181.215	7.579	173.636	Cloudy	Low	Strong sulphur odour.	53.21	19.4	1.78	529.57	344.22	6.3	-85.1	Lachlan
E3	MW200	Off-site	540489.09	6111231.75	23-04-21	-	183.137	-	-	-	-	Sample collected from aquaculture pond fill point.	N/A	18.3	4.41	1524.00	990.60	7.06	-23.2	Lachlan
E4	MW200	Off-site	540489.09	6111231.75	21-10-21	-	183.137	-	-	-	-	Sample collected from aquaculture pond fill point.	N/A	17.8	2.45	1184.00	769.60	6.9	124.4	Lachlan
E5	MW200	Off-site	540489.09	6111231.75	03-05-22	-	183.137	-	-	Clear	-	No well present, sample taken from aqua pond fill point.	N/A	18.1	1.27	1360.00	884.00	6.9	-5.4	Lachlan
E6	MW200	Off-site	540489.09	6111231.75	08-11-22	-	183.137	-	-	Clear	Low	No well present, sample taken from aqua pond fill point.	N/A	19.1	3.72	1210.00	786.50	6.6	92.6	Lachlan
E7	MW200	Off-site	540489.09	6111231.75	13-04-23	-	183.137	-	-	Clear	No	No well present, sample taken from aqua pond fill point. Purge for 5 mins then sample. High flow output. No odour.	N/A	18.7	2.31	1187.55	771.91	6.9	37.4	Lachlan
E8	MW200	Off-site	540489.09	6111231.75	12-10-23	-	183.137	-	-	Clear	No	No well present, sample taken from aqua pond fill point. Purge for 5 mins then sample. High flow output. No odour.	N/A	16.5	2.22	1045.00	679.25	6.7	16.6	Lachlan
E3	MW204	Off-site	540107.16	6110883.61	23-04-21	43.12	184.119	15.385	168.734	-	-	-	36.9	19.5	0.32	486.90	316.49	7.4	-174.6	Lachlan
E4	MW204	Off-site	540107.16	6110883.61	21-10-21	42.1	184.119	15.365	168.754	-	-	-	36.9	18.3	0.50	441.90	287.24	7.5	-134.5	Lachlan
E5	MW204	Off-site	540107.16	6110883.61	03-05-22	54	183.024	15.255	167.769	Clear	Low	Sleeve grey water, sulf odour with dark specs. Sediment at base black	36.9	19.5	0.73	485.00	315.25	7.3	-50	Lachlan
E6	MW204	Off-site	540107.16	6110883.61	08-11-22	36.4	183.024	14.845	168.179	Clear	Low	Black sediment in base of sleeve, no odour	36.9	18.4	0.81	414.50	269.43	7.0	-69.9	Lachlan
E7	MW204	Off-site	540107.16	6110883.61	15-04-23	46.95	183.024	14.544	168.48	Clear	High	High volume of black suspended soilds in base of hydrasleeve and throughout water. Excluded from sample matrix as much as practicable.	36.9	20.4	0.93	266.16	173.01	7.3	-75.2	Lachlan
E8	MW204	Off-site	540107.16	6110883.61	12-10-23	16.65	183.024	14.196	168.828	Very cloudy, grey	High	High volume of black suspended solids, possible manganese formation? Some orange suspended solids.	36.9	13.1	0.08	362.10	235.37	7.5	-146	Lachlan
E3	MW208	Off-site	539924.30	6112236.46	23-04-21	-	-	-	-	-	-	Not sampled. No access.	-	-	-	-	-	-	-	Lachlan
E4	MW208	Off-site	539924.30	6112236.46	21-10-21	-	-	-	-	-	-	Not sampled. No access.	-	-	-	-	-	-	-	Lachlan
E5	MW208	Off-site	539924.30	6112236.46	-	-	-	-	-	-	-	Not sampled - no access	-	-	-	-	-	-	-	Lachlan
E6	MW208	Off-site	539924.30	6112236.46	-	-	-	-	-	-	-	Not sampled - no access	-	-	-	-	-	-	-	Lachlan
E3	MW209	Off-site	542509.04	6114393.77	22-04-21	100	-	23.45	-	-	-	Well locked in pump shed, sample taken from pipe attached to bore pump.	N/A	17.4	0.75	333.20	216.58	6.6	-6.5	Lachlan
E4	MW209	Off-site	542509.04	6114393.77	21-10-21	100	-	19.93	-	-	-	Well locked in pump shed, sample taken from pipe attached to bore pump.	N/A	20.7	1.55	329.70	214.31	6.8	-3	Lachlan
E5	MW209	Off-site	542521.77	6114403.23	03-05-22	-	-	-	-	-	-	Sampled from outflow pipe, well depth in excess of 100m, water clear, no odour, no particulates	N/A	20.5	0.61	196.00	127.40	6.5	-28	Lachlan
E6	MW209	Off-site	542521.77	6114403.23	09-11-22	-	-	16.733	-	Clear	Low	Sampled from outflow pipe, well depth in excess of 100m, water clear, no odour, no particulates	N/A	18.8	6.32	285.90	185.84	6.7	45.8	Lachlan
E7	MW209	Off-site	542521.77	6114403.23	18-04-23	-	-	18.224	-	Clear	No	Sampled from outflow pipe. No odour. Water initially brown. Purged till clear.	N/A	18.1	1.47	373.16	242.55	6.2	-35.5	Lachlan
E8	MW209	Off-site	542521.77	6114403.23	15-10-23	-	-	20.912	-	Clear	No	Bore inside pump house gauged, pump purged for 5 minutes.	N/A	17.5	1.80	268.40	174.46	6.4	-23.7	Lachlan
E3	MW210	Off-site	540670.13	6114434.25	23-04-21	-	-	-	-	-	-	Standing water level not taken, no monitoring well. Sample taken from tap at base of bore.	N/A	18.1	5.95	233.70	151.91	6.9	91.2	Lachlan
E4	MW210	Off-site	540670.13	6114434.25	21-10-21	-	-	-	-	-	-	Standing water level not taken, no monitoring well. Sample taken from tap at base of bore.	N/A	15.9	7.40	204.10	132.67	6.6	104.5	Lachlan
E5	MW210	Off-site	540664.20	6114397.70	03-05-22	NM	-	-	-	Clear	No	Previous sampling point, tap not working. All connected to same bore. Ran for few min the sampled.	N/A	18.3	6.18	234.00	152.10	7.1	18.1	Lachlan
E6	MW210	Off-site	540664.20	6114397.70	07-11-22	-	-	-	-	Clear	Low	Ran for 5 mins then sampled.	N/A	16	6.81	193.20	125.58	6.3	172.9	Lachlan
E7	MW210	Off-site	540664.20	6114397.70	18-04-23	-	-	-	-	Clear	No	Purged for 5 minutes prior to sampling. No odour.	N/A	18.6	5.65	229.80	149.37	6.6	161.1	Lachlan

Event	Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Hydrasleeve Deployment Depth (mBTOC)[1]	Temp (C^0)	DO (mg/L)	EC (uS/cm)	TDS (calculated mg/L)	pH	Eh (mV)	Aquifer
E8	MW210	Off-site	540664.20	6114397.70	13-10-23	NA	-	NA	-	Clear	No	-	N/A	18	6.19	188.70	122.66	6.7	34.6	Lachlan
E3	MW211	On-site	535731.87	6113725.75	20-04-21	-	181.707	-	-	-	-	Sampled from hose connected to bore.	N/A	19.7	0.99	293.00	190.45	6.5	198.5	Lachlan
E4	MW211	On-site	535731.87	6113725.75	20-10-21	-	181.707	-	-	-	-	Bore pump within locked gate and tap key needed to sample. Sampled from hose connected to bore.	N/A	18.9	1.01	273.10	177.52	6.6	64.2	Lachlan
E5	MW211	On-site	535735.79	6113725.27	-	NM	181.707	-	-	-	-	Electrical fault, not sampled	N/A	-	-	-	-	-	-	Lachlan
E6	MW211	On-site	535735.79	6113725.27	07-11-22	-	181.707	-	-	Clear	Low	Pump left running for 5 minutes prior to sampling. Sampled using the tap.	N/A	18.3	0.91	219.70	142.81	6.1	142.9	Lachlan
E7	MW211	On-site	535735.79	6113725.27	-	-	-	-	-	-	-	Not in operation due to imposed energy penalties on RWCC.	N/A	-	-	-	-	-	-	Lachlan
E8	MW211	On-site	535735.79	6113725.27	12-10-23	-	-	-	-	Clear	No	Purged for 5 minutes prior to sampling.	N/A	17.4	3.33	287.20	186.68	6.4	128.6	Lachlan
E3	MW212	On-site	535690.10	6113485.03	20-04-21	-	181.215	-	-	-	-	Stand pipe and tap, unable to gauge water level.	N/A	19.9	2.98	480.00	312.00	6.7	177.6	Lachlan
E4	MW212	On-site	535690.10	6113485.03	20-10-21	-	181.215	-	-	-	-	Stand pipe and tap, unable to gauge water level.	N/A	17.3	2.80	418.50	272.03	6.7	33.5	Lachlan
E5	MW212	On-site	535681.87	6113475.53	02-05-22	NM	181.215	-	-	Clear	No	Pump left running for 5 minutes prior to sampling. Sampled using the tap.	N/A	18.6	2.87	439.00	285.35	6.7	132.2	Lachlan
E6	MW212	On-site	535681.87	6113475.53	07-11-22	-	181.215	-	-	Clear	Low	Pump left running for 5 minutes prior to sampling. Sampled using the tap.	N/A	20.6	1.81	379.10	246.42	7.0	-135.9	Lachlan
E7	MW212	On-site	535681.87	6113475.53	-	-	-	-	-	-	-	Not in operation due to imposed energy penalties on RWCC.	N/A	-	-	-	-	-	-	Lachlan
E8	MW212	On-site	535681.87	6113475.53	12-10-23	-	-	-	-	Clear	No	Purged for 5 minutes, no odour.	N/A	18.5	2.48	224.80	146.12	6.6	111.9	Lachlan
E3	MW213	On-site	536665.92	6114233.72	20-04-21	-	180.533	-	-	-	-	Riverina Water East Wagga Bore No. 3 pump house. Not gauged.	N/A	19.3	2.06	228.70	148.66	6.5	121.2	Lachlan
E4	MW213	On-site	536665.92	6114233.72	20-10-21	-	180.533	-	-	-	-	Riverina Water East Wagga Bore No. 3 pump house. Not gauged.	N/A	16.9	2.04	205.40	133.51	6.6	73.2	Lachlan
E5	MW213	On-site	536651.55	6114239.35	02-05-22	NM	180.533	-	-	Clear	No	Pump left to run for 5 minutes prior to sample collection. Sampled directly from tap.	N/A	17.8	2.11	213.00	138.45	6.5	169.2	Lachlan
E6	MW213	On-site	536651.55	6114239.35	-	-	180.533	-	-	-	-	Not sampled - bore uder water and not operational	N/A	-	-	-	-	-	-	Lachlan
E7	MW213	On-site	536651.55	6114239.35	-	-	180.533	-	-	-	-	Not in operation due to imposed energy penalties on RWCC.	N/A	-	-	-	-	-	-	Lachlan
E8	MW213	On-site	536651.55	6114239.35	12-10-23	-	180.533	-	-	Clear	No	Purged for 5 minutes prior to sampling.	N/A	17	2.91	212.40	138.06	6.5	109.4	Lachlan
E3	MW214	On-site	542678.69	6111403.83	27-04-21	-	-	-	-	-	-	Production pumping bore, run to purge prior to sampling. Sampled.	N/A	20.5	0.94	561.00	364.65	6.6	3.2	Lachlan
E4	MW214	On-site	542678.69	6111403.83	21-10-21	-	-	-	-	-	-	Production pumping bore, run to purge prior to sampling. Sampled.	N/A	20	1.22	552.00	358.80	6.8	26.1	Lachlan
E5	MW214	On-site	542678.11	6111434.75	03-05-22	NM	186.043	-	-	Clear	-	Keys required from Downer on base. Sampled from tap after a few mins running. Water colour brown then grey when turned on, turned clear	N/A	18.4	1.42	560.00	364.00	6.8	3	Lachlan
E6	MW214	On-site	542678.11	6111434.75	07-11-22	-	186.043	-	-	-	-	Keys required from Downer on base. Sampled from tap after a few mins running. Water colour brown then grey when turned on, turned clear	N/A	21.3	2.27	513.00	333.45	5.1	32.6	Lachlan
E7	MW214	On-site	542678.11	6111434.75	14-04-23	-	186.043	-	-	Clear	No	Production bore. No odour.	N/A	18.6	3.32	510.86	332.06	6.7	-20.5	Lachlan
E8	MW214	On-site	542678.11	6111434.75	16-10-23	-	186.043	-	-	nitially brown, turned clea	No	Purged for 5 minutes prior to sampling.	N/A	15.7	2.87	411.30	267.35	6.6	-9.1	Lachlan
E3	MW215	On-site	542697.20	6111408.40	27-04-21	48.53	186.043	14.545	171.498	-	-	Well only gauged, not sampled as per SAQP, logger present	N/A	-	-	-	-	-	-	Lachlan
E4	MW215	On-site	542697.20	6111408.40	19-10-21	48.6	186.043	14.595	171.448	-	-	Well only gauged, not sampled as per SAQP, logger present	N/A	-	-	-	-	-	-	Lachlan
E5	MW215	On-site	542678.11	6111434.75	02-05-22	49.56	-	14.72	-	-	-	Not sampled- data logger only	N/A	-	-	-	-	-	-	Lachlan
E6	MW215	On-site	542678.11	6111434.75	-	49.02	-	-	-	-	-	Not sampled- data logger only	N/A	-	-	-	-	-	-	Lachlan

Event	Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Hydrasleeve Deployment Depth (mBTOC)[1]	Temp (C°)	DO (mg/L)	EC (uS/cm)	TDS (calculated mg/L)	pH	Eh (mV)	Aquifer
E7	MW215	On-site	542678.11	6111434.75	-	49.74	-	14.34	-	-	-	Not sampled - data logger only.	NA	-	-	-	-	-	-	Lachlan
E8	MW215	On-site	542678.11	6111434.75	-	49.74	-	14.12	-	-	-	Not sampled - data logger only.	NA	-	-	-	-	-	-	Lachlan
E3	MW231	On-site	540938.04	6113482.17	23-04-21	-	-	-	-	-	-	Unable to gauge water levels, as there is no monitoring well, sample taken from irrigation system.	N/A	16.8	0.98	510.80	332.02	6.5	19.3	Lachlan
E4	MW231	On-site	540938.04	6113482.17	22-10-21	-	-	-	-	-	-	Unable to gauge water levels, as there is no monitoring well, sample taken from irrigation system.	N/A	19.6	1.47	446.60	290.29	6.5	88.2	Lachlan
E5	MW231	On-site	540910.71	6113541.05	03-05-22	-	-	-	-	Clear	-	Sample taken from bore pump. Water initially black allowed to run for 5 minutes prior to sampling. When sampled water was clear, no odour, no particulates	N/A	17	7.58	444.00	288.60	6.7	103.5	Lachlan
E6	MW231	On-site	540910.71	6113541.05	09-11-22	-	-	-	-	Brown	High	Sample taken from bore pump. Water initially brown allowed to run for 5 minutes prior to sampling. When sampled water was clear, no odour, no particulates	N/A	20	5.75	448.60	291.59	6.5	30.3	Lachlan
E7	MW231	On-site	540910.71	6113541.05	18-04-23	-	-	-	-	Clear	No	Water initially grey then brown. Purged until clear.	N/A	18.8	1.47	437.62	284.45	6.2	52.2	Lachlan
E8	MW231	On-site	540910.71	6113541.05	16-10-23	-	-	-	-	Clear	Low	Ran for 5 minutes. Water initially orange and then clear.	N/A	17	1.48	210.90	137.09	6.6	-0.8	Lachlan
E3	MW233	Off-site	539794.47	6112439.90	22-04-21	-	-	-	-	-	-	Sampled from hose connected to bore	N/A	16	4.41	2209.00	1435.85	6.8	109.1	Cowra
E4	MW233	Off-site	539794.47	6112439.90	19-10-21	-	-	-	-	-	-	Sampled from hose connected to bore	N/A	18.9	1.83	1192.00	774.80	6.6	163.2	Cowra
E5	MW233	Off-site	539802.59	6112448.66	02-05-22	-	-	-	-	Clear	-	Pump left running 5 minutes prior to sampling. Sample taken from tap attached to bore.	N/A	19.1	4.66	1920.00	1248.00	6.7	194.7	Cowra
E6	MW233	Off-site	539802.59	6112448.66	06-11-22	-	-	-	-	Clear	Low	Pump left running 5 minutes prior to sampling. Sample taken from tap attached to bore.	N/A	21.2	0.44	915.00	594.75	7.1	-182.7	Cowra
E7	MW233	Off-site	539802.59	6112448.66	13-04-23	-	-	-	-	Clear	No	Sampled from hose attached to bore pump. Purged for 5 minutes. No odour.	N/A	19.7	3.53	847.54	550.90	7.0	77.6	Cowra
E8	MW233	Off-site	539802.59	6112448.66	16-10-23	-	-	-	-	Clear	No	Purged for 5 minutes prior to sampling.	N/A	17.5	3.06	1406.00	913.90	6.6	70.1	Cowra
E3	MW235	Off-site	[redacted]		20-04-21	-	-	-	-	-	-	Sample taken from hose connected to bore, no monitoring well present.	N/A	19.3	1.01	171.50	111.48	6.7	88.4	Lachlan
E4	MW235	Off-site			20-10-21	-	-	-	-	-	-	Sample taken from hose connected to bore, no monitoring well present.	N/A	16.8	3.63	136.30	88.60	6.6	145.5	Lachlan
E5	MW235	Off-site			01-05-22	-	-	-	-	Clear	-	Unable to access bore - sampled from hose	N/A	17.7	1.58	19.00	12.35	6.6	125.8	Lachlan
E6	MW235	Off-site			06-11-22	-	-	-	-	Clear	Low	No odour	N/A	18.8	1.57	138.60	90.09	6.4	113.3	Lachlan
E7	MW235	Off-site			13-04-23	-	-	-	-	Clear	No	Sampled from bore no hose. Purged for 5 minutes. No odour.	N/A	17.6	1.49	158.25	102.86	7.1	-47.5	Lachlan
E8	MW235	Off-site			-	-	-	-	-	-	-	Not in operation. Unable to be sampled.	N/A	-	-	-	-	-	-	Lachlan
E3	MW238	Off-site	540680.52	6112223.60	23-04-21	69.96	182.88	17.29	165.59	-	-	Logger in well.	66.1	18.6	1.56	1389.00	902.85	6.7	-124	Lachlan
E4	MW238	Off-site	540680.52	6112223.60	21-10-21	71.9	182.88	16.215	166.665	-	-	Logger in well. Sulfur odour.	66.1	22.5	0.70	1338.00	869.70	6.6	-57	Lachlan
E5	MW238	Off-site	540682.06	6112227.81	02-05-22	72.054	182.88	15.902	166.978	Clear	-	Hydrasleeve had hole in bottom, was unable to capture image of full hydrasleeve, water was clear with minimal silt at base of sleeve. Top of sleeve deployed at 66.1 m	66.1	16.8	1.93	720.00	468.00	6.7	58.4	Lachlan
E6	MW238	Off-site	540682.06	6112227.81	08-11-22	56.17	182.88	14.317	168.563	Clear	Low	No odour	66.1	20.5	0.84	706.00	458.90	6.4	152.2	Lachlan
E7	MW238	Off-site	540682.06	6112227.81	18-04-23	71.3	182.88	13.776	169.104	Clear	No	No odour.	66.1	17.7	3.02	360.58	234.38	6.8	80	Lachlan
E8	MW238	Off-site	540682.06	6112227.81	15-10-23	71.3	182.88	13.54	169.34	Slightly cloudy	No	-	66.1	18.8	1.23	505.00	328.25	6.5	110.8	Lachlan
E3	MW239	Off-site	540679.79	6112218.40	23-04-21	20.95	182.8	16.615	166.185	-	-	Logger deployed	19.05	18.9	4.94	1920.00	1248.00	6.9	127.9	Cowra
E4	MW239	Off-site	540679.79	6112218.40	21-10-21	20.3	182.8	15.985	166.815	-	-	Logger deployed	19.05	16.2	3.74	1787.00	1161.55	7.1	67.9	Cowra
E5	MW239	Off-site	540678.34	6112216.01	02-05-22	21.246	182.8	15.712	167.088	Clear	-	Top of sleeve deployed at 19.05 m	19.05	17	6.17	910.00	591.50	6.9	185.7	Cowra

Event	Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Hydrasleeve Deployment Depth (mBTOC)[1]	Temp (C°)	DO (mg/L)	EC (uS/cm)	TDS (calculated mg/L)	pH	Eh (mV)	Aquifer
E6	MW239	Off-site	540678.34	6112216.01	08-11-22	20.95	182.8	14.7	168.1	Brown	High	No odour, sediment in base of sleeve	19.05	19.3	5.88	1627.00	1057.55	6.7	159.4	Cowra
E7	MW239	Off-site	540678.34	6112216.01	18-04-23	21.34	182.8	13.912	168.888	Cloudy	Medium	Orange brown suspended solids present within bottem 20% of hydrasleeve. Excluded from sampling matrix as much as practicable. No odour.	19.05	17.5	6.93	1653.53	1074.79	6.8	147.9	Cowra
E8	MW239	Off-site	540678.34	6112216.01	15-10-23	21.28	182.8	13.305	169.495	Clear	No	-	19.05	18.5	4.65	1510.00	981.50	6.6	145.7	Cowra
E3	MW240	Off-site	538087.96	6112263.43	20-04-21	27.43	182.54	16.91	165.63	-	-	-	25.9	19.5	3.03	611.00	397.15	6.7	86.2	Cowra
E4	MW240	Off-site	538087.96	6112263.43	19-10-21	27.5	182.54	16.18	166.36	-	-	-	25.9	18.7	3.08	595.00	386.75	6.5	50	Cowra
E5	MW240	Off-site	538090.54	6112266.06	01-05-22	27.4	182.54	15.463	167.077	Clear	-	Extensive rootlets just above sleeve at 15.8 m, decontaminated metal bailer sent down to clear . Top of sleeve deployed at 25.9 m	25.9	20.8	2.52	680.00	442.00	6.6	-77.9	Cowra
E6	MW240	Off-site	538090.54	6112266.06	06-11-22	27.56	182.54	13.961	168.579	Cloudy	Moderate	No odour, sediment in base of sleeve	25.9	20.2	2.80	587.00	381.55	6.4	152.6	Cowra
E7	MW240	Off-site	538090.54	6112266.06	17-04-23	27.42	182.54	12.711	169.829	Clear	Medium	No odour. Moderate orange brown suspended solids within bottom 20% of hydrasleeve. Excluded as much as practicable from sampling matrix.	25.9	18.7	3.12	570.03	370.52	6.7	57.4	Cowra
E8	MW240	Off-site	538090.54	6112266.06	15-10-23	16.45	182.54	12.585	169.955	Clear	No	-	25.9	17.1	3.00	394.70	256.56	6.4	114.9	Cowra
E3	MW241	Off-site	544120.21	6109532.09	22-04-21	75.4	200.07	14.31	185.76	-	-	Sleeve requires replacement	69.3	17.3	1.59	1012.00	657.80	11.9	-209	Granite
E4	MW241	Off-site	544120.21	6109532.09	24-10-21	74.63	200.07	14.01	186.06	-	-	-	69.3	19.3	1.20	1015.00	659.75	11.8	-100	Granite
E5	MW241	Off-site	544118.31	6109524.74	02-05-22	75.598	200.07	14.071	185.999	Clear	-	Hole in bottom of sleeve, image of full hydrasleeve could not be captured, Top sleeve deployed at 69. 3 m	69.3	19.3	2.32	590.00	383.50	7.9	212.9	Granite
E6	MW241	Off-site	544118.31	6109524.74	08-11-22	75.6	200.07	13.81	186.26	-	-	-	69.3	20.4	0.40	1164.00	756.60	11.1	-145.2	Granite
E7	MW241	Off-site	544118.31	6109524.74	13-04-23	75.8	200.07	12.789	187.281	Clear	No	Grey suspended solids at base of hydrasleeve. Excluded from sample matrix. No odour.	69.3	19.8	0.51	1208.71	785.66	11.3	-139.2	Granite
E8	MW241	Off-site	544118.31	6109524.74	12-10-23	75.4	200.07	12.846	187.224	Clear	No	-	69.3	15.1	5.34	1088.00	707.20	11.8	-87	Granite
E3	MW242	Off-site	544122.45	6109540.11	22-04-21	62.1	199.89	14.355	185.535	-	-	Logger deployed.	58.3	17.1	1.35	528.30	343.40	7.3	-78.1	Lachlan
E4	MW242	Off-site	544122.45	6109540.11	22-10-21	61.68	199.89	14.065	185.825	-	-	Logger deployed. Black sediment observed in sleeve.	58.3	20.1	0.95	1203.00	781.95	7.9	-158.8	Lachlan
E5	MW242	Off-site	544118.75	6109538.52	02-05-22	63.38	199.89	14.12	185.77	Clear	-	Logger deployed. Top of sleeve deployed at 58.3 m	58.3	19.1	0.90	520.00	338.00	7.3	1.5	Lachlan
E6	MW242	Off-site	544118.75	6109538.52	08-11-22	62.48	199.89	13.88	186.01	Cloudy	Moderate	No odour	58.3	20.9	0.27	530.00	344.50	7.2	34.3	Lachlan
E7	MW242	Off-site	544118.75	6109538.52	15-04-23	63.12	199.89	12.891	186.999	Clear	Hiigh	No odour, signifigant buildup of light brown suspended solids in bottom 20% of hydrasleeve. Excluded as much as practicable from sample matrix.	58.3	20.9	1.03	503.24	327.11	7.5	-26.4	Lachlan
E8	MW242	Off-site	544118.75	6109538.52	12-10-23	62.6	199.89	12.912	186.978	Generally clear	Medium	-	58.3	16.1	0.38	406.30	264.10	7.3	-45.6	Lachlan
E3	MW243	On-site	542976.97	6110069.23	23-04-21	54.02	211.48	39.44	172.04	-	-	-	52.35	18.4	3.41	1315.00	854.75	6.8	148	Lachlan
E4	MW243	On-site	542976.97	6110069.23	20-10-21	54.02	211.48	39.54	171.94	-	-	-	52.35	21.5	1.62	1296.00	842.40	6.7	121	Lachlan
E5	MW243	On-site	542979.06	6110074.36	30-04-22	54.85	211.48	39.64	171.84	Clear	-	Logger. Sleeve pulled up with hole at bottom, quickly sampled. New sleeve deployed. Top of sleeve deployed at 52.35 m	52.35	18.9	2.06	1240.00	806.00	6.5	34.6	Lachlan
E6	MW243	On-site	542979.06	6110074.36	06-11-22	53.62	211.48	39.721	171.759	Clear	Low	No odour	52.35	19.9	1.86	1133.00	736.45	6.2	191.8	Lachlan
E7	MW243	On-site	542979.06	6110074.36	18-04-23	54.75	211.48	39.432	172.048	Clear	No	No odour, rocks from well casing present with in hydrasleeve.	52.35	20.2	1.73	1205.34	783.47	6.4	100.1	Lachlan
E8	MW243	On-site	542979.06	6110074.36	13-10-23	53.75	211.48	39.244	172.236	Clear	No	Combination padlock replaced. Suctioning still occurring.	52.35	16.9	1.58	1199.00	779.35	6.2	131.5	Lachlan
E3	MW244	Off-site	537007.56	6113057.61	20-04-21	60.42	180.37	15.77	164.6	-	-	Logger deployed.	57.5	18	1.48	235.00	152.75	7.2	-166.2	Lachlan
E4	MW244	Off-site	537007.56	6113057.61	19-10-21	60.5	180.37	14.12	166.25	-	-	Logger deployed.	57.5	18.9	1.14	234.00	152.10	6.7	-124.2	Lachlan

Event	Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Hydrasleeve Deployment Depth (mBTOC)[1]	Temp (C°)	DO (mg/L)	EC (uS/cm)	TDS (calculated mg/L)	pH	Eh (mV)	Aquifer
E5	MW244	Off-site	536997.10	6113055.36	03-05-22	60.6	180.37	13.976	166.394	Cloudy	Moderate	Top of sleeve deployed at 57. 5 m	57.5	19.3	0.98	274.00	178.10	6.9	-2.2	Lachlan
E6	MW244	Off-site	536997.10	6113055.36	08-11-22	60.25	180.37	6.109	174.261	Cloudy	Moderate	No odour	57.5	19.3	1.00	202.10	131.37	6.4	130.7	Lachlan
E7	MW244	Off-site	536997.10	6113055.36	15-04-23	60.24	180.37	8.331	172.039	Clear	Low	Concrete base cracked in half, possible infiltration. No standing water at base, drainage line with stagnant water 5m to the west of well. Minimal suspended solids at base of hydrasleeve. Excluded from sample matrix. No odour.	57.5	20.4	1.15	157.89	102.63	6.9	15.8	Lachlan
E8	MW244	Off-site	536997.10	6113055.36	14-10-23	60	180.37	10.88	169.49	cloudy	Medium	Concrete base repaired. Logger data downloaded	57.5	18	1.42	405.80	263.77	6.3	147.8	Lachlan
E3	MW245	Off-site	536996.47	6113060.76	20-04-21	20.83	180.37	16.41	163.96	-	-	Logger tangled in sleeve, Logger data may be affected	19.5	16.9	2.39	430.90	280.09	6.4	198.8	Cowra
E4	MW245	Off-site	536996.47	6113060.76	19-10-21	21	180.37	15.02	165.35	-	-	Logger deployed.	19.5	18.3	2.05	614.00	399.10	6.3	45	Cowra
E5	MW245	Off-site	537011.85	6113066.50	30-04-22	20.92	180.37	13.93	166.44	Cloudy	Med	Top of sleeve deployed at 19.5 m	19.5	17.4	0.65	740.00	481.00	6.2	88.7	Cowra
E6	MW245	Off-site	537011.85	6113066.50	08-11-22	20.96	180.37	5.847	174.523	Cloudy	Moderate	No odour	19.5	18.6	0.47	339.00	220.35	6.0	141.6	Cowra
E7	MW245	Off-site	537011.85	6113066.50	15-04-23	20.74	180.37	8.562	171.808	Clear	Low	No odour, minor orange brown sediment deposits at base of hydrasleeve. Excluded from sample matrix.	19.5	19.3	0.92	543.59	353.33	6.3	-10.3	Cowra
E8	MW245	Off-site	537011.85	6113066.50	14-10-23	20.57	180.37	10.864	169.506	Cloudy/light brown	Low	Sampled 14.10, data logger downloaded and redeployed.	19.5	17.9	0.13	1064.00	691.60	5.8	123.6	Cowra
E3	MW246	Off-site	541737.87	6110580.21	20-04-21	48.45	189.469	19.209	170.26	-	-	Logger deployed.	30.2	19.2	1.84	451.80	293.67	6.8	-27.1	Lachlan
E4	MW246	Off-site	541737.87	6110580.21	20-10-21	48.85	189.469	19.39	170.079	-	-	Logger deployed.	30.2	19.4	2.24	395.00	256.75	6.7	-84.3	Lachlan
E5	MW246	Off-site	541737.87	6110580.21	01-05-22	48.62	189.563	19.3	170.263	Clear	-	Top of sleeve deployed at 30.2 m	30.2	18	2.49	456.00	296.40	6.8	-114.5	Lachlan
E6	MW246	Off-site	541737.87	6110580.21	06-11-22	48.91	189.563	19.425	170.138	Clear	Low	No odour	30.2	19.7	0.51	391.10	254.22	6.4	55.2	Lachlan
E7	MW246	Off-site	541737.87	6110580.21	15-04-23	48.935	189.563	19.173	170.39	Clear	No	No odour.	30.2	19.8	1.16	419.72	272.82	6.6	29.3	Lachlan
E8	MW246	Off-site	541737.87	6110580.21	16-10-23	70	189.563	18.892	170.671	Clear	Low	Minimal sediment at bottom of the sleeve.	30.2	17.6	1.01	3810.00	2476.50	6.7	13	Lachlan
E3	MW247	Off-site	536050.95	6112506.30	27-04-21	34.81	182.311	14.175	168.136	-	-	Logger deployed.	29.95	17.5	0.67	1160.00	754.00	7.2	-107	Lachlan
E4	MW247	Off-site	536050.95	6112506.30	21-10-21	35.35	182.311	14.085	168.226	-	-	Logger deployed.	29.95	16.8	1.10	983.00	638.95	7.4	-70.2	Lachlan
E5	MW247	Off-site	536050.95	6112506.30	02-05-22	33.676	181.343	13.725	167.618	Cloudy	-	Strong sulfuric odor, black silts in bottom of sleeve, Top of sleeve deployed at 29.95 m	29.95	17.4	1.86	630.00	409.50	7.1	-33.1	Cowra
E6	MW247	Off-site	536050.95	6112506.30	09-11-22	35.41	181.343	13.182	168.161	Cloudy	Modeate	No odour, sediment in base of sleeve	29.95	22.5	1.06	1058.00	687.70	7.0	-22.2	Cowra
E7	MW247	Off-site	536050.95	6112506.30	15-04-23	35.17	181.343	11.246	170.097	Cloudy	Low	No odour.	29.95	19.1	1.96	859.80	558.87	10.9	-59.6	Lachlan
E8	MW247	Off-site	536050.95	6112506.30	14-10-23	35.03	181.343	11.06	170.283	Brown	High	-	29.95	19.1	0.74	745.00	484.25	11.3	-523.5	Lachlan
E3	MW248	Off-site	536049.40	6112509.06	27-04-21	24.6	182.301	14.2	168.101	-	-	Logger deployed.	20	15.6	1.59	2342.00	1522.30	6.6	118.6	Cowra
E4	MW248	Off-site	536049.40	6112509.06	20-10-21	25.22	182.301	14.04	168.261	-	-	Logger deployed.	20	16.4	2.75	1875.00	1218.75	6.6	139.5	Cowra
E5	MW248	Off-site	536049.40	6112509.06	02-05-22	25.2	181.361	13.65	167.711	Cloudy	-	Changed label on stand pipe from 247 to 248. Logger also changed. Top of sleeve deployed at 20.0 m	20	18	2.02	2320.00	1508.00	6.7	22.4	Lachlan
E6	MW248	Off-site	536049.40	6112509.06	09-11-22	25.17	181.361	13.046	168.315	Cloudy	Moderate	No odour, sediment in base of sleeve	20	22.3	1.49	2151.00	1398.15	6.5	84.2	Lachlan
E7	MW248	Off-site	536049.40	6112509.06	15-04-23	24.98	181.361	11.098	170.263	Cloudy	Moderate	Suspended solids at base of hydrasleeve. Excluded from sample matrix. No odour.	20	19.2	1.61	1734.87	1127.66	6.6	149.4	Cowra
E8	MW248	Off-site	536049.40	6112509.06	14-10-23	20.68	181.361	10.967	170.394	Light brown	Medium	-	20	19.4	2.28	1423.00	924.95	6.5	95.7	Cowra
E3	MW249	Off-site	536082.81	6113454.97	28-04-21	60.9	180.008	18.74	161.268	-	-	New sleeve installed.	47.7	18.4	1.00	458.00	297.70	6.4	118	Lachlan

Event	Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Hydrasleeve Deployment Depth (mBTOC)[1]	Temp (C^0)	DO (mg/L)	EC (uS/cm)	TDS (calculated mg/L)	pH	Eh (mV)	Aquifer
E4	MW249	Off-site	536082.81	6113454.97	21-10-21	60.8	180.008	17.02	162.988	-	-	-	47.7	18.7	0.87	285.70	185.71	6.6	25.1	Lachlan
E5	MW249	Off-site	536082.81	6113454.97	30-04-22	60.674	180.008	17.772	162.236	Cloudy	-	Top of sleeve deployed at 47. 7 m	47.7	19.4	9.07	1.00	0.65	5.8	610.7	Lachlan
E6	MW249	Off-site	536082.81	6113454.97	08-11-22	NM	180.008	5.17	174.838	Clear	Low	No odour	47.7	17.4	1.42	221.80	144.17	6.3	166.8	Lachlan
E7	MW249	Off-site	536082.81	6113454.97	15-04-23	60.34	180.008	8.596	171.412	Clear	Low	No odour, water around base of well.	47.7	19.7	0.96	288.51	187.53	6.0	147	Lachlan
E8	MW249	Off-site	536082.81	6113454.97	14-10-23	60.9	180.008	13.91	166.098	Clear	No	-	47.7	16	0.91	679.00	441.35	6.0	-262.2	Lachlan
E3	MW250	Off-site	536087.34	6113452.45	28-04-21	26.03	179.936	17.91	162.026	-	-	Logger deployed.	22.6	19.6	3.67	655.00	425.75	6.7	112.2	Cowra
E4	MW250	Off-site	536087.34	6113452.45	19-10-21	26	179.936	16.61	163.326	-	-	Logger deployed.	22.6	18.7	3.10	837.00	544.05	6.6	142	Cowra
E5	MW250	Off-site	536087.34	6113452.45	30-04-22	26	179.936	15.559	164.377	Clear	Low	Logger. Sleeve Full. Top of sleeve deployed at 22.6 m	22.6	18.4	3.01	790.00	513.50	6.7	59.9	Lachlan
E6	MW250	Off-site	536087.34	6113452.45	08-11-22	NM	179.936	6.416	173.52	Clear	Low	No odour	22.6	16.7	3.44	636.00	413.40	6.4	166.8	Lachlan
E7	MW250	Off-site	536087.34	6113452.45	15-04-23	25.74	179.936	8.231	171.705	Cloudy	Low	No odour.	22.6	18.4	3.55	589.91	383.44	6.5	122.8	Cowra
E8	MW250	Off-site	536087.34	6113452.45	14-10-23	26	179.936	12.28	167.656	Clear	No	-	22.6	16.5	3.00	509.00	330.85	6.5	-195	Cowra
E3	MW251	Off-site	536569.19	6113765.55	22-04-21	23.75	178.394	16.68	161.714	-	-	-	19.15	17.2	1.32	754.00	490.10	6.0	-4.5	Cowra
E4	MW251	Off-site	536569.19	6113765.55	21-10-21	24.15	178.394	13.92	164.424	-	-	-	19.15	18.4	1.17	533.00	346.45	6.0	2.9	Cowra
E5	MW251	Off-site	536569.19	6113765.55	30-04-22	24.1	178.394	13.512	164.882	Clear	-	Top of sleeve deployed at 19. 15 m	19.15	18	0.84	540.00	351.00	6.1	21.7	Cowra
E6	MW251	Off-site	536569.19	6113765.55	-	-	178.394	-	-	-	-	Not sampled - unable to access location due to flood water	-	-	-	-	-	-	-	Cowra
E7	MW251	Off-site	536569.19	6113765.55	17-04-23	23.97	178.394	6.633	171.761	Low	Low	Initial hydrasleeve split, well cleared out with slug on 15/04/23. No odour, minimal dark brown suspended solids at base of sleeve. Exluded from sample matrix.	19.15	16.6	0.84	720.34	468.22	6.0	-30.7	Cowra
E8	MW251	Off-site	536569.19	6113765.55	14-10-23	24	178.394	10.8	167.594	Clear	No	Added extra weight on hydrasleeve.	19.15	15.1	1.03	400.00	260.00	5.3	33	Cowra
E3	MW252	Off-site	536569.98	6113769.89	22-04-21	62.3	178.607	16.23	162.377	-	-	-	47.5	16.2	1.27	544.50	353.93	6.1	58	Lachlan
E4	MW252	Off-site	536569.98	6113769.89	19-10-21	62.5	178.607	14.23	164.377	-	-	-	47.5	18.7	1.30	389.00	252.85	5.8	84.4	Lachlan
E5	MW252	Off-site	536569.98	6113769.89	30-04-22	62.45	178.607	14.798	163.809	Clear	-	Top of sleeve deployed at 47.15 m	47.5	18.3	1.52	239.00	155.35	6.0	182.4	Lachlan
E6	MW252	Off-site	536569.98	6113769.89	-	-	178.607	-	-	-	-	Not sampled - unable to access location due to flood water	-	-	-	-	-	-	-	Lachlan
E7	MW252	Off-site	536569.98	6113769.89	17-04-23	62.23	178.607	7.114	171.493	Clear	-	Multiple hydrasleeves split, bore cleared out with a slug. No odour, minor suspended solids at base of sleeve. Excluded from sample matrix.	47.5	16.2	0.82	450.07	292.54	6.1	83.9	Lachlan
E8	MW252	Off-site	536569.98	6113769.89	14-10-23	60	178.607	11.25	167.357	Clear	No	Acid sulfate soil odour.	47.5	15.9	0.87	391.30	254.35	5.8	-14.7	Lachlan
E3	MW253	Off-site	537469.03	6112456.61	20-04-21	49.03	180.991	17.18	163.811	-	-	-	45.5	18.1	3.13	421.00	273.65	6.6	73	Lachlan
E4	MW253	Off-site	537469.03	6112456.61	19-10-21	48.95	180.991	15.61	165.381	-	-	-	45.5	17.9	2.33	271.70	176.61	6.6	130	Lachlan
E5	MW253	Off-site	537469.03	6112456.61	30-04-22	48.893	180.991	15.534	165.457	Clear	-	Top of sleeve deployed at 45. 5 m	45.5	17.5	4.98	195.00	126.75	6.3	138.6	Cowra
E6	MW253	Off-site	537469.03	6112456.61	06-11-22	49.17	180.991	8.691	172.3	Clear	Low	No odour, ants in well head	45.5	17.7	2.05	3269.00	2124.85	6.3	175.5	Cowra
E7	MW253	Off-site	537469.03	6112456.61	17-04-23	48.87	180.991	10.155	170.836	Clear	-	No odour, no suspended solids.	45.5	17.4	1.98	354.25	230.26	6.8	86.4	Lachlan
E8	MW253	Off-site	537469.03	6112456.61	14-10-23	48.87	180.991	11.47	169.521	Clear	-	-	45.5	18.1	2.41	312.20	202.93	6.2	38.5	Lachlan

Event	Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Hydrasleeve Deployment Depth (mBTOC)[1]	Temp (C°)	DO (mg/L)	EC (uS/cm)	TDS (calculated mg/L)	pH	Eh (mV)	Aquifer
E3	MW254	Off-site	537469.85	6112462.06	21-04-21	26.03	181.122	16.295	164.827	-	-	-	18.6	-	4.12	345.00	224.25	6.4	82.4	Cowra
E4	MW254	Off-site	537469.85	6112462.06	19-10-21	24.5	181.122	15.495	165.627	-	-	-	18.6	18.3	3.65	308.00	200.20	6.2	112	Cowra
E5	MW254	Off-site	537469.85	6112462.06	30-04-22	26.03	181.122	14.792	166.33	Brown	-	Hydrasleeve contained silt at bottom of sleeve. Top of sleeve deployed at 18.6 m	18.6	16	4.35	171.00	111.15	6.1	156.6	Lachlan
E6	MW254	Off-site	537469.85	6112462.06	06-11-22	26.14	181.122	12.644	168.478	Cloudy	Low	No odour	18.6	18	2.86	285.60	185.64	5.9	187.4	Lachlan
E7	MW254	Off-site	537469.85	6112462.06	18-04-23	25.85	181.122	11.488	169.634	Clear	No	No odour.	18.6	17.2	4.36	299.22	194.49	6.2	150.9	Cowra
E8	MW254	Off-site	537469.85	6112462.06	14-10-23	25.85	181.122	11.743	169.379	Clear	No	-	18.6	18.5	3.97	288.90	187.79	5.9	92.1	Cowra
E3	MW255	Off-site	539219.76	6112296.57	22-04-21	52.89	182.094	16.48	165.614	-	-	-	49	13.9	1.99	1098.00	713.70	6.6	110	Lachlan
E4	MW255	Off-site	539219.76	6112296.57	19-10-21	53.1	182.094	15.58	166.514	-	-	-	49	18.8	1.19	706.00	458.90	6.4	-58	Lachlan
E5	MW255	Off-site	539219.76	6112296.57	30-04-22	53	182.094	15.25	166.844	Cloudy	Medium	Top of sleeve at 49 m	49	18	1.38	750.00	487.50	6.7	-5.1	Cowra
E6	MW255	Off-site	539219.76	6112296.57	07-11-22	52.95	182.094	13.059	169.035	Cloudy	Moderate	No odour	49	20	0.95	709.00	460.85	6.2	173	Cowra
E7	MW255	Off-site	539219.76	6112296.57	15-04-23	53.16	182.094	12.29	169.804	Clear	No	No sediment observed within hydrasleeve, no odour.	49	21	1.12	853.41	554.71	6.5	-3.1	Lachlan
E8	MW255	Off-site	539219.76	6112296.57	16-10-23	57	182.094	12.306	169.788	Clear	No	-	49	16.9	0.93	625.00	406.25	6.4	11.3	Lachlan
E3	MW256	Off-site	539217.62	6112291.11	22-04-21	24.5	182.128	16.48	165.648	-	-	-	18.35	16.4	3.15	1379.00	896.35	6.5	120.7	Cowra
E4	MW256	Off-site	539217.62	6112291.11	19-10-21	22.2	182.128	15.9	166.228	-	-	-	18.35	18.7	2.93	1395.00	906.75	6.6	183.9	Cowra
E5	MW256	Off-site	539217.62	6112291.11	01-05-22	22.44	182.128	15.25	166.878	Cloudy	Moderate	Sleeve full sampled. Top of sleeve deployed at 18.35 m	18.35	15.9	2.75	1510.00	981.50	6.6	19.2	Lachlan
E6	MW256	Off-site	539217.62	6112291.11	07-11-22	22.57	182.128	14.137	167.991	Clear	Low	No odour	18.35	20.3	1.52	1426.00	926.90	6.3	165.6	Lachlan
E7	MW256	Off-site	539217.62	6112291.11	15-04-23	22.7	182.128	12.78	169.348	Clear	-	Minor orange brown suspended solids at base of hydrasleeve. Excluded from sample matrix.	18.35	20.1	1.36	1504.64	978.02	6.5	1.2	Cowra
E8	MW256	Off-site	539217.62	6112291.11	16-10-23	22.5	182.128	12.32	169.808	Clear	No	-	18.35	16.9	2.64	1162.00	755.30	6.3	106	Cowra
E3	MW257	Off-site	538861.39	6111683.41	21-04-21	16	182.37	15.95	166.42	-	-	Well Dry	15	-	-	-	-	-	-	Cowra
E4	MW257	Off-site	538861.39	6111683.41	18-10-21	15.96	182.37	15.865	166.505	-	-	Insufficient water for sampling	15	-	-	-	-	-	-	Cowra
E5	MW257	Off-site	538761.46	6111519.67	01-05-22	16.47	182.37	15.31	167.06	Cloudy	Moderate	5 x bailer volumes removed then sampled via bailer. Sleeve empty	15	15.3	4.37	3620.00	2353.00	6.5	57.8	Cowra
E6	MW257	Off-site	538761.46	6111519.67	08-11-22	16.36	182.37	14.561	167.809	Cloudy	Low	No odour, small amount of water in sleeve	15	19.4	3.90	3339.00	2170.35	6.3	115.8	Cowra
E7	MW257	Off-site	538761.46	6111519.67	15-04-23	16.88	182.37	13.464	168.906	Clear	-	Minimal pale brown sediment at base of sleeve. Excluded from sample matrix. No odour.	15	20.1	4.68	3806.92	2474.50	6.4	150.9	Cowra
E8	MW257	Off-site	538761.46	6111519.67	15-10-23	16.6	182.37	12.75	169.62	Clear	No	-	15	15.4	5.81	3002.00	1951.30	6.0	135.4	Cowra
E8	MW258	Off-site	535907.63	6112894.10	12-10-23	26.9	181.38	10.149	171.231	Clear	Low	Sampled for first time as part of OMP.	-	16.5	1.53	1425.00	926.25	11.7	55.7	Lachlan
E8	MW259	Off-site	535902.15	6112900.44	12-10-23	17.85	181.48	10.136	171.344	Clear	No	Sampled for first time as part of OMP.	13.3	16.4	4.64	645.00	419.25	6.7	130.6	Cowra
E3	MW300	On-site	542273.70	6110126.28	21-04-21	61.83	200.538	29.94	170.598	-	-	-	50.2	14	4.24	1523.00	989.95	6.5	154.5	Lachlan
E4	MW300	On-site	542273.70	6110126.28	20-10-21	62	200.538	30.07	170.468	-	-	-	50.2	19.8	3.05	1246.00	809.90	6.3	100	Lachlan
E5	MW300	On-site	542277.11	6110129.15	30-04-22	62.012	200.538	30.173	170.365	Clear	-	Duplicate samples collected. Top of sleeve deployed at 50.2 m	50.2	15.8	5.36	700.00	455.00	6.4	228.5	Cowra

Event	Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Hydrasleeve Deployment Depth (mBTOC)[1]	Temp (C°)	DO (mg/L)	EC (uS/cm)	TDS (calculated mg/L)	pH	Eh (mV)	Aquifer
E6	MW300	On-site	542277.11	6110129.15	06-11-22	60.85	200.538	30.291	170.247	Cloudy	Low	No odour	50.2	19.2	3.27	1258.00	817.70	6.1	195.5	Cowra
E7	MW300	On-site	542277.11	6110129.15	15-04-23	61.97	200.538	29.965	170.573	Clear	No	No odour.	50.2	20.2	3.12	1298.90	844.28	6.3	165.3	Lachlan
E8	MW300	On-site	542277.11	6110129.15	13-10-23	57	200.538	29.73	170.808	Clear	No	Minimal sediment at bottom of sleeve.	50.2	17.4	3.26	1270.00	825.50	6.1	137.5	Lachlan
E3	MW301	On-site	542281.24	6110125.85	21-04-21	18.765	200.705	-	-	-	-	Dry, not sampled, 20mm pipe in well	-	-	-	-	-	-	-	Cowra
E4	MW301	On-site	542281.24	6110125.85	18-10-21	18.88	200.705	-	-	-	-	Dry, not sampled, 20mm pipe in well	-	-	-	-	-	-	-	Cowra
E5	MW301	On-site	542281.27	6110125.89	-	19.1	200.705	30.13	-	-	-	Location Dry	-	-	-	-	-	-	-	Lachlan
E6	MW301	On-site	542281.27	6110125.89	-	18.8	200.705	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Lachlan
E7	MW301	On-site	542281.27	6110125.89	-	19.34	200.705	Dry	-	-	-	Location Dry	-	-	-	-	-	-	-	Cowra
E8	MW301	On-site	542281.27	6110125.89	12-10-23	19.1	200.705	Dry	-	-	-	Location Dry	-	-	-	-	-	-	-	Cowra
E3	MW302	On-site	542353.34	6109471.93	21-04-21	64.67	209.607	38.83	170.777	-	-	-	61.5	17.1	3.04	946.00	614.90	6.5	142.2	Lachlan
E4	MW302	On-site	542353.34	6109471.93	20-10-21	65.24	209.607	38.97	170.637	-	-	-	61.5	20	2.34	838.00	544.70	6.4	93	Lachlan
E5	MW302	On-site	542356.16	6109473.31	01-05-22	65.256	209.607	39	170.607	Clear	-	Water was clear with minimal orange silt build up on the bottom. Top of sleeve deployed at 61.5 m	61.5	18	8.68	2.00	1.30	7.0	242.5	Cowra
E6	MW302	On-site	542356.16	6109473.31	07-11-22	65.48	209.607	39.086	170.521	Clear	Low	No odour	61.5	22.9	2.56	939.00	610.35	6.5	140.1	Cowra
E7	MW302	On-site	542356.16	6109473.31	15-04-23	65.52	209.607	38.781	170.826	Clear	No	No odour.	61.5	20.7	3.52	905.94	588.86	6.4	160.5	Lachlan
E8	MW302	On-site	542356.16	6109473.31	13-10-23	63.74	209.607	38.51	171.097	Clear	-	Minimal sediment in bottom of sleeve.	61.5	18.6	1.83	663.00	430.95	6.3	129.4	Lachlan
E3	MW303	On-site	542358.33	6109470.45	21-04-21	19.7	209.568	-	-	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E4	MW303	On-site	542358.33	6109470.45	18-10-21	20.78	209.568	-	-	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E5	MW303	On-site	542358.37	6109470.43	-	21.4	209.568	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Lachlan
E6	MW303	On-site	542358.37	6109470.43	-	21.46	209.568	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Lachlan
E7	MW303	On-site	542358.37	6109470.43	-	21.569	209.568	Dry	-	-	-	Location Dry	-	-	-	-	-	-	-	Cowra
E8	MW303	On-site	542358.37	6109470.43	12-10-23	21.57	209.568	Dry	-	-	-	Location Dry	-	-	-	-	-	-	-	Cowra
E3	MW304	On-site	541365.89	6108801.04	28-04-21	69.25	211.767	39.053	172.714	-	-	-	48.5	13.1	2.64	1793.00	1165.45	7.2	96.5	Lachlan
E4	MW304	On-site	541365.89	6108801.04	20-10-21	69.56	211.767	39.02	172.747	-	-	-	48.5	20.1	1.27	1732.00	1125.80	7.5	112.3	Lachlan
E5	MW304	On-site	541367.48	6108802.00	01-05-22	69.2	211.767	39.02	172.747	Clear	NM	Duplicate samples collected. Top of sleeve deployed at 48.5 m	48.5	18.4	1.26	1780.00	1157.00	7.0	-81.4	Lachlan
E6	MW304	On-site	541367.48	6108802.00	06-11-22	58.16	211.767	39.192	172.575	Brown	High	No odour, brwon sediment in sleeve	48.5	20.7	0.62	1616.00	1050.40	6.7	142.2	Lachlan
E7	MW304	On-site	541367.48	6108802.00	15-04-23	69.42	211.767	39.19	172.577	Brown	High	Suspended solids within bottom half of hydrasleeve. Excluded from sample matrix as much as practicable. No odour.	48.5	17.5	0.07	1725.49	1121.57	6.8	75.6	Lachlan
E8	MW304	On-site	541367.48	6108802.00	14-10-23	68.85	211.767	39.05	172.717	Generally clear	Low	MTB samp-led 14/10. Both data loggers downloaded and redeployed	48.5	18.2	0.07	1369.00	889.85	7.0	159.4	Lachlan
E3	MW305	On-site	541363.17	6108795.49	27-04-21	24.925	211.774	-	-	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E4	MW305	On-site	541363.17	6108795.49	18-10-21	24.91	211.774	24.27	187.504	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra

Event	Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Hydrasleeve Deployment Depth (mBTOC)[1]	Temp (C^0)	DO (mg/L)	EC (uS/cm)	TDS (calculated mg/L)	pH	Eh (mV)	Aquifer
E5	MW305	On-site	541363.15	6108795.52	-	25.3	211.774	-	-	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E6	MW305	On-site	541363.15	6108795.52	-	24.93	211.774	-	-	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E7	MW305	On-site	541363.15	6108795.52	-	25.8	211.774	Dry	-	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E8	MW305	On-site	541363.15	6108795.52	14-10-23	25.8	211.774	Dry	-	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E3	MW306	On-site	542796.36	6107013.69	22-04-21	61.95	233.058	44.92	188.138	-	-	Wire around base of bore	54	16.2	3.30	932.00	605.80	8.6	-16	Lachlan
E4	MW306	On-site	542796.36	6107013.69	22-10-21	61.2	233.058	44.88	188.178	-	-	-	54	20.8	0.81	1868.00	1214.20	7.1	53.2	Lachlan
E5	MW306	On-site	542799.42	6107013.89	02-05-22	62.3	233.058	45.85	187.208	Cloudy	-	Top of sleeve deployed at 54 m	54	19.6	0.57	2270.00	1475.50	7.0	4.7	Lachlan
E6	MW306	On-site	542799.42	6107013.89	07-11-22	60.835	233.058	44.891	188.167	Cloudy	Low	No odour, sediment in sleeve	54	22.8	1.66	2085.00	1355.25	6.9	127.6	Lachlan
E7	MW306	On-site	542799.42	6107013.89	14-04-23	62.2	233.058	44.694	188.364	Clear	No	No odour, minimal orange brown suspended solids within bottom third of hydrasleeve.	54	19.5	0.57	2087.92	1357.15	6.7	22.3	Lachlan
E8	MW306	On-site	542799.42	6107013.89	13-10-23	62.4	233.058	30.518	202.54	Clear	-	-	54	14.2	3.56	1767.00	1148.55	6.9	-2.6	Lachlan
E3	MW307	On-site	542791.09	6107014.46	22-04-21	31.05	232.904	30.4	202.504	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E4	MW307	On-site	542791.09	6107014.46	22-10-21	31.2	232.904	30.49	202.414	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E5	MW307	On-site	542791.05	6107014.44	-	30.415	232.904	-	-	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E6	MW307	On-site	542791.05	6107014.44	-	30.55	232.904	-	-	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E7	MW307	On-site	542791.05	6107014.44	-	31.41	232.904	Dry	-	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E8	MW307	On-site	542791.05	6107014.44	13-10-23	31.41	232.904	Dry	-	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E3	MW308	On-site	543139.62	6109380.46	21-04-21	66.5	213.901	41.895	172.006	-	-	-	51.7	18.8	2.75	701.00	455.65	6.4	117.5	Lachlan
E4	MW308	On-site	543139.62	6109380.46	21-10-21	66.86	213.901	41.97	171.931	-	-	-	51.7	20.3	2.76	621.00	403.65	6.5	47.5	Lachlan
E5	MW308	On-site	543139.39	6109381.63	01-05-22	66.876	213.901	41.99	171.911	Brown	-	Duplicate samples collected. Top of sleeve deployed at 51.7 m	51.7	19.8	3.72	364.00	236.60	7.9	140.1	Cowra
E6	MW308	On-site	543139.39	6109381.63	07-11-22	66.25	213.901	42.211	171.69	Brown	High	No odour, sediment in sleeve	51.7	21.9	2.85	645.00	419.25	6.2	153.4	Cowra
E7	MW308	On-site	543139.39	6109381.63	18-04-23	67.16	213.901	42.116	171.785	Clear	No	No odour. Brown suspended solids within bottom 20% of hydrasleeve.	51.7	18.1	4.14	625.11	406.32	6.2	132.4	Lachlan
E8	MW308	On-site	543139.39	6109381.63	14-10-23	66	213.901	42.07	171.831	Cloudy	No	-	51.7	18.4	3.02	660.00	429.00	6.1	145	Lachlan
E3	MW309	On-site	543133.55	6109377.74	21-04-21	24.95	213.826	24.455	189.371	-	-	Well bailed	N/A	21.6	2.28	2020.00	1313.00	6.9	-57.2	Cowra
E4	MW309	On-site	543133.55	6109377.74	18-10-21	24	213.826	-	-	-	-	IP hitting top of sleeve at 24m. No water detected.	-	-	-	-	-	-	-	Cowra
E5	MW309	On-site	543133.57	6109377.71	-	25.1	213.826	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Lachlan
E6	MW309	On-site	543133.57	6109377.71	-	24.805	213.826	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Lachlan
E7	MW309	On-site	543133.57	6109377.71	-	25.4	213.826	Dry	-	-	-	Dry	-	-	-	-	-	-	-	Cowra
E8	MW309	On-site	543133.57	6109377.71	12-10-23	25.4	213.826	Dry	-	-	-	Dry	-	-	-	-	-	-	-	Cowra
E3	MW310	On-site	543561.01	6108970.47	22-04-21	58.57	210.274	23.5	186.774	-	-	Well bailed	N/A	11.5	1.58	1155.00	750.75	7.3	-143.7	Lachlan

Event	Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Hydrasleeve Deployment Depth (mBTOC)[1]	Temp (C°)	DO (mg/L)	EC (uS/cm)	TDS (calculated mg/L)	pH	Eh (mV)	Aquifer
E4	MW310	On-site	543561.01	6108970.47	22-10-21	59	210.274	23.45	186.824	-	-	-	52.2	19	1.99	963.00	625.95	7.1	-107	Lachlan
E5	MW310	On-site	543564.83	6108980.78	02-05-22	59	210.274	-	-	Cloudy	Med	Top of sleeve deployed at 52.2 m	52.2	17.9	2.37	4710.00	3061.50	6.8	13.2	Lachlan
E6	MW310	On-site	543564.83	6108980.78	08-11-22	58.39	210.274	24.31	-	Cloudy	Moderate	No odour, sediment in sleeve	52.2	21.6	1.53	1081.00	702.65	6.8	127.6	Lachlan
E7	MW310	On-site	543564.83	6108980.78	14-04-23	59.04	210.274	23.095	187.179	Cloudy	Low	Brown suspended solids within hydrasleeve. Excluded from sample matrix. No odour.	52.2	18.5	2.07	1072.92	697.40	6.8	118.2	Lachlan
E8	MW310	On-site	543564.83	6108980.78	16-10-23	46.1	210.274	-	-	-	-	-	52.2	17.5	2.15	863.00	560.95	6.7	97.1	Lachlan
E3	MW311	On-site	543562.73	6108981.36	22-04-21	22.13	210.651	-	-	-	-	Dry, not sampled	-	-	-	-	-	-	-	Cowra
E4	MW311	On-site	543562.73	6108981.36	22-10-21	22.6	210.651	21.93	188.721	-	-	Dry (orange mud at base), not sampled	-	-	-	-	-	-	-	Cowra
E5	MW311	On-site	543566.06	6108977.08	02-05-22	22	210.651	20.69	189.961	Cloudy	High	Stagnant water in sump, not sampled	N/A	17.9	2.37	4710.00	3061.50	6.8	13.2	Cowra
E6	MW311	On-site	543566.06	6108977.08	08-11-22	21.78	210.651	19.23	191.421	Cloudy	Moderate	No odour, brown/orange sediment in sleeve	20.6	20.7	3.88	3966.00	2577.90	6.7	131.5	Cowra
E7	MW311	On-site	543566.06	6108977.08	14-04-23	22.2	210.651	18.1	192.551	Cloudy	Low	No odour.	20.6	18.4	4.39	4076.93	2650.00	6.6	67.4	Cowra
E8	MW311	On-site	543566.06	6108977.08	16-10-23	22.15	210.651	-	-	Brown	Low	-	20.6	17.3	3.49	3729.00	2423.85	6.5	133.1	Cowra
E3	MW312	Off-site	[redacted]		22-04-21	-	182.97	-	-	-	-	Not sampled. No access granted. Land owner could not be contacted	-	-	-	-	-	-	-	Lachlan
E4	MW312	Off-site			21-10-21	62.3	182.97	13.89	169.08	-	-	-	53	21.1	1.79	1068.00	694.20	6.9	19.4	Lachlan
E5	MW312	Off-site			02-05-22	60.4	182.97	13.84	169.13	Cloudy	Moderate	Top of sleeve deployed at 53 m	53	16.8	0.85	880.00	572.00	6.8	40.5	Lachlan
E6	MW312	Off-site			08-11-22	60.64	182.97	13.665	169.305	Clear	Low	Orange sediment in sleeve	53	21.6	0.53	558.00	362.70	6.6	126.3	Lachlan
E7	MW312	Off-site			18-04-23	60.61	182.97	13.303	169.667	Clear	No	No odour. Minor brown suspended solids within bottom 25% of hydrasleeve. Excluded from sample matrix.	53	18.9	0.55	812.81	528.33	6.5	123.1	Lachlan
E8	MW312	Off-site			13-10-23	30.45	182.97	12.913	170.057	Cloudy	Low	-	53	18.2	0.64	860.00	559.00	6.7	65.3	Lachlan
E3	MW313	Off-site			22-04-21	11.88	182.99	-	-	-	-	Not sampled. No access granted. Land owner could not be contacted	-	-	-	-	-	-	-	Cowra
E4	MW313	Off-site			21-10-21	11.88	182.99	-	-	-	-	Not sampled. No access granted. Land owner could not be contacted	-	-	-	-	-	-	-	Cowra
E5	MW313	Off-site			-	12	182.99	-	-	-	-	Location Dry	-	-	-	-	-	-	-	-
E6	MW313	Off-site			-	11.93	182.99	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Cowra
E7	MW313	Off-site			-	-	182.99	-	-	-	-	Dry.	-	-	-	-	-	-	-	Cowra
E8	MW313	Off-site			13-10-23	12.06	182.99	-	-	-	-	Dry	-	-	-	-	-	-	-	Cowra

1. As measured from the top of the Hydrasleeve.
2. Result anomalous. Potentially faulty YSI.

Event	Sample ID	Property	Easting	Northing	Monitoring Date	Sample Depth (m)	Water Body Depth (m)	Flow Rate (qualitative)	Flow Rate (m/s)	Water Colour	Turbidity	Channel Width (m)	Water Body Condition	Other Observations	Temp (C°)	DO (mg/L)	EC (uS/cm)	TDS	pH	Eh (mV)
E3	SW104	On-site	542253.59	6110127.89	19-04-21	0.01	-	Low	-	-	-	-	Underground sewage channel	Very slow rate of flow.	15.4	7.2	609.3	390	8.3	83.1
E4	SW104	On-site	542253.59	6110127.89	20-10-21	0.01	-	Low	-	-	-	-	Underground sewage channel	Very low flow, stormwater drain.	23.2	6.56	64	41	8.38	76.1
E5	SW104	On-site	542263.80	6110131.68	01-05-22	0.1	0.1	Fast	-	Clear	Low	-	Underground sewage channel	Strong decaying odour, dead cat observed downstream of sampling point in pit	18.4	9.60	194	124	7.4	157.2
E6	SW104	On-site	542263.80	6110131.68	05-11-22	0.1	0.1	Medium	-	Clear	Low	-	Underground sewage channel	-	16.8	5.41	738	472	7.9	88.3
E7	SW104	On-site	542263.80	6110131.68	15-04-23	0.1	0.1	Medium	0.5	Clear	Low	-	Underground sewage channel	No odour.	20.6	5.07	642	411	8.07	106.7
E8	SW104	On-site	542263.80	6110131.68	14-10-23	0.05	0.1	Low	5	Clear	No	-	Underground sewage channel	No foaming, no microorganisms, no algae, no sheen, slight organic odour	15.6	6.30	613	392	7.62	122
E3	SW206	Off-site	541675.39	6110527.27	19-04-21	0	-	Medium	-	-	-	-	Stormwater discharge pipe	-	17.3	5.39	788	504	8.38	72.7
E4	SW206	Off-site	541675.39	6110527.27	21-10-21	0.1	-	Low	-	-	-	-	Stormwater discharge pipe	Sampled from culvert, low flow from RAAF base.	16.1	6.17	441.6	283	8.44	38.5
E5	SW206	Off-site	541675.39	6110527.28	03-05-22	0.1	0.1	Medium	-	Clear	Low	-	Stormwater discharge pipe	Very stagnant water below	14.3	7.51	201	129	7.9	163.4
E6	SW206	Off-site	541675.39	6110527.28	04-11-22	0.1	1.5	Low	-	Clear	Low	-	Stormwater discharge pipe	-	16.6	5.68	788	504	8.6	-62.2
E7	SW206	Off-site	541675.39	6110527.28	15-04-23	0	0	High	Unable to discern due to low volume	Cloudy	Low	-	Stormwater discharge pipe	Low volume high speed inflow from culvert, minor foam in water body once inflow enters culvert, no odour, no microorganisms.	18.2	5.86	124	80	8.11	69.8
E8	SW206	Off-site	541675.39	6110527.28	15-10-23	0.3	0.5	High	10	Clear	Low	-	Stormwater discharge pipe	Foaming, no microorganisms, no algae, no sheen, no odour, some minor vegetation (grasses etc)	14.6	7.47	39	25	7.25	51.5
E3	SW212	Off-site	539582.68	6114411.44	19-04-21	0.2	-	Medium	-	-	-	-	River	-	13.6	5.45	173.2	111	7.71	74.8
E4	SW212	Off-site	539582.68	6114411.44	19-10-21	0.1	-	Medium	-	-	-	-	River	-	16	5.66	145.8	93	7.69	110
E5	SW212	Off-site	539563.37	6114381.22	03-05-22	0.1	2	Medium	-	Brown	Low	-	River	-	15.9	3.37	125	80	7.5	47.2
E6	SW212	Off-site	539563.37	6114381.22	-	-	-	-	-	-	-	-	River	Inaccessible due to flood water	-	-	-	-	-	-
E7	SW212	Off-site	539563.37	6114381.22	15-04-23	0.3	0.5	Stagnant	0	Clear	Low	10	River	No sheen, no odour, some surface water bugs.	18	5.72	205	131	7.72	114.4
E8	SW212	Off-site	539563.37	6114381.22	15-10-23	0.3	Unknown	3	High	Slightly cloudy	No	10	River	No foaming, no microorganisms, no algae, no sheen, no odour	15.6	7.98	91	58	7.98	87.1
E3	SW218	Off-site	541664.98	6110523.10	20-04-21	0	-	Low	-	-	-	-	Stormwater culvert	-	17.1	5.54	1346	861	8.36	62
E4	SW218	Off-site	541664.98	6110523.10	21-10-21	0.1	-	Medium	-	Cloudy	-	-	Stormwater culvert	-	16.5	6.68	558	357	8.59	40.6
E5	SW218	Off-site	541679.77	6110529.39	03-05-22	0.1	0.1	Fast	-	Clear	Low	-	Stormwater culvert	-	12.5	7.88	209	134	8.3	162.5
E6	SW218	Off-site	541679.77	6110529.39	04-11-22	0.1	1.5	Low	-	Cloudy	High	-	Stormwater culvert	Brown cloudy sediment within water flowing from pipe	16.9	0.09	53.9	34	7.7	168.8
E7	SW218	Off-site	541679.77	6110529.39	15-04-23	0	0	High	N/A	Clear	Low	-	Stormwater culvert	Fast flowing trickle from inflow culvert, sampled directly into water scoop, unable to take quantitative flow rate or observe sheen due to the minimal fast moving inflow, no odour, no microorganisms.	18.9	6.62	157	100	8.20	75.5
E8	SW218	Off-site	541679.77	6110529.39	15-10-23	0.2	0.5	Medium	5	Clear	Low	-	Stormwater culvert	Foaming, no microorganisms, no algae, no sheen, no odour, some minor vegetation (grasses etc)	14.6	7.43	28	18	7.20	70.3
E3	SW228	Off-site	543266.05	6112271.19	20-04-21	0.2	-	Low	-	-	-	-	Sewage inflow pit	-	19.9	11.19	650	416	9.67	11.5
E4	SW228	Off-site	543266.05	6112271.19	21-10-21	0.2	-	Low	-	-	-	-	Sewage inflow pit	-	20.3	3.97	836	535	8.14	59.3
E5	SW228	Off-site	543262.03	6112272.39	03-05-22	0.3	1	Fast	-	Green	Low	-	Sewage inflow pit	Some particulates, no odour	18	12.12	366	234	9.5	50.3
E6	SW228	Off-site	543262.03	6112272.39	09-11-22	0.1	0.2	Low	-	Cloudy	Medium	-	Sewage inflow pit	Sewage odour	22.9	12.90	545	349	9.0	32.6
E7	SW228	Off-site	543262.03	6112272.39	17-04-23	0.2	0.4	Low	0	Green	Low	-	Sewage inflow pit	Sewage particles, greenish tinge, minor foaming.	19.4	10.44	525	336	10.48	-15.2
E8	SW228	Off-site	543262.03	6112272.39	16-10-23	0.05	Unknown	Stagnant	0	Yellow	Low	-	Sewage inflow pit	No foaming, no microorganisms, no algae, no sheen, strong sewage odour	16.8	0.97	578	370	7.50	2.0
E3	SW234	Off-site	536164.53	6112335.11	20-04-21	0.5	-	Medium	-	-	-	-	Creek	-	16.9	5.34	743	476	7.47	129.5
E4	SW234	Off-site	536164.53	6112335.11	19-10-21	0.2	-	Medium	-	-	-	-	Creek	-	22.9	5.16	633	405	7.72	133.5
E5	SW234	Off-site	536166.15	6112334.13	03-05-22	0.3	1	Slow	-	Brown	High	-	Creek	Very stagnant and little flow	18.5	4.20	477	305	7.2	173.3

Event	Sample ID	Property	Easting	Northing	Monitoring Date	Sample Depth (m)	Water Body Depth (m)	Flow Rate (qualitative)	Flow Rate (m/s)	Water Colour	Turbidity	Channel Width (m)	Water Body Condition	Other Observations	Temp (C°)	DO (mg/L)	EC (uS/cm)	TDS	pH	Eh (mV)
E6	SW234	Off-site	536166.15	6112334.13	08-11-22	0.1	2	Low	-	Cloudy	Medium	-	Creek	-	23.1	4.06	161.3	103	7.1	145.6
E7	SW234	Off-site	536166.15	6112334.13	13-04-23	0.2	2	Low	0.01	Cloudy	Low	20	Creek	No odour, reeds, no sheen, no foam no algae.	17.9	3.90	275	176	7.71	76.8
E8	SW234	Off-site	536166.15	6112334.13	15-10-23	0.3	0.5	Low	0.01	Brown	Medium	20	Creek	No foaming, no microorganisms, no algae, no sheen, no odour	19	6.32	536	343	8.09	48.00
E3	SW236	Off-site	543767.37	6112318.24	20-04-21	0.05	-	Low	-	-	-	-	Creek	Water stagnant with minimal flow	12.8	7.52	1061	679	8.28	96.6
E4	SW236	Off-site	543767.37	6112318.24	22-10-21	0.1	-	Low	-	-	-	-	Creek	-	16.4	4.67	560	358	7.74	108.5
E5	SW236	Off-site	543767.40	6112318.00	03-05-22	0.2	0.5	Slow	-	Brown	High	-	Creek	Water highly stagnant, no flow observed, high number of particulates, no odour, no water surface sheen, fish observed swimming	17	8.82	238	152	7.6	102.7
E6	SW236	Off-site	543767.40	6112318.00	04-11-22	0.1	0.5	Low	-	Cloudy	Medium	-	Creek	High water level, brown water	15.3	5.54	194.6	125	7.0	112.2
E7	SW236	Off-site	543767.40	6112318.00	14-04-23	0.2	1	Low	0.2	Cloudy	Medium	10	Creek	No odour, small foam bubbles, no organisms, no sheen.	16.4	5.50	783	501	7.46	150.6
E8	SW236	Off-site	543767.40	6112318.00	14-10-23	0.1	1	Low	5	Slightly cloudy	Low	10	Creek	No foaming, no microorganisms, no algae, no sheen, odour of organics and manure	18.5	7.84	1167	747	7.71	63.4
E3	SW240	Off-site	545027.98	6110671.82	20-04-21	0.1	-	Low	-	-	-	-	Creek	-	11.8	3.5	1183	757	7.41	129.3
E4	SW240	Off-site	545027.98	6110671.82	22-10-21	0.1	-	Low	-	-	High	-	Creek	Stangant water, highly turbid.	14.7	2.24	231.3	148	7.13	118.6
E5	SW240	Off-site	545028.00	6110672.00	03-05-22	0.2	0.5	Slow	-	Brown	High	-	Creek	Highly stagnant, no flow, layer of brown algae on surface, high proportion of particulates, organic decomposing odour	14.1	5.23	191	122	7.4	31.7
E6	SW240	Off-site	545028.00	6110672.00	04-11-22	0.1	-	High	-	Clear	Low	-	Creek	Fast flowing water	18.7	2.77	169.2	108	6.7	-33.3
E7	SW240	Off-site	545028.00	6110672.00	14-04-23	0.1	0.2	Stagnant	0	Brown	High	3	Creek	Stagnant, no odour, no foam, bugs on water surface.	18.6	3.73	255	163	7.24	129.8
E8	SW240	Off-site	545028.00	6110672.00	14-10-23	0.1	0.4	Low	0.3	Slightly cloudy, light brown	Low	3	Creek	No foaming, microorganisms, no algae, no sheen, slight manure odour	16.2	6.86	938	600	7.48	105.5
E3	SW261	Off-site	534770.43	6114079.37	21-04-21	0.3	-	High	-	-	-	-	River	-	14.3	6.38	185.5	119	7.79	149.6
E4	SW261	Off-site	534770.43	6114079.37	19-10-21	0.1	-	High	-	-	-	-	River	-	15.5	5.64	176.8	113	7.52	79.5
E5	SW261	Off-site	534761.81	6114107.59	-	-	-	-	-	-	-	-	River	Sampling sheet not available due to software malfunction	-	-	-	-	-	-
E6	SW261	Off-site	534761.81	6114107.59	-	-	-	-	-	-	-	-	River	Inaccessible due to flood water	-	-	-	-	-	-
E7	SW261	Off-site	534761.81	6114107.59	17-04-23	0.3	2	Low	0.2	Brown	Medium	80	River	No odour, no sheen, no microorganisms, no vegetation, minimal foaming.	14.5	7.08	188	121	7.73	39.3
E8	SW261	Off-site	534761.81	6114107.59	15-10-23	0.3	Unknown	High	0.5	Slightly cloudy	Low	80	River	No foaming, no microorganisms, no algae, no sheen, no odour	15.7	7.48	92	59	8.01	60.8
E3	SW262	Off-site	534968.42	6113905.72	22-04-21	0.2	-	Low	-	-	-	-	River	Water stagnant due to trees blocking flow from Marshalls Creek	14.4	7.75	258.6	166	7.76	172.5
E4	SW262	Off-site	534968.42	6113905.72	19-10-21	0.2	-	Low	-	-	-	-	River	Fallen trees upstream of Marshall's Creek that seem to obstruct flow. Demolition waste evident on the bank.	18.4	5.93	250.1	160	7.63	104.7
E5	SW262	Off-site	534970.84	6113903.83	28-04-22	0.1	2	Medium	-	Clear	Low	-	River	-	17.6	5.35	217	139	7.6	34.8
E6	SW262	Off-site	534970.84	6113903.83	08-11-22	0.1	0.2	High	-	Cloudy	Medium	-	River	Sampled on flood plain 15m south of historic location, junction of creek and river not visible.	17	4.93	123.9	79	7.5	139.4
E7	SW262	Off-site	534970.84	6113903.83	17-04-23	0.2	0.4	Low	0.1	Brown	High	80	River	No odour, no sheen, no microorganisms, minimal foaming uprooted trees within river 20m directly upstream.	14.9	6.68	110	70	7.64	53
E8	SW262	Off-site	534970.84	6113903.83	15-10-23	0.3	Approx 1m	Low	0.05	Cloudy	Low	80	River	No foaming, no microorganisms, no algae, no sheen, no odour	19.7	5.38	302	193	8.02	72.4
E3	SW286	Off-site	543635.32	6114263.22	22-04-21	0.2	-	High	-	-	-	-	River	-	14.8	5.98	162.4	104	7.73	116.4
E4	SW286	Off-site	543635.32	6114263.22	22-10-21	0.2	-	High	-	-	-	-	River	-	15.8	5.51	91.9	59	7.76	95.7
E5	SW286	Off-site	543605.67	6114255.45	03-05-22	0.2	0.5	Fast	-	Brown	High	-	River	No odour, minimal particulates, river flowing rapidly	16.6	8.19	61	39	5.3	145.6
E6	SW286	Off-site	543605.67	6114255.45	08-11-22	0.1	0.5	High	-	Cloudy	Medium	-	River	No odour, minimal particulates, river flowing rapidly	20.3	2.36	229.9	147	6.9	133.4
E7	SW286	Off-site	543605.67	6114255.45	18-04-23	0.3	2	High	1	Clear	Low	80	River	No odour, slight bubbling, no foam, mosquitos on surface, no algae.	14.7	8.09	3990	2554	7.53	75.5
E8	SW286	Off-site	543605.67	6114255.45	14-10-23	0.3	Unknown	High	2	Brown	Low	80	River	No foaming, no microorganisms, no algae, no sheen, no odour	16.7	7.78	98	63	7.77	60.6

Event	Sample ID	Property	Easting	Northing	Monitoring Date	Sample Depth (m)	Water Body Depth (m)	Flow Rate (qualitative)	Flow Rate (m/s)	Water Colour	Turbidity	Channel Width (m)	Water Body Condition	Other Observations	Temp (C°)	DO (mg/L)	EC (uS/cm)	TDS	pH	Eh (mV)
E3	SW288	Off-site	542934.31	6111998.95	22-04-21	0.1	-	High	-	-	-	-	Sewage pit	-	23.8	0.81	1009	646	7.74	-172.3
E4	SW288	Off-site	542934.31	6111998.95	21-10-21	0.1	-	High	-	-	-	-	Sewage pit	Solids within water.	19.9	0.29	1057	676	8.53	-182.4
E5	SW288	Off-site	542930.77	6112004.76	03-05-22	0.3	1	Slow	-	Cloudy	Medium	-	Sewage pit	Strong sewage odour, particulates present in sample	22.4	7.54	456	292	7.8	39.9
E6	SW288	Off-site	542930.77	6112004.76	09-11-22	0.1	0.2	High	-	Brown	High	-	Sewage pit	Strong sewage odour, particulates present in sample	21.2	0.42	947	606	7.9	-160.4
E7	SW288	Off-site	542930.77	6112004.76	17-04-23	-	-	High	10	Cloudy	Medium	-	Sewage pit	Sewage odour.	21.8	0.61	990	634	7.51	-179.4
E8	SW288	Off-site	542930.77	6112004.76	16-10-23	NA	NA	High	-	Yellow	No	-	Sewage pit	No foaming, no microorganisms, no algae, no sheen, strong sewage odour	19.2	1.44	706	452	7.54	-118.8
E3	SW289	Off-site	543071.11	6112163.76	22-04-21	0.1	-	High	-	-	-	-	Sewage pit	-	23.8	0.37	1275	816	7.71	-28.9
E4	SW289	Off-site	543071.11	6112163.76	21-10-21	0.1	-	High	-	-	-	-	Sewage pit	-	20.3	1.11	884	566	7.85	2
E5	SW289	Off-site	543054.42	6112176.56	03-05-22	0	0	Fast	-	Cloudy	Medium	-	Sewage pit	Taken from RAAF inflow stream	22.8	0.96	477	305	7.7	18.5
E6	SW289	Off-site	543054.42	6112176.56	09-11-22	0.1	0.2	High	-	Brown	High	-	Sewage pit	Sewage odour	21.2	0.24	850	544	7.4	-50
E7	SW289	Off-site	543054.42	6112176.56	17-04-23	0	0	High	10	Cloudy	Medium	-	Sewage pit	Sewage odour, sewage fragments.	21.6	0.73	1015	650	7.50	-60.9
E8	SW289	Off-site	543054.42	6112176.56	16-10-23	0.1	1	High	-	Yellowish brown	Low	-	Sewage pit	No foaming, no microorganisms, no algae, no sheen, strong sewage odour	18.9	1.90	617	395	7.52	-14.7
E3	SW294	Off-site	535316.74	6113380.92	27-04-21	0.2	-	Medium	-	-	-	-	Culvert	-	15.1	4.79	589	377	8.13	169.9
E4	SW294	Off-site	535316.74	6113380.92	19-10-21	0	-	High	-	-	-	-	Culvert	Water cloudy in Marshall's Creek directly west of culvert.	14	6.92	126.5	81	8.73	104.2
E5	SW294	Off-site	535307.66	6113375.69	28-04-22	0.1	0.5	Medium	-	Clear	Low	-	Culvert	River appears grey brown. Clear. Sampled DS of steel plate culvert	17.7	0.39	590	378	7.4	21.0
E6	SW294	Off-site	535307.66	6113375.69	-	-	-	-	-	-	-	-	Culvert	Inaccessible due to flood water	-	-	-	-	-	-
E7	SW294	Off-site	535307.66	6113375.69	13-04-23	0.1	0.1	Medium	0.2	Clear	Low	2	Culvert	No odour, sampled from culvert, no foam, no sheen, no organisms.	16.1	5.3	717	459	11.55	-48.2
E8	SW294	Off-site	535307.66	6113375.69	15-10-23	NA	NA	Medium	5	Cloudy	No	2	Culvert	Foaming, no microorganisms, no algae, no sheen, no odour	15.3	7.33	298	191	8.44	59.8
E3	SW309	Off-site	6113739.79	535431.22	27-04-21	0.5	-	High	-	-	-	-	River	-	16.7	5.42	169.6	109	7.73	142.5
E4	SW309	Off-site	6113739.79	535431.22	19-10-21	0.1	-	Medium	-	-	-	-	River	-	15.4	5.80	131.3	84	7.55	102.3
E5	SW309	Off-site	535436.96	6113744.17	02-05-22	0.2	5	Medium	-	Brown	Medium	-	River	Organic material within river water	17.3	5.89	151	97	7.4	175.2
E6	SW309	Off-site	535436.96	6113744.17	08-11-22	0.1	0.5	High	-	Cloudy	Medium	-	River	High water level, sampled over river bank	18	4.55	129.7	83	6.9	149.5
E7	SW309	Off-site	535436.96	6113744.17	15-04-23	0.3	1	Medium	0.5	Brown	High	120	River	No odour, no sheen, no microorganisms, no vegetation.	14.7	6.91	247	158	7.84	168.3
E8	SW309	Off-site	535436.96	6113744.17	12-10-23	0.3	1	High	0.5	Clear	Low	120	River	No foaming, no microorganisms, no algae, no sheen, no odour, sampled 5m east of boat ramp	16.4	7.60	126	81	7.65	46.5
E3	SW310	Off-site	538809.34	6111596.73	27-04-21	0.05	-	Low	-	-	-	-	Road culvert	-	17.8	3.73	200.8	129	7.02	144.1
E4	SW310	Off-site	538809.34	6111596.73	19-10-21	0.05	-	Low	-	-	-	-	Road culvert	-	21.7	4.72	189.2	121	7.88	104.8
E5	SW310	Off-site	538809.34	6111596.73	30-04-22	0.1	0.1	Slow	-	Brown	Medium	-	Road culvert	Sampled from scoop by hand-pole	18.7	0.05	190	122	7.7	65.3
E6	SW310	Off-site	538809.34	6111596.73	04-11-22	0.1	0.4	High	-	Cloudy	Medium	-	Road culvert	Reeds and grasses observed, high water level and flow. Foam observed during sampling.	19.9	4.91	124.5	80	6.9	-48.9
E7	SW310	Off-site	538809.34	6111596.73	14-04-23	0.1	0.2	Stagnant	0	Brown	High	1	Road culvert	Grey brown water, no flow, white foaming on surface, no organisms, no odour, no sheen.	22.7	4.30	195	125	7.38	119.1
E8	SW310	Off-site	538809.34	6111596.73	15-10-23	0.01	0.05	No	0	Grey brown	High	1	Road culvert	No foaming, no microorganisms, no algae, no sheen, no odour	13.4	6.54	266	170	7.12	30.7

							Perfluorocarbons													
							Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
							µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR							0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water								0.56	0.07															
PFAS NEMP 2.0 Table 1 Health Recreational Water								10	2															
PFAS NEMP 2.0 Table 5 Freshwater 95%							0.13	220																
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																		
GW025234_D	Off-base	-	19 Apr 2023	0906_GW025234_D_20230419	Normal	EM2306927	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
GW025234_I	Off-base	-	19 Apr 2023	0906_GW025234_I_20230419	Normal	EM2306927	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW200	Off-base	PO1	07 Jul 2017	0906_GW200_D_07072017	Normal	ES1716876	1.36	0.08	3.36	0.34	0.29	2.00	0.08	<0.02	<0.1	0.10	0.32	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			25 Mar 2020	0906_MW200_20200325	Normal	ES2011455	0.75	0.05	1.90	0.18	0.19	1.15	0.04	<0.02	<0.1	0.05	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			30 Sep 2020	0906_MW200_20200930	Normal	ES2034893	0.60	0.04	1.56	0.14	0.18	0.96	0.05	<0.02	<0.1	0.04	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			23 Apr 2021	0906_MW200_20210423	Normal	ES2116296	0.39	0.04	1.39	0.14	0.15	1.00	<0.02	<0.02	<0.1	0.05	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			21 Oct 2021	0906_MW200_20211021	Normal	ES2139300	0.31	0.02	0.86	0.10	0.10	0.55	0.03	<0.02	<0.1	0.03	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			03 May 2022	0906_MW200_20220503	Normal	EM2208337	0.28	0.03	0.92	0.09	0.10	0.64	0.02	<0.02	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			08 Nov 2022	0906_MW200_20221108	Normal	EM2222380	0.28	0.02	0.92	0.10	0.10	0.64	0.02	<0.02	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Apr 2023	0906_MW200_20230413	Normal	EM2306915	0.30	0.02	0.96	0.09	0.12	0.66	0.03	<0.02	<0.1	0.03	0.16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Oct 2023	0906_MW200_231013	Normal	EM2318608	0.30	0.02	0.90	0.08	0.09	0.60	0.03	<0.02	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW204	Off-base	PO1	07 Jul 2017	0906_GW204_D_07072017	Normal	ES1716876	0.03	<0.01	0.07	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC101_07072017	Field_D	ES1716876	0.04	<0.01	0.08	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC201_07072017	Interlab_D	553701	0.02	<0.01	-	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			18 Jan 2018	0906_MW204_D_180118	Normal	ES1802488	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
				0906_QC101_180118	Field_D	ES1802488	0.02	<0.01	0.04	<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
				0906_QC201_180118	Interlab_D	581448	0.01	<0.01	0.04	<0.01	<0.01	0.03	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			20 Feb 2018	0906_MW204_D_180220	Normal	ES1805693	0.03	<0.01	0.05	<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
			30 Mar 2020	0906_MW204_20200330	Normal	ES2011455	<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
			01 Oct 2020	0906_MW204_20201001	Normal	ES2034893	<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
			23 Apr 2021	0906_MW204_20210423	Normal	ES2116296	<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
			21 Oct 2021	0906_MW204_20211021	Normal	ES2139300	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			03 May 2022	0906_MW204_20220503	Normal	EM2208337	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			09 Nov 2022	0906_MW204_20221109	Normal	EM2222380	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Apr 2023	0906_MW204_20230413	Normal	EM2306915	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Oct 2023	0906_MW204_231013	Normal	EM2318608	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW209	Off-base	PO2	07 Sep 2017	0906_GW209_D_170907	Normal	EM1712263	<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
				0906_QC101_170907	Field_D	EM1712263	<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
				0906_QC201_170907	Interlab_D	562566	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			12 Jan 2018	0906_MW209_D_180112	Normal	ES1801990	<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
			31 Mar 2020	0906_MW209_20200331	Normal	ES2011456	<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
			30 Sep 2020	0906_MW209_20200930	Normal	ES2034898	<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
			22 Apr 2021	0906_MW209_20210422	Normal	ES2116325	<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
			21 Oct 2021	0906_MW209_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			03 May 2022	0906_MW209_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			09 Nov 2022	0906_MW209_20221109	Normal	EM2222392	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			18 Apr 2023	0906_MW209_20230418	Normal	EM2306916	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Oct 2023	0906_MW209_231016	Normal	EM2318609	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW210	Off-base	PO3	20 Jun 2017	0906_0S002_170620	Normal	ES1715329	<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
				0906_QC101_170620	Field_D	ES1715329	<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
				0906_QC201_170620	Interlab_D	551365	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			18 Jan 2018	0906_MW210_D_180112	Normal	ES1802470	0.03	<0.01	0.03	<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
			21 Feb 2018	0906_MW210_D_180221	Normal	ES1805664	<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
			17 Jul 2018	0906_MW210_D_180717	Normal	EM1811457	<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
				0906_QC101_180717	Field_D	EM1811457	<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
				0906_QC201_180717	Interlab_D	608455	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			26 Mar 2020	0906_MW210_20200326	Normal	ES2011461	<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
			01 Oct 2020	0906_MW210_20201001	Normal	ES2034897	<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
			23 Apr 2021	0906_MW210_20210423	Normal	ES2116321	<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
			21 Oct 2021	0906_MW210_20211021	Normal	ES2139302	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			03 May 2022	0906_MW210_20220503	Normal	EM2208335	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			08 Nov 2022	0906_MW210_20221108	Normal	EM2222395	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			18 Apr 2023	0906_MW210_20230418	Normal	EM2306917	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Oct 2023	0906_MW210_231013	Normal	EM2318610	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW211	Off-base	PO4	20 Jun 2017	0906_EWB1_170620	Normal	ES1715334	<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
			04 Dec 2017	0906_EWB1_171204	Normal	ES1731229	<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
			27 Mar 2020	0906_MW211_20200327	Normal	ES2011459	<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
			28 Sep 2020	0906_MW211_20200928	Normal	ES2034885	<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
			20 Apr 2021	0906_MW211_20210420	Normal	ES2116324	<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

						Perfluorocarbons																	
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							0.56	0.07															
PFAS NEMP 2.0 Table 1 Health Recreational Water							10	2															
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
			20 Oct 2021	0906_MW211_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			08 Nov 2022	0906_MW211_20221108	Normal	EM2222397	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			12 Oct 2023	0906_MW211_231012	Normal	EM2318611	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW212	Off-base	PO4	20 Jun 2017	0906_EWB2_170620	Normal	ES1715334	<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
			04 Dec 2017	0906_EWB2_171204	Normal	ES1731229	<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
			27 Mar 2020	0906_MW212_20200327	Normal	ES2011459	<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
			28 Sep 2020	0906_MW212_20200928	Normal	ES2034885	<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
			20 Apr 2021	0906_MW212_20210420	Normal	ES2116324	<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
			20 Oct 2021	0906_MW212_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			02 May 2022	0906_MW212_20220502	Normal	EM2208334	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			08 Nov 2022	0906_MW212_20221109	Normal	EM2222397	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			12 Oct 2023	0906_MW212_231012	Normal	EM2318611	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW213	Off-base	PO4	20 Jun 2017	0906_EWB3_170620	Normal	ES1715334	<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
			04 Dec 2017	0906_EWB3_171204	Normal	ES1731229	<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
			27 Mar 2020	0906_MW213_20200327	Normal	ES2011459	<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
				0906_QC101_20200327	Field_D	ES2011459	<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
				0906_QC201_20200327	Interlab_D	712442	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			28 Sep 2020	0906_MW213_20200928	Normal	ES2034885	<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
				0906_QC101_20200928	Field_D	ES2034862-AA	<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
				0906_QC201_20200928	Interlab_D	749083	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			20 Apr 2021	0906_MW213_20210420	Normal	ES2116324	<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
			20 Oct 2021	0906_MW213_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC104_20211020	Field_D	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC204_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			02 May 2022	0906_MW213_20220502	Normal	EM2208334	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			12 Oct 2023	0906_MW213_231012	Normal	EM2318611	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW214	Off-base	Base	20 Jun 2017	0906_GW047279_170620	Normal	ES1715334	<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
			18 Jan 2018	0906_MW214_D_180118	Normal	ES1802545	<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
			31 Mar 2020	0906_MW214_20200331	Normal	ES2011568	<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
			01 Oct 2020	0906_MW214_20201001	Normal	ES2034891	<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
			27 Apr 2021	0906_MW214_20210427	Normal	ES2116327	<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
			21 Oct 2021	0906_MW214_20211021	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			04 May 2022	0906_MW214_20220503	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			07 Nov 2022	0906_MW214_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			14 Apr 2023	0906_MW214_20230414	Normal	EM2306945	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Oct 2023	0906_MW214_231016	Normal	EM2318641	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW231	Off-base	PO2	12 Jan 2018	0906_MW231_D_180112	Normal	ES1802473	<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
			26 Mar 2020	0906_MW231_20200326	Normal	ES2011456	<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
						ES2011459	<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
			30 Sep 2020	0906_MW231_20200930	Normal	ES2034898	<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
			23 Apr 2021	0906_MW231_20210423	Normal	ES2116325	<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
			22 Oct 2021	0906_MW231_20211022	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			04 May 2022	0906_MW231_20220504	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			09 Nov 2022	0906_MW231_20221109	Normal	EM2222392	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			18 Apr 2023	0906_MW231_20230418	Normal	EM2306916	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Oct 2023	0906_MW231_231016	Normal	EM2318609	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW233	Off-base	PO5	20 Feb 2018	0906_MW233_I_180220	Normal	ES1805656	0.08	<0.01	0.18	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			25 Mar 2020	0906_MW233_20200325	Normal	ES2011451	0.18	<0.01	0.37	<0.02	0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			30 Sep 2020	0906_MW233_20200930	Normal	ES2034890	0.25	<0.01	0.44	0.02	0.03	0.19	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			22 Apr 2021	0906_MW233_20210422	Normal	ES2116319	0.17	<0.01	0.38	0.02	0.02	0.21	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			19 Oct 2021	0906_MW233_20211019	Normal	ES2139304	0.28	<0.01	0.52	0.03	0.04	0.24	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			02 May 2022	0906_MW233_20220502	Normal	EM2208333	0.20	<0.01	0.39	0.02	0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			07 Nov 2022	0906_MW233_20221107	Normal	EM2222376	0.24	<0.01	0.47	0.03	0.03	0.23	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Apr 2023	0906_MW233_ 20230413	Normal	EM2306918	0.20	<0.01	0.41	0.02	0.04	0.21	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Oct 2023	0906_MW233_231016	Normal	EM2318613	0.18	<0.01	0.36	<0.02	0.02	0.18	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW235	Off-base	PO6	11 Jan 2018	0906_MW235_D_180111	Normal	ES1802460	<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
			19 Dec 2019	0906_MW235_D_191219	Normal	ES1942606-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-
			27 Mar 2020	0906_MW235_20200327	Normal	ES2011450	<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
			30 Sep 2020	0906_MW235_20200930	Normal	ES2034899	<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
			20 Apr 2021	0906_MW235_20210420	Normal	ES2115488	<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

							Perfluorocarbons																
							Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
							µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR							0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water								0.56	0.07														
PFAS NEMP 2.0 Table 1 Health Recreational Water								10	2														
PFAS NEMP 2.0 Table 5 Freshwater 95%							0.13	220															
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
			20 Oct 2021	0906_MW235_20211020	Normal	ES2139305	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			01 May 2022	0906_MW235_20220501	Normal	EM2208341	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			07 Nov 2022	0906_MW235_20221107	Normal	EM2222377	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Apr 2023	0906_MW235_20230413	Normal	EM2306920	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW238	Off-base	PO2	12 Dec 2019	0906_MW238_I_191212	Normal	ES1941492-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-
			30 Mar 2020	0906_MW238_20200330	Normal	ES2011456	<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
			30 Sep 2020	0906_MW238_20200930	Normal	ES2034898	<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
			23 Apr 2021	0906_MW238_20210423	Normal	ES2116325	<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
			21 Oct 2021	0906_MW238_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			03 May 2022	0906_MW238_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			08 Nov 2022	0906_MW238_20221108	Normal	EM2222392	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			18 Apr 2023	0906_MW238_20230418	Normal	EM2306916	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Oct 2023	0906_MW238_231015	Normal	EM2318609	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW239	Off-base	PO2	12 Dec 2019	0906_MW239_S_191212	Normal	ES1941492-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-
			30 Mar 2020	0906_MW239_20200330	Normal	ES2011456	<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
			01 Oct 2020	0906_MW239_20201001	Normal	ES2034898	<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
			23 Apr 2021	0906_MW239_20210423	Normal	ES2116325	<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
			21 Oct 2021	0906_MW239_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			03 May 2022	0906_MW239_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			08 Nov 2022	0906_MW239_20221108	Normal	EM2222392	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			18 Apr 2023	0906_MW239_20230418	Normal	EM2306916	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Oct 2023	0906_MW239_231015	Normal	EM2318609	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW240	Off-base	PO7	12 Dec 2019	0906_MW240_D_191212	Normal	ES1941492-AD	0.05	<0.01	0.26	0.04	-	0.21	-	-	<0.1	<0.02	0.06	<0.02	-	-	-	-	-	-
				0906_QC101_191212	Field_D	ES1941492-AD	0.04	<0.01	0.33	0.05	-	0.29	-	-	<0.1	<0.02	0.08	<0.02	-	-	-	-	-	-
			19 Dec 2019	0906_MW240_I_191219	Normal	ES1942606-AB	0.02	<0.01	0.19	0.03	-	0.17	-	-	<0.1	<0.02	0.04	<0.02	-	-	-	-	-	-
				0906_QC101_191219	Field_D	ES1942606-AB	0.02	<0.01	0.19	0.03	-	0.17	-	-	<0.1	<0.02	0.05	<0.02	-	-	-	-	-	-
				0906_QC201_191219	Interlab_D	695221	0.01	<0.01	0.12	0.02	0.01	0.11	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			01 Apr 2020	0906_MW240_20200330	Normal	ES2011453	0.01	<0.01	0.11	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			30 Sep 2020	0906_MW240_20200930	Normal	ES2034866	0.06	0.02	0.41	0.04	0.05	0.35	<0.02	<0.02	<0.1	0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			20 Apr 2021	0906_MW240_20210420	Normal	ES2116333	0.04	0.01	0.27	0.04	0.03	0.23	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			19 Oct 2021	0906_MW240_20211019	Normal	ES2139237	0.04	<0.01	0.19	0.02	0.02	0.15	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			01 May 2022	0906_MW240_20220501	Normal	EM2208150	0.04	<0.01	0.19	<0.02	0.02	0.15	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			07 Nov 2022	0906_MW240_20221107	Normal	EM2222399	0.04	<0.01	0.21	0.02	0.02	0.17	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			17 Apr 2023	0906_MW240_20230417	Normal	EM2306921	0.05	<0.01	0.19	<0.02	<0.02	0.14	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Oct 2023	0906_MW240_231016	Normal	EM2318614	0.06	<0.01	0.20	<0.02	<0.02	0.14	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW241	Off-base	PO8	18 Mar 2020	0906_MW241_D_200318	Normal	ES2009949	<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
			31 Mar 2020	0906_MW241_20200331	Normal	ES2011462	<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
			01 Oct 2020	0906_MW241_20201001	Normal	ES2034889	<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
			22 Apr 2021	0906_MW241_20210422	Normal	ES2116320	<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
			24 Oct 2021	0906_MW241_20211024	Normal	ES2139236	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			02 May 2022	0906_MW241_20220502	Normal	EM2208340	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			08 Nov 2022	0906_MW241_20221108	Normal	EM2222383	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Apr 2023	0906_MW241_20230413	Normal	EM2306922	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Oct 2023	0906_MW241_231013	Normal	EM2318617	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW242	Off-base	PO8	12 Mar 2020	0906_MW242_I_200312	Normal	ES2008845	<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
			31 Mar 2020	0906_MW242_20200331	Normal	ES2011462	<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
			01 Oct 2020	0906_MW242_20201001	Normal	ES2034889	<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
			22 Apr 2021	0906_MW242_20210422	Normal	ES2116320	<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
			22 Oct 2021	0906_MW242_20211022	Normal	ES2139236	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			02 May 2022	0906_MW242_20220502	Normal	EM2208340	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			08 Nov 2022	0906_MW242_20221108	Normal	EM2222383	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			14 Apr 2023	0906_MW242_20230414	Normal	EM2306922	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Oct 2023	0906_MW242_231013	Normal	EM2318617	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW243	On-base	Base	10 Mar 2020	0906_MW243_I_200310	Normal	ES2008845	<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
				0906_QC201_200310	Interlab_D	707955	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			30 Mar 2020	0906_MW243_20200330	Normal	ES2011457	<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
			01 Oct 2020	0906_MW243_20201001	Normal	ES2034862-AB	<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
			23 Apr 2021	0906_MW243_20210423	Normal	ES2116327	<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
				0906_QC106_20210423	Field_D	ES2116327	<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
				0906_QC206_20210423	Interlab_D	792771	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

						Perfluorocarbons																	
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							0.56	0.07															
PFAS NEMP 2.0 Table 1 Health Recreational Water							10	2															
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
			20 Oct 2021	0906_MW243_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			02 May 2022	0906_MW243_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			07 Nov 2022	0906_MW243_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC103_20221107	Field_D	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC203_20221107	Interlab_D	940477	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			17 Apr 2023	0906_MW243_20230417	Normal	EM2306945	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			14 Oct 2023	0906_MW243_231014	Normal	EM2318641	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC100_231014	Field_D	EM2318641	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC200_20231014	Interlab_D	1036478	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW244	Off-base	PO7	13 Mar 2020	0906_MW244_I_200313	Normal	ES2009442	<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
			01 Apr 2020	0906_MW244_20200401	Normal	ES2011562	<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
			01 Oct 2020	0906_MW244_20201001	Normal	ES2034866	<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
			20 Apr 2021	0906_MW244_20210420	Normal	ES2116333	<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
			19 Oct 2021	0906_MW244_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			03 May 2022	0906_MW244_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			09 Nov 2022	0906_MW244_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			14 Apr 2023	0906_MW244_20230414	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Aug 2023	0906_MW244_230816	Normal	EM2314805	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			14 Oct 2023	0906_MW244_231014	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC102_231014	Field_D	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC202_20231014	Interlab_D	1036481	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW245	Off-base	PO7	13 Mar 2020	0906_MW245_S_200313	Normal	ES2009442	<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
			01 Apr 2020	0906_MW245_20200401	Normal	ES2011562	<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
			01 Oct 2020	0906_MW245_20201001	Normal	ES2034866	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			20 Apr 2021	0906_MW245_20210420	Normal	ES2116333	<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
			19 Oct 2021	0906_MW245_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			30 Apr 2022	0906_MW245_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			09 Nov 2022	0906_MW245_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			14 Apr 2023	0906_MW245_20230414	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Aug 2023	0906_MW245_230816	Normal	EM2314805	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			14 Oct 2023	0906_MW245_231014	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW246	Off-base	PO7	22 Jun 2020	0906_MW246_I_200622	Normal	ES2021594	<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
			30 Jul 2020	0906_MW246_I_200730	Normal	ES2026752	<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
				0906_QC202_200730	Normal	735782	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			20 Apr 2021	0906_MW246_20210420	Normal	ES2116333	<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
			20 Oct 2021	0906_MW246_20211020	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			01 May 2022	0906_MW246_20220501	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			07 Nov 2022	0906_MW246_20221107	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Apr 2023	0906_MW246_20230415	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Oct 2023	0906_MW246_231016	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW247	Off-base	PO7	30 Jul 2020	0906_MW247_I_200730	Normal	ES2026752	<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
			27 Apr 2021	0906_MW247_20210427	Normal	ES2116333	<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
			21 Oct 2021	0906_MW247_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			02 May 2022	0906_MW247_20220502	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			09 Nov 2022	0906_MW247_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Apr 2023	0906_MW247_20230415	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Aug 2023	0906_MW247_230816	Normal	EM2314805	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Oct 2023	0906_MW247_231015	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW248	Off-base	PO7	30 Jul 2020	0906_MW248_S_200730	Normal	ES2026752	0.09	0.01	0.15	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.04	0.04	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			27 Apr 2021	0906_MW248_20210427	Normal	ES2116333	0.07	<0.01	0.12	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			20 Oct 2021	0906_MW248_20211020	Normal	ES2139237	0.08	0.01	0.14	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.03	0.03	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.05
			02 May 2022	0906_MW248_20220502	Normal	EM2208150	0.06	<0.01	0.10	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			09 Nov 2022	0906_MW248_20221109	Normal	EM2222399	0.07	<0.01	0.12	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	0.03	0.03	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Apr 2023	0906_MW248_20230415	Normal	EM2306921	0.07	0.01	0.13	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.04	0.03	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Aug 2023	0906_MW248_230816	Normal	EM2314805	0.10	0.01	0.18	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	0.04	0.04	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Oct 2023	0906_MW248_231015	Normal	EM2318614	0.08	0.01	0.15	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	0.04	0.04	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW249	Off-base	PO7	30 Jul 2020	0906_MW249_I_200730	Normal	ES2026752	<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
			28 Apr 2021	0906_MW249_20210428	Normal	ES2116333	<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
			21 Oct 2021	0906_MW249_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			30 Apr 2022	0906_MW249_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05

							Perfluorocarbons																
							Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
							µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR							0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water								0.56	0.07														
PFAS NEMP 2.0 Table 1 Health Recreational Water								10	2														
PFAS NEMP 2.0 Table 5 Freshwater 95%							0.13	220															
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
			09 Nov 2022	0906_MW249_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Apr 2023	0906_MW249_20230415	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Aug 2023	0906_MW249_230816	Normal	EM2314805	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Oct 2023	0906_MW249_231015	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW250	Off-base	PO7	30 Jul 2020	0906_MW250_S_200730	Normal	ES2026752	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.03	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			02 Sep 2020	0906_MW250_S_200902	Normal	ES2031377	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC202_200902	Interlab_D	742937	0.06	<0.01	0.1	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			28 Apr 2021	0906_MW250_20210428	Normal	ES2116333	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.03	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC107_20210428	Field_D	ES2116333	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.03	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC207_20210428	Interlab_D	792804	<0.01	<0.01	0.02	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			19 Oct 2021	0906_MW250_20211019	Normal	ES2139237	<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
			09 Nov 2022	0906_MW250_20221109	Normal	EM2222399	<0.01	<0.01	0.01	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Apr 2023	0906_MW250_20230415	Normal	EM2306921	<0.01	<0.01	0.01	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Aug 2023	0906_MW250_230816	Normal	EM2314805	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Oct 2023	0906_MW250_231015	Normal	EM2318614	<0.01	<0.01	0.01	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW251	Off-base	PO7	30 Jul 2020	0906_MW251_S_200730	Normal	ES2026752	<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
				0906_QC201_200730	Normal	735782	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			22 Apr 2021	0906_MW251_20210422	Normal	ES2118542	<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
			21 Oct 2021	0906_MW251_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			30 Apr 2022	0906_MW251_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			17 Apr 2023	0906_MW251_20230417	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Aug 2023	0906_MW251_230816	Normal	EM2314805	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			14 Oct 2023	0906_QC205_20231015	Interlab_D	1036481	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			15 Oct 2023	0906_MW251_231015	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC105_231015	Field_D	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW252	Off-base	PO7	30 Jul 2020	0906_MW252_I_200730	Normal	ES2026752	<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
			22 Apr 2021	0906_MW252_20210422	Normal	ES2118542	<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
			19 Oct 2021	0906_MW252_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			30 Apr 2022	0906_MW252_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			17 Apr 2023	0906_MW252_20230417	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Aug 2023	0906_MW252_230816	Normal	EM2314805	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Oct 2023	0906_MW252_231015	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW253	Off-base	PO7	30 Jul 2020	0906_MW253_I_200730	Normal	ES2026752	0.01	<0.01	0.03	<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
			20 Apr 2021	0906_MW253_20210420	Normal	ES2116333	<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			19 Oct 2021	0906_MW253_20211019	Normal	ES2139237	0.02	<0.01	0.05	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC102_20211019	Field_D	ES2139231	0.01	<0.01	0.03	<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
				0906_QC202_20211019	Interlab_D	837704	0.02	<0.01	0.06	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			30 Apr 2022	0906_MW253_20220430	Normal	EM2208150	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			07 Nov 2022	0906_MW253_20221107	Normal	EM2222399	<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
			17 Apr 2023	0906_MW253_20230417	Normal	EM2306921	0.02	<0.01	0.04	<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
			16 Aug 2023	0906_MW253_230816	Normal	EM2314805	0.05	0.01	0.11	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Oct 2023	0906_QC206_20231015	Interlab_D	1036481	0.04	0.01	0.1	<0.01	<0.01	0.06	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				0906_MW253_231015	Normal	EM2318614	0.03	<0.01	0.08	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC106_231015	Field_D	EM2318614	0.06	0.01	0.11	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			19 Dec 2023	0906_MW253_231219	Normal	EM2322880	0.07	0.01	0.12	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW254	Off-base	PO7	30 Jul 2020	0906_MW254_S_200730	Normal	ES2026752	<0.01	0.14	0.15	0.02	0.03	0.15	<0.02	<0.02	<0.1	0.04	0.07	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			20 Apr 2021	0906_MW254_20210420	Normal	ES2116333	<0.01	0.14	0.19	0.04	0.03	0.19	<0.02	<0.02	<0.1	0.03	0.06	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			19 Oct 2021	0906_MW254_20211019	Normal	ES2139237	<0.01	0.08	0.13	0.02	0.02	0.13	<0.02	<0.02	<0.1	0.02	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC101_20211019	Field_D	ES2139231	<0.01	0.12	0.14	0.02	0.02	0.14	<0.02	<0.02	<0.1	0.03	0.05	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC201_20211019	Interlab_D	837704	<0.01	0.13	0.14	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.03	0.05	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			30 Apr 2022	0906_MW254_20220430	Normal	EM2208150	0.13	0.25	0.33	0.03	0.03	0.20	<0.02	<0.02	<0.1	0.08	0.09	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			07 Nov 2022	0906_MW254_20221107	Normal	EM2222399	0.02	0.10	0.14	<0.02	0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.04	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			17 Apr 2023	0906_MW254_20230417	Normal	EM2306921	0.02	0.10	0.14	<0.02	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Aug 2023	0906_MW254_230816	Normal	EM2314805	0.32	0.14	0.45	<0.02	<0.02	0.13	<0.02	<0.02	<0.1	0.04	0.05	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Oct 2023	0906_MW254_231015	Normal	EM2318614	0.27	0.14	0.40	<0.02	<0.02	0.13	<0.02	<0.02	<0.1	0.04	0.05	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			19 Dec 2023	0906_MW254_231219	Normal	EM2322880	0.26	0.15	0.37	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	0.04	0.06	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW255	Off-base	PO7	30 Jul 2020	0906_MW255_I_200730	Normal	ES2026752	<0.01	0.02	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			22 Apr 2021	0906_MW255_20210422	Normal	ES2116333	0.04	<0.01	0.14	0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			02 Jul 2021	0906_MW255_02072021	Normal	ES2124834	0.04	<0.01	0.12	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC101_02072021	Field_D	ES2124834	0.03	<0.01	0.11	<0.02	-	0.08	-	-	<0.1	<0.02	0.02	<0.02	-	-	-	-	-	-

							Perfluorocarbons																
							Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
							µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR							0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water								0.56	0.07														
PFAS NEMP 2.0 Table 1 Health Recreational Water								10	2														
PFAS NEMP 2.0 Table 5 Freshwater 95%							0.13	220															
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
				0906_QC201_210702	Interlab_D	808916	0.04	<0.01	0.13	-	-	0.09	-	-	-	-	-	-	-	-	-	-	-	-
			19 Oct 2021	0906_MW255_20211019	Normal	ES2139237	0.01	<0.01	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			30 Apr 2022	0906_MW255_20220430	Normal	EM2208150	<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
			08 Nov 2022	0906_MW255_20221108	Normal	EM2222399	0.02	<0.01	0.07	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC106_20221108	Field_D	EM2222404	0.02	<0.01	0.07	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC206_20221108	Interlab_D	940477	0.04	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			15 Apr 2023	0906_MW255_20230415	Normal	EM2306921	0.02	<0.01	0.07	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Oct 2023	0906_MW255_231016	Normal	EM2318614	0.01	<0.01	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW256	Off-base	PO7	10 Sep 2020	0906_MW256_S_200910	Normal	ES2032277	0.04	<0.01	0.32	0.05	0.05	0.28	<0.02	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC101_200910	Field_D	ES2032277	0.02	<0.01	0.32	0.06	-	0.30	-	-	<0.1	<0.02	0.10	<0.02	-	-	-	-	-	-
				0906_QC201_200910	Interlab_D	744316	<0.01	<0.01	0.21	-	-	0.21	-	-	-	-	-	-	-	-	-	-	-	-
			22 Apr 2021	0906_MW256_20210422	Normal	ES2116333	0.07	<0.01	0.30	0.07	0.04	0.23	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			19 Oct 2021	0906_MW256_20211019	Normal	ES2139237	0.01	<0.01	0.10	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			02 May 2022	0906_MW256_20220502	Normal	EM2208150	<0.01	<0.01	0.06	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			08 Nov 2022	0906_MW256_20221108	Normal	EM2222399	<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Apr 2023	0906_MW256_20230415	Normal	EM2306921	<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
			16 Oct 2023	0906_MW256_231016	Normal	EM2318614	<0.01	<0.01	0.05	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW257	Off-base	PO7	10 Sep 2020	0906_MW257_S_200910	Normal	ES2032277	<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
			02 May 2022	0906_MW257_20220502	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			09 Nov 2022	0906_MW257_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Apr 2023	0906_MW257_20230415	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			16 Oct 2023	0906_MW257_231016	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW258	Off-base	PO4	24 Jul 2023	0906_MW258_230724	Normal	ES2325225	0.01	<0.01	0.03	<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
			11 Aug 2023	0906_MW258_230811	Normal	EM2314653	0.01	<0.01	0.03	<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
			12 Oct 2023	0906_MW258_231012	Normal	EM2318611	0.01	<0.01	0.03	<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
			19 Dec 2023	0906_MW258_231219	Normal	EM2322880	0.01	<0.01	0.02	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW259	Off-base	PO4	24 Jul 2023	0906_MW259_230724	Normal	ES2325225	0.02	0.01	0.05	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			11 Aug 2023	0906_MW259_230811	Normal	EM2314653	0.02	0.01	0.06	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	0.02	0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			12 Oct 2023	0906_MW259_231012	Normal	EM2318611	0.02	0.02	0.06	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			19 Dec 2023	0906_MW259_231219	Normal	EM2322880	0.02	<0.01	0.05	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW300	On-base	Base	12 Jan 2018	0906_MW300_D_180112	Normal	ES1802545	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Apr 2018	0906_MW300_D_180413	Normal	EM1806331	<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
			30 Mar 2020	0906_MW300_20200330	Normal	ES2011457	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			29 Sep 2020	0906_MW300_20200929	Normal	ES2034862-AB	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			22 Apr 2021	0906_MW300_20210422	Normal	ES2116327	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC105_20210422	Field_D	ES2116327	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC205_20210422	Interlab_D	792803	<0.01	<0.01	0.02	0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			20 Oct 2021	0906_MW300_20211020	Normal	ES2139228	<0.01	<0.01	0.05	0.04	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC106_20211020	Field_D	ES2139231	<0.01	<0.01	0.05	0.04	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC206_20211020	Interlab_D	837704	<0.01	<0.01	0.07	0.04	0.02	0.07	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			01 May 2022	0906_MW300_20220501	Normal	EM2208338	<0.01	<0.01	0.10	0.05	0.03	0.10	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC102_20220501	Field_D	EM2208338	<0.01	<0.01	0.10	0.06	0.03	0.10	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC202_20220501	Interlab_D	889634	<0.01	<0.01	0.13	0.08	0.03	0.13	<0.01	<0.01	<0.05	0.02	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			07 Nov 2022	0906_MW300_20221107	Normal	EM2222404	<0.01	<0.01	0.13	0.10	0.04	0.13	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Apr 2023	0906_MW300_20230415	Normal	EM2306945	0.01	<0.01	0.15	0.11	0.06	0.14	<0.02	<0.02	<0.1	0.03	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC103_20230415	Field_D	EM2306945	0.01	<0.01	0.14	0.12	0.05	0.13	<0.02	<0.02	<0.1	0.03	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC203_20230415	Interlab_D	982807	0.02	<0.01	0.2	0.14	0.06	0.18	<0.01	<0.01	<0.05	0.03	0.10	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			24 Jul 2023	0906_MW300_230724	Normal	ES2325225	0.02	<0.01	0.16	0.14	0.05	0.14	<0.02	<0.02	<0.1	0.03	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			14 Oct 2023	0906_MW300_231014	Normal	EM2318641	0.02	<0.01	0.18	0.14	0.06	0.16	<0.02	<0.02	<0.1	0.03	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW302	On-base	Base	12 Jan 2018	0906_MW302_D_180112	Normal	ES1802545	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
			11 Apr 2018	0906_MW302_D_180411	Normal	EM1806331	<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
			30 Mar 2020	0906_MW302_20200330	Normal	ES2011457	<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
			29 Sep 2020	0906_MW302_20200929	Normal	ES2034862-AB	<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
				0906_QC102_20200929	Field_D	ES2034862-AB	<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
				0906_QC202_20200929	Interlab_D	749220	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			21 Apr 2021	0906_MW302_20210421	Normal	ES2116327	<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
				0906_QC103_20210421	Field_D	ES2116327	<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
				0906_QC203_20210421	Interlab_D	792803	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			20 Oct 2021	0906_MW302_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC107_20211020	Field_D	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05

							Perfluorocarbons															
							Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
							µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR							0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water								0.56	0.07															
PFAS NEMP 2.0 Table 1 Health Recreational Water								10	2															
PFAS NEMP 2.0 Table 5 Freshwater 95%							0.13	220																
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																		
				0906_QC207_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			01 May 2022	0906_MW302_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC105_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC205_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			07 Nov 2022	0906_MW302_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC104_20221107	Field_D	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC204_20221107	Interlab_D	940477	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			15 Apr 2023	0906_MW302_20230415	Normal	EM2306945	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC104_20230415	Field_D	EM2306945	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC204_20230415	Interlab_D	982807	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			14 Oct 2023	0906_MW302_231014	Normal	EM2318641	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC101_231014	Field_D	EM2318641	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC201_20231014	Interlab_D	1036478	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW304	On-base	Base	16 Jan 2018	0906_MW304_D_180116	Normal	ES1802545	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
			13 Apr 2018	0906_MW304_D_180413	Normal	EM1806331	<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
			31 Mar 2020	0906_MW304_20200331	Normal	ES2011457	<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
			29 Sep 2020	0906_MW304_20200929	Normal	ES2034862-AB	<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
			28 Apr 2021	0906_MW304_20210428	Normal	ES2116327	<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
			20 Oct 2021	0906_MW304_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			01 May 2022	0906_MW304_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC104_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC204_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			07 Nov 2022	0906_MW304_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			15 Apr 2023	0906_MW304_20230415	Normal	EM2306945	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			14 Oct 2023	0906_MW304_231014	Normal	EM2318641	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW306	On-base	Base	16 Jan 2018	0906_MW306_D_180116	Normal	ES1802545	<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
			12 Apr 2018	0906_MW306_D_180412	Normal	EM1806331	<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
			30 Mar 2020	0906_MW306_20200330	Normal	ES2011457	<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
			29 Sep 2020	0906_MW306_20200929	Normal	ES2034862-AB	<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
			22 Apr 2021	0906_MW306_20210422	Normal	ES2116327	<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
			22 Oct 2021	0906_MW306_20211022	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			02 May 2022	0906_MW306_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			07 Nov 2022	0906_MW306_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			14 Apr 2023	0906_MW306_20230414	Normal	EM2306945	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC101_20230414	Field_D	EM2306945	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC201_20230414	Interlab_D	982807	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			16 Oct 2023	0906_MW306_231016	Normal	EM2318641	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW308	On-base	Base	15 Jan 2018	0906_MW308_D_180115	Normal	ES1802545	<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
				0906_QC103_180115	Field_D	ES1802545	<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
				0906_QC203_180115	Interlab_D	581313	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			11 Apr 2018	0906_MW308_D_180411	Normal	EM1806331	<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
			30 Mar 2020	0906_MW308_20200330	Normal	ES2011457	<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
			29 Sep 2020	0906_MW308_20200929	Normal	ES2034862-AB	<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
			21 Apr 2021	0906_MW308_20210421	Normal	ES2116327	<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
			22 Apr 2021	0906_MW308_20210422	Normal	ES2116327	<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
			21 Oct 2021	0906_MW308_20211021	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			01 May 2022	0906_MW308_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC103_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC203_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			07 Nov 2022	0906_MW308_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC105_20221107	Field_D	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC205_20221107	Interlab_D	940477	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			17 Apr 2023	0906_MW308_20230417	Normal	EM2306945	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC106_20230417	Field_D	EM2306945	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC206_20230417	Interlab_D	982807	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			14 Oct 2023	0906_MW308_231014	Normal	EM2318641	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05

							Perfluorocarbons																
							Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
							µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR							0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water								0.56	0.07														
PFAS NEMP 2.0 Table 1 Health Recreational Water								10	2														
PFAS NEMP 2.0 Table 5 Freshwater 95%							0.13	220															
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
MW309	On-base	Base	21 Apr 2021	0906_MW309_20210421	Normal	ES2116327	0.04	0.03	0.04	<0.02	<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
MW310	On-base	Base	16 Jan 2018	0906_MW310_D_180116	Normal	ES1802545	<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
			12 Apr 2018	0906_MW310_D_180412	Normal	EM1806331	<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
			31 Mar 2020	0906_MW310_20200331	Normal	ES2011457	<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
			30 Sep 2020	0906_MW310_20200930	Normal	ES2034862-AB	<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
			22 Apr 2021	0906_MW310_20210422	Normal	ES2116327	<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
			22 Oct 2021	0906_MW310_20211022	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			02 May 2022	0906_MW310_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			08 Nov 2022	0906_MW310_20221108	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Apr 2023	0906_MW310_20230413	Normal	EM2306945	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			17 Oct 2023	0906_MW310_231017	Normal	EM2318641	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW311	On-base	Base	15 Jan 2018	0906_MW311_I_180115	Normal	ES1802545	0.01	<0.01	0.04	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
				0906_QC101_180115	Field_D	ES1802545	<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
				0906_QC201_180115	Interlab_D	581313	<0.01	<0.01	0.04	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			31 Mar 2020	0906_MW311_20200331	Normal	ES2011457	<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			08 Nov 2022	0906_MW311_20221108	Normal	EM2222404	<0.01	<0.01	0.49	0.05	0.06	0.49	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Apr 2023	0906_MW311_20230413	Normal	EM2306945	<0.01	<0.01	0.43	0.04	0.06	0.43	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			17 Oct 2023	0906_MW311_2310117	Normal	EM2318641	<0.01	<0.01	0.48	0.03	0.05	0.48	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
MW312	Off-base	PO9	16 Jan 2018	0906_MW312_D_180115	Normal	ES1802566	0.02	<0.01	0.10	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Apr 2018	0906_MW312_D_180413	Normal	EM1806331	0.02	<0.01	0.08	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			01 Apr 2020	0906_MW312_200401	Normal	ES2011454	0.01	<0.01	0.07	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			01 Oct 2020	0906_MW312_20201001	Normal	ES2034888	0.01	<0.01	0.06	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			21 Oct 2021	0906_MW312_20211021	Normal	ES2139399	0.01	<0.01	0.03	<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
			03 May 2022	0906_MW312_20220503	Normal	EM2208339	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			08 Nov 2022	0906_MW312_20221108	Normal	EM2222499	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			17 Apr 2023	0906_MW312_20230417	Normal	EM2306923	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			13 Oct 2023	0906_MW312_231013	Normal	EM2318618	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05

							Perfluorocarbons																		
							Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FTs)	8:2 Fluorotelomer sulfonate (8:2 FTs)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
							µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L
LOR							0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																				
PFAS NEMP 2.0 Table 1 Health Recreational Water																				
PFAS NEMP 2.0 Table 5 Freshwater 95%																				
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**														
GW025234_D	Off-base	-	19 Apr 2023	0906_GW025234_D_20230419	Normal	EM2306927	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
GW025234_I	Off-base	-	19 Apr 2023	0906_GW025234_I_20230419	Normal	EM2306927	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW200	Off-base	PO1	07 Jul 2017	0906_GW200_D_07072017	Normal	ES1716876	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.62	-	-
			25 Mar 2020	0906_MW200_20200325	Normal	ES2011455	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.70	-	-
			30 Sep 2020	0906_MW200_20200930	Normal	ES2034893	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.30	-	-
			23 Apr 2021	0906_MW200_20210423	Normal	ES2116296	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.04	-	-
			21 Oct 2021	0906_MW200_20211021	Normal	ES2139300	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.29	-	-
			03 May 2022	0906_MW200_20220503	Normal	EM2208337	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.33	-	-
			08 Nov 2022	0906_MW200_20221108	Normal	EM2222380	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.33	-	-
			13 Apr 2023	0906_MW200_20230413	Normal	EM2306915	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.41	-	-
			13 Oct 2023	0906_MW200_231013	Normal	EM2318608	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.29	-	-
MW204	Off-base	PO1	07 Jul 2017	0906_GW204_D_07072017	Normal	ES1716876	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-
				0906_QC101_07072017	Field_D	ES1716876	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-
				0906_QC201_07072017	Interlab_D	553701	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-	-
			18 Jan 2018	0906_MW204_D_180118	Normal	ES1802488	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-	-
				0906_QC101_180118	Field_D	ES1802488	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
				0906_QC201_180118	Interlab_D	581448	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-	-
			20 Feb 2018	0906_MW204_D_180220	Normal	ES1805693	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-
			30 Mar 2020	0906_MW204_20200330	Normal	ES2011455	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			01 Oct 2020	0906_MW204_20201001	Normal	ES2034893	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			23 Apr 2021	0906_MW204_20210423	Normal	ES2116296	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			21 Oct 2021	0906_MW204_20211021	Normal	ES2139300	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			03 May 2022	0906_MW204_20220503	Normal	EM2208337	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			09 Nov 2022	0906_MW204_20221109	Normal	EM2222380	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			13 Apr 2023	0906_MW204_20230413	Normal	EM2306915	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			13 Oct 2023	0906_MW204_231013	Normal	EM2318608	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW209	Off-base	PO2	07 Sep 2017	0906_GW209_D_170907	Normal	EM1712263	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC101_170907	Field_D	EM1712263	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC201_170907	Interlab_D	562566	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-	-
			12 Jan 2018	0906_MW209_D_180112	Normal	ES1801990	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			31 Mar 2020	0906_MW209_20200331	Normal	ES2011456	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Sep 2020	0906_MW209_20200930	Normal	ES2034898	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			22 Apr 2021	0906_MW209_20210422	Normal	ES2116325	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			21 Oct 2021	0906_MW209_20211021	Normal	ES2139301	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			03 May 2022	0906_MW209_20220503	Normal	EM2208336	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			09 Nov 2022	0906_MW209_20221109	Normal	EM2222392	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			18 Apr 2023	0906_MW209_20230418	Normal	EM2306916	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			16 Oct 2023	0906_MW209_231016	Normal	EM2318609	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW210	Off-base	PO3	20 Jun 2017	0906_0S002_170620	Normal	ES1715329	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC101_170620	Field_D	ES1715329	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC201_170620	Interlab_D	551365	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-	-
			18 Jan 2018	0906_MW210_D_180112	Normal	ES1802470	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			21 Feb 2018	0906_MW210_D_180221	Normal	ES1805664	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			17 Jul 2018	0906_MW210_D_180717	Normal	EM1811457	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC101_180717	Field_D	EM1811457	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC201_180717	Interlab_D	608455	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			26 Mar 2020	0906_MW210_20200326	Normal	ES2011461	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			01 Oct 2020	0906_MW210_20201001	Normal	ES2034897	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			23 Apr 2021	0906_MW210_20210423	Normal	ES2116321	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			21 Oct 2021	0906_MW210_20211021	Normal	ES2139302	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			03 May 2022	0906_MW210_20220503	Normal	EM2208335	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			08 Nov 2022	0906_MW210_20221108	Normal	EM2222395	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			18 Apr 2023	0906_MW210_20230418	Normal	EM2306917	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			13 Oct 2023	0906_MW210_231013	Normal	EM2318610	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW211	Off-base	PO4	20 Jun 2017	0906_EWB1_170620	Normal	ES1715334	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			04 Dec 2017	0906_EWB1_171204	Normal	ES1731229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			27 Mar 2020	0906_MW211_20200327	Normal	ES2011459	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			28 Sep 2020	0906_MW211_20200928	Normal	ES2034885	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			20 Apr 2021	0906_MW211_20210420	Normal	ES2116324	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-

Table B2a: Groundwater PFAS Analytical Results

						Perfluorocarbons														
						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L
LOR						0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																			
PFAS NEMP 2.0 Table 1 Health Recreational Water																			
PFAS NEMP 2.0 Table 5 Freshwater 95%																			
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**													
			20 Oct 2021	0906_MW211_20211020	Normal	ES2139303	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			08 Nov 2022	0906_MW211_20221108	Normal	EM2222397	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			12 Oct 2023	0906_MW211_231012	Normal	EM2318611	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW212	Off-base	PO4	20 Jun 2017	0906_EWB2_170620	Normal	ES1715334	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			04 Dec 2017	0906_EWB2_171204	Normal	ES1731229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			27 Mar 2020	0906_MW212_20200327	Normal	ES2011459	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			28 Sep 2020	0906_MW212_20200928	Normal	ES2034885	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			20 Apr 2021	0906_MW212_20210420	Normal	ES2116324	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			20 Oct 2021	0906_MW212_20211020	Normal	ES2139303	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			02 May 2022	0906_MW212_20220502	Normal	EM2208334	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			08 Nov 2022	0906_MW212_20221109	Normal	EM2222397	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			12 Oct 2023	0906_MW212_231012	Normal	EM2318611	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW213	Off-base	PO4	20 Jun 2017	0906_EWB3_170620	Normal	ES1715334	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			04 Dec 2017	0906_EWB3_171204	Normal	ES1731229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			27 Mar 2020	0906_MW213_20200327	Normal	ES2011459	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC101_20200327	Field_D	ES2011459	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC201_20200327	Interlab_D	712442	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			28 Sep 2020	0906_MW213_20200928	Normal	ES2034885	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC101_20200928	Field_D	ES2034862-AA	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC201_20200928	Interlab_D	749083	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			20 Apr 2021	0906_MW213_20210420	Normal	ES2116324	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			20 Oct 2021	0906_MW213_20211020	Normal	ES2139303	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC104_20211020	Field_D	ES2139231	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC204_20211020	Interlab_D	837704	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			02 May 2022	0906_MW213_20220502	Normal	EM2208334	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			12 Oct 2023	0906_MW213_231012	Normal	EM2318611	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW214	Off-base	Base	20 Jun 2017	0906_GW047279_170620	Normal	ES1715334	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			18 Jan 2018	0906_MW214_D_180118	Normal	ES1802545	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			31 Mar 2020	0906_MW214_20200331	Normal	ES2011568	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			01 Oct 2020	0906_MW214_20201001	Normal	ES2034891	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			27 Apr 2021	0906_MW214_20210427	Normal	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			21 Oct 2021	0906_MW214_20211021	Normal	ES2139228	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			04 May 2022	0906_MW214_20220503	Normal	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			07 Nov 2022	0906_MW214_20221107	Normal	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			14 Apr 2023	0906_MW214_20230414	Normal	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			16 Oct 2023	0906_MW214_231016	Normal	EM2318641	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW231	Off-base	PO2	12 Jan 2018	0906_MW231_D_180112	Normal	ES1802473	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			26 Mar 2020	0906_MW231_20200326	Normal	ES2011456	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
						ES2011459	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Sep 2020	0906_MW231_20200930	Normal	ES2034898	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			23 Apr 2021	0906_MW231_20210423	Normal	ES2116325	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			22 Oct 2021	0906_MW231_20211022	Normal	ES2139301	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			04 May 2022	0906_MW231_20220504	Normal	EM2208336	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			09 Nov 2022	0906_MW231_20221109	Normal	EM2222392	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			18 Apr 2023	0906_MW231_20230418	Normal	EM2306916	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			16 Oct 2023	0906_MW231_231016	Normal	EM2318609	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW233	Off-base	PO5	20 Feb 2018	0906_MW233_I_180220	Normal	ES1805656	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.20	-	-
			25 Mar 2020	0906_MW233_20200325	Normal	ES2011451	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-	-
			30 Sep 2020	0906_MW233_20200930	Normal	ES2034890	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	-	-
			22 Apr 2021	0906_MW233_20210422	Normal	ES2116319	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-	-
			19 Oct 2021	0906_MW233_20211019	Normal	ES2139304	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-	-
			02 May 2022	0906_MW233_20220502	Normal	EM2208333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-	-
			07 Nov 2022	0906_MW233_20221107	Normal	EM2222376	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.57	-	-
			13 Apr 2023	0906_MW233_ 20230413	Normal	EM2306918	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.52	-	-
			16 Oct 2023	0906_MW233_231016	Normal	EM2318613	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.42	-	-
MW235	Off-base	PO6	11 Jan 2018	0906_MW235_D_180111	Normal	ES1802460	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			19 Dec 2019	0906_MW235_D_191219	Normal	ES1942606-AC	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
			27 Mar 2020	0906_MW235_20200327	Normal	ES2011450	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Sep 2020	0906_MW235_20200930	Normal	ES2034899	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			20 Apr 2021	0906_MW235_20210420	Normal	ES2115488	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-

Table B2a: Groundwater PFAS Analytical Results

						Perfluorocarbons														
						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L
LOR						0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																			
PFAS NEMP 2.0 Table 1 Health Recreational Water																			
PFAS NEMP 2.0 Table 5 Freshwater 95%																			
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**													
			20 Oct 2021	0906_MW235_20211020	Normal	ES2139305	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			01 May 2022	0906_MW235_20220501	Normal	EM2208341	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			07 Nov 2022	0906_MW235_20221107	Normal	EM2222377	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			13 Apr 2023	0906_MW235_20230413	Normal	EM2306920	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW238	Off-base	PO2	12 Dec 2019	0906_MW238_I_191212	Normal	ES1941492-AC	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
			30 Mar 2020	0906_MW238_20200330	Normal	ES2011456	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Sep 2020	0906_MW238_20200930	Normal	ES2034898	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			23 Apr 2021	0906_MW238_20210423	Normal	ES2116325	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			21 Oct 2021	0906_MW238_20211021	Normal	ES2139301	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			03 May 2022	0906_MW238_20220503	Normal	EM2208336	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			08 Nov 2022	0906_MW238_20221108	Normal	EM2222392	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			18 Apr 2023	0906_MW238_20230418	Normal	EM2306916	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			15 Oct 2023	0906_MW238_231015	Normal	EM2318609	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW239	Off-base	PO2	12 Dec 2019	0906_MW239_S_191212	Normal	ES1941492-AC	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
			30 Mar 2020	0906_MW239_20200330	Normal	ES2011456	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			01 Oct 2020	0906_MW239_20201001	Normal	ES2034898	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			23 Apr 2021	0906_MW239_20210423	Normal	ES2116325	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			21 Oct 2021	0906_MW239_20211021	Normal	ES2139301	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			03 May 2022	0906_MW239_20220503	Normal	EM2208336	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			08 Nov 2022	0906_MW239_20221108	Normal	EM2222392	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			18 Apr 2023	0906_MW239_20230418	Normal	EM2306916	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			15 Oct 2023	0906_MW239_231015	Normal	EM2318609	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW240	Off-base	PO7	12 Dec 2019	0906_MW240_D_191212	Normal	ES1941492-AD	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
				0906_QC101_191212	Field_D	ES1941492-AD	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
			19 Dec 2019	0906_MW240_I_191219	Normal	ES1942606-AB	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
				0906_QC101_191219	Field_D	ES1942606-AB	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
				0906_QC201_191219	Interlab_D	695221	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.19	0.01	0.12
			01 Apr 2020	0906_MW240_20200330	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-	-
			30 Sep 2020	0906_MW240_20200930	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-	-
			20 Apr 2021	0906_MW240_20210420	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.42	-	-
			19 Oct 2021	0906_MW240_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	-	-
			01 May 2022	0906_MW240_20220501	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25	-	-
			07 Nov 2022	0906_MW240_20221107	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.30	-	-
			17 Apr 2023	0906_MW240_20230417	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-
			16 Oct 2023	0906_MW240_231016	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-
MW241	Off-base	PO8	18 Mar 2020	0906_MW241_D_200318	Normal	ES2009949	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			31 Mar 2020	0906_MW241_20200331	Normal	ES2011462	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.15	<0.05	<0.05	0.15	-	-
			01 Oct 2020	0906_MW241_20201001	Normal	ES2034889	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			22 Apr 2021	0906_MW241_20210422	Normal	ES2116320	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.12	<0.05	<0.05	0.12	-	-
			24 Oct 2021	0906_MW241_20211024	Normal	ES2139236	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			02 May 2022	0906_MW241_20220502	Normal	EM2208340	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			08 Nov 2022	0906_MW241_20221108	Normal	EM2222383	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			13 Apr 2023	0906_MW241_20230413	Normal	EM2306922	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			13 Oct 2023	0906_MW241_231013	Normal	EM2318617	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW242	Off-base	PO8	12 Mar 2020	0906_MW242_I_200312	Normal	ES2008845	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			31 Mar 2020	0906_MW242_20200331	Normal	ES2011462	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			01 Oct 2020	0906_MW242_20201001	Normal	ES2034889	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			22 Apr 2021	0906_MW242_20210422	Normal	ES2116320	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			22 Oct 2021	0906_MW242_20211022	Normal	ES2139236	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			02 May 2022	0906_MW242_20220502	Normal	EM2208340	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			08 Nov 2022	0906_MW242_20221108	Normal	EM2222383	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			14 Apr 2023	0906_MW242_20230414	Normal	EM2306922	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			13 Oct 2023	0906_MW242_231013	Normal	EM2318617	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW243	On-base	Base	10 Mar 2020	0906_MW243_I_200310	Normal	ES2008845	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC201_200310	Interlab_D	707955	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			30 Mar 2020	0906_MW243_20200330	Normal	ES2011457	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			01 Oct 2020	0906_MW243_20201001	Normal	ES2034862-AB	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			23 Apr 2021	0906_MW243_20210423	Normal	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC106_20210423	Field_D	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC206_20210423	Interlab_D	792771	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01

Table B2a: Groundwater PFAS Analytical Results

						Perfluorocarbons														
						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L
LOR						0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																			
PFAS NEMP 2.0 Table 1 Health Recreational Water																			
PFAS NEMP 2.0 Table 5 Freshwater 95%																			
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**													
			20 Oct 2021	0906_MW243_20211020	Normal	ES2139228	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			02 May 2022	0906_MW243_20220502	Normal	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			07 Nov 2022	0906_MW243_20221107	Normal	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC103_20221107	Field_D	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC203_20221107	Interlab_D	940477	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.01	0.01
			17 Apr 2023	0906_MW243_20230417	Normal	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			14 Oct 2023	0906_MW243_231014	Normal	EM2318641	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC100_231014	Field_D	EM2318641	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC200_20231014	Interlab_D	1036478	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
MW244	Off-base	PO7	13 Mar 2020	0906_MW244_I_200313	Normal	ES2009442	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			01 Apr 2020	0906_MW244_20200401	Normal	ES2011562	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			01 Oct 2020	0906_MW244_20201001	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			20 Apr 2021	0906_MW244_20210420	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			19 Oct 2021	0906_MW244_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			03 May 2022	0906_MW244_20220503	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			09 Nov 2022	0906_MW244_20221109	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			14 Apr 2023	0906_MW244_20230414	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			16 Aug 2023	0906_MW244_230816	Normal	EM2314805	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			14 Oct 2023	0906_MW244_231014	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC102_231014	Field_D	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC202_20231014	Interlab_D	1036481	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
MW245	Off-base	PO7	13 Mar 2020	0906_MW245_S_200313	Normal	ES2009442	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
			01 Apr 2020	0906_MW245_20200401	Normal	ES2011562	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
			01 Oct 2020	0906_MW245_20201001	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			20 Apr 2021	0906_MW245_20210420	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
			19 Oct 2021	0906_MW245_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Apr 2022	0906_MW245_20220430	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			09 Nov 2022	0906_MW245_20221109	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			14 Apr 2023	0906_MW245_20230414	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			16 Aug 2023	0906_MW245_230816	Normal	EM2314805	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			14 Oct 2023	0906_MW245_231014	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW246	Off-base	PO7	22 Jun 2020	0906_MW246_I_200622	Normal	ES2021594	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Jul 2020	0906_MW246_I_200730	Normal	ES2026752	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC202_200730	Normal	735782	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			20 Apr 2021	0906_MW246_20210420	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			20 Oct 2021	0906_MW246_20211020	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			01 May 2022	0906_MW246_20220501	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			07 Nov 2022	0906_MW246_20221107	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			15 Apr 2023	0906_MW246_20230415	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			16 Oct 2023	0906_MW246_231016	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW247	Off-base	PO7	30 Jul 2020	0906_MW247_I_200730	Normal	ES2026752	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			27 Apr 2021	0906_MW247_20210427	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			21 Oct 2021	0906_MW247_20211021	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			02 May 2022	0906_MW247_20220502	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			09 Nov 2022	0906_MW247_20221109	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			15 Apr 2023	0906_MW247_20230415	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			16 Aug 2023	0906_MW247_230816	Normal	EM2314805	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			15 Oct 2023	0906_MW247_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW248	Off-base	PO7	30 Jul 2020	0906_MW248_S_200730	Normal	ES2026752	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	-	-
			27 Apr 2021	0906_MW248_20210427	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-	-
			20 Oct 2021	0906_MW248_20211020	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.24	-	-
			02 May 2022	0906_MW248_20220502	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-
			09 Nov 2022	0906_MW248_20221109	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.20	-	-
			15 Apr 2023	0906_MW248_20230415	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-
			16 Aug 2023	0906_MW248_230816	Normal	EM2314805	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.29	-	-
			15 Oct 2023	0906_MW248_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.26	-	-
MW249	Off-base	PO7	30 Jul 2020	0906_MW249_I_200730	Normal	ES2026752	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			28 Apr 2021	0906_MW249_20210428	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			21 Oct 2021	0906_MW249_20211021	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Apr 2022	0906_MW249_20220430	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-

Table B2a: Groundwater PFAS Analytical Results

						Perfluorocarbons														
						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L
LOR						0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																			
PFAS NEMP 2.0 Table 1 Health Recreational Water																			
PFAS NEMP 2.0 Table 5 Freshwater 95%																			
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**													
			09 Nov 2022	0906_MW249_20221109	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			15 Apr 2023	0906_MW249_20230415	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			16 Aug 2023	0906_MW249_230816	Normal	EM2314805	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			15 Oct 2023	0906_MW249_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW250	Off-base	PO7	30 Jul 2020	0906_MW250_S_200730	Normal	ES2026752	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-
			02 Sep 2020	0906_MW250_S_200902	Normal	ES2031377	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-
				0906_QC202_200902	Interlab_D	742937	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.14	0.06	0.1
			28 Apr 2021	0906_MW250_20210428	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-
				0906_QC107_20210428	Field_D	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-
				0906_QC207_20210428	Interlab_D	792804	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	0.02
			19 Oct 2021	0906_MW250_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
			09 Nov 2022	0906_MW250_20221109	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-	-
			15 Apr 2023	0906_MW250_20230415	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-	-
			16 Aug 2023	0906_MW250_230816	Normal	EM2314805	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			15 Oct 2023	0906_MW250_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
MW251	Off-base	PO7	30 Jul 2020	0906_MW251_S_200730	Normal	ES2026752	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC201_200730	Normal	735782	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			22 Apr 2021	0906_MW251_20210422	Normal	ES2118542	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			21 Oct 2021	0906_MW251_20211021	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Apr 2022	0906_MW251_20220430	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			17 Apr 2023	0906_MW251_20230417	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			16 Aug 2023	0906_MW251_230816	Normal	EM2314805	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			14 Oct 2023	0906_QC205_20231015	Interlab_D	1036481	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			15 Oct 2023	0906_MW251_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC105_231015	Field_D	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW252	Off-base	PO7	30 Jul 2020	0906_MW252_I_200730	Normal	ES2026752	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			22 Apr 2021	0906_MW252_20210422	Normal	ES2118542	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			19 Oct 2021	0906_MW252_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Apr 2022	0906_MW252_20220430	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			17 Apr 2023	0906_MW252_20230417	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			16 Aug 2023	0906_MW252_230816	Normal	EM2314805	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			15 Oct 2023	0906_MW252_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.12	<0.05	<0.05	0.12	-	-
MW253	Off-base	PO7	30 Jul 2020	0906_MW253_I_200730	Normal	ES2026752	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			20 Apr 2021	0906_MW253_20210420	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
			19 Oct 2021	0906_MW253_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-
				0906_QC102_20211019	Field_D	ES2139231	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
				0906_QC202_20211019	Interlab_D	837704	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.02	0.06
			30 Apr 2022	0906_MW253_20220430	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			07 Nov 2022	0906_MW253_20221107	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
			17 Apr 2023	0906_MW253_20230417	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
			16 Aug 2023	0906_MW253_230816	Normal	EM2314805	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-
			15 Oct 2023	0906_QC206_20231015	Interlab_D	1036481	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.11	0.05	0.11
				0906_MW253_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-
				0906_QC106_231015	Field_D	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-
			19 Dec 2023	0906_MW253_231219	Normal	EM2322880	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13	-	-
MW254	Off-base	PO7	30 Jul 2020	0906_MW254_S_200730	Normal	ES2026752	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-	-
			20 Apr 2021	0906_MW254_20210420	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	-	-
			19 Oct 2021	0906_MW254_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.43	-	-
				0906_QC101_20211019	Field_D	ES2139231	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-	-
				0906_QC201_20211019	Interlab_D	837704	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.44	0.13	0.27
			30 Apr 2022	0906_MW254_20220430	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.89	-	-
			07 Nov 2022	0906_MW254_20221107	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.33	-	-
			17 Apr 2023	0906_MW254_20230417	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.32	-	-
			16 Aug 2023	0906_MW254_230816	Normal	EM2314805	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72	-	-
			15 Oct 2023	0906_MW254_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.67	-	-
			19 Dec 2023	0906_MW254_231219	Normal	EM2322880	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66	-	-
MW255	Off-base	PO7	30 Jul 2020	0906_MW255_I_200730	Normal	ES2026752	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-
			22 Apr 2021	0906_MW255_20210422	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.16	-	-
			02 Jul 2021	0906_MW255_02072021	Normal	ES2124834	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-	-
				0906_QC101_02072021	Field_D	ES2124834	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-

						Perfluorocarbons														
						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L
LOR						0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																			
PFAS NEMP 2.0 Table 1 Health Recreational Water																			
PFAS NEMP 2.0 Table 5 Freshwater 95%																			
Location Code	Location Type	Monitoring Zone	Date	Field ID	Sample Type	Lab Report Number													
				0906_QC201_210702	Interlab_D	808916	-	-	-	-	-	-	-	-	<0.05	-	-	-	0.04	0.13
			19 Oct 2021	0906_MW255_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-
			30 Apr 2022	0906_MW255_20220430	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
			08 Nov 2022	0906_MW255_20221108	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-
				0906_QC106_20221108	Field_D	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-
				0906_QC206_20221108	Interlab_D	940477	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.04	0.04
			15 Apr 2023	0906_MW255_20230415	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-
			16 Oct 2023	0906_MW255_231016	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-
MW256	Off-base	PO7	10 Sep 2020	0906_MW256_S_200910	Normal	ES2032277	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-	-
				0906_QC101_200910	Field_D	ES2032277	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
				0906_QC201_200910	Interlab_D	744316	-	-	-	-	-	-	-	-	<0.05	-	-	-	<0.01	0.21
			22 Apr 2021	0906_MW256_20210422	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.46	-	-
			19 Oct 2021	0906_MW256_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-
			02 May 2022	0906_MW256_20220502	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-
			08 Nov 2022	0906_MW256_20221108	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
			15 Apr 2023	0906_MW256_20230415	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
			16 Oct 2023	0906_MW256_231016	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-
MW257	Off-base	PO7	10 Sep 2020	0906_MW257_S_200910	Normal	ES2032277	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			02 May 2022	0906_MW257_20220502	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			09 Nov 2022	0906_MW257_20221109	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			15 Apr 2023	0906_MW257_20230415	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			16 Oct 2023	0906_MW257_231016	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW258	Off-base	PO4	24 Jul 2023	0906_MW258_230724	Normal	ES2325225	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			11 Aug 2023	0906_MW258_230811	Normal	EM2314653	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			12 Oct 2023	0906_MW258_231012	Normal	EM2318611	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			19 Dec 2023	0906_MW258_231219	Normal	EM2322880	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
MW259	Off-base	PO4	24 Jul 2023	0906_MW259_230724	Normal	ES2325225	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-
			11 Aug 2023	0906_MW259_230811	Normal	EM2314653	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-	-
			12 Oct 2023	0906_MW259_231012	Normal	EM2318611	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-
			19 Dec 2023	0906_MW259_231219	Normal	EM2322880	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-
MW300	On-base	Base	12 Jan 2018	0906_MW300_D_180112	Normal	ES1802545	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			13 Apr 2018	0906_MW300_D_180413	Normal	EM1806331	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Mar 2020	0906_MW300_20200330	Normal	ES2011457	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			29 Sep 2020	0906_MW300_20200929	Normal	ES2034862-AB	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			22 Apr 2021	0906_MW300_20210422	Normal	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
				0906_QC105_20210422	Field_D	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
				0906_QC205_20210422	Interlab_D	792803	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	0.02
			20 Oct 2021	0906_MW300_20211020	Normal	ES2139228	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.18	-	-
				0906_QC106_20211020	Field_D	ES2139231	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-
				0906_QC206_20211020	Interlab_D	837704	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.17	<0.01	0.07
			01 May 2022	0906_MW300_20220501	Normal	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.22	-	-
				0906_QC102_20220501	Field_D	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-
				0906_QC202_20220501	Interlab_D	889634	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.34	<0.01	0.13
			07 Nov 2022	0906_MW300_20221107	Normal	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.35	-	-
			15 Apr 2023	0906_MW300_20230415	Normal	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-	-
				0906_QC103_20230415	Field_D	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-	-
				0906_QC203_20230415	Interlab_D	982807	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.59	0.02	0.2
			24 Jul 2023	0906_MW300_230724	Normal	ES2325225	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-	-
			14 Oct 2023	0906_MW300_231014	Normal	EM2318641	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-	-
MW302	On-base	Base	12 Jan 2018	0906_MW302_D_180112	Normal	ES1802545	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-	-
			11 Apr 2018	0906_MW302_D_180411	Normal	EM1806331	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Mar 2020	0906_MW302_20200330	Normal	ES2011457	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			29 Sep 2020	0906_MW302_20200929	Normal	ES2034862-AB	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC102_20200929	Field_D	ES2034862-AB	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC202_20200929	Interlab_D	749220	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			21 Apr 2021	0906_MW302_20210421	Normal	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC103_20210421	Field_D	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC203_20210421	Interlab_D	792803	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			20 Oct 2021	0906_MW302_20211020	Normal	ES2139228	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC107_20211020	Field_D	ES2139231	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-

Table B2a: Groundwater PFAS Analytical Results

						Perfluorocarbons														
						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L
LOR						0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																			
PFAS NEMP 2.0 Table 1 Health Recreational Water																			
PFAS NEMP 2.0 Table 5 Freshwater 95%																			
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**													
				0906_QC207_20211020	Interlab_D	837704	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			01 May 2022	0906_MW302_20220501	Normal	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC105_20220501	Field_D	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC205_20220501	Interlab_D	889634	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			07 Nov 2022	0906_MW302_20221107	Normal	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC104_20221107	Field_D	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC204_20221107	Interlab_D	940477	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			15 Apr 2023	0906_MW302_20230415	Normal	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC104_20230415	Field_D	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC204_20230415	Interlab_D	982807	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			14 Oct 2023	0906_MW302_231014	Normal	EM2318641	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC101_231014	Field_D	EM2318641	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC201_20231014	Interlab_D	1036478	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
MW304	On-base	Base	16 Jan 2018	0906_MW304_D_180116	Normal	ES1802545	<0.02	<0.05	<0.05	<0.05	0.15	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.24	-	-
			13 Apr 2018	0906_MW304_D_180413	Normal	EM1806331	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			31 Mar 2020	0906_MW304_20200331	Normal	ES2011457	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.06	-	-
			29 Sep 2020	0906_MW304_20200929	Normal	ES2034862-AB	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			28 Apr 2021	0906_MW304_20210428	Normal	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			20 Oct 2021	0906_MW304_20211020	Normal	ES2139228	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			01 May 2022	0906_MW304_20220501	Normal	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC104_20220501	Field_D	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC204_20220501	Interlab_D	889634	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			07 Nov 2022	0906_MW304_20221107	Normal	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			15 Apr 2023	0906_MW304_20230415	Normal	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			14 Oct 2023	0906_MW304_231014	Normal	EM2318641	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW306	On-base	Base	16 Jan 2018	0906_MW306_D_180116	Normal	ES1802545	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.08	-	-
			12 Apr 2018	0906_MW306_D_180412	Normal	EM1806331	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Mar 2020	0906_MW306_20200330	Normal	ES2011457	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			29 Sep 2020	0906_MW306_20200929	Normal	ES2034862-AB	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			22 Apr 2021	0906_MW306_20210422	Normal	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			22 Oct 2021	0906_MW306_20211022	Normal	ES2139228	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			02 May 2022	0906_MW306_20220502	Normal	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			07 Nov 2022	0906_MW306_20221107	Normal	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			14 Apr 2023	0906_MW306_20230414	Normal	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC101_20230414	Field_D	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC201_20230414	Interlab_D	982807	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			16 Oct 2023	0906_MW306_231016	Normal	EM2318641	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW308	On-base	Base	15 Jan 2018	0906_MW308_D_180115	Normal	ES1802545	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC103_180115	Field_D	ES1802545	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC203_180115	Interlab_D	581313	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-	-
			11 Apr 2018	0906_MW308_D_180411	Normal	EM1806331	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Mar 2020	0906_MW308_20200330	Normal	ES2011457	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			29 Sep 2020	0906_MW308_20200929	Normal	ES2034862-AB	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			21 Apr 2021	0906_MW308_20210421	Normal	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			22 Apr 2021	0906_MW308_20210422	Normal	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			21 Oct 2021	0906_MW308_20211021	Normal	ES2139228	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			01 May 2022	0906_MW308_20220501	Normal	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC103_20220501	Field_D	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC203_20220501	Interlab_D	889634	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			07 Nov 2022	0906_MW308_20221107	Normal	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC105_20221107	Field_D	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC205_20221107	Interlab_D	940477	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			17 Apr 2023	0906_MW308_20230417	Normal	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC106_20230417	Field_D	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC206_20230417	Interlab_D	982807	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			14 Oct 2023	0906_MW308_231014	Normal	EM2318641	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-

Table B2a: Groundwater PFAS Analytical Results

						Perfluorocarbons														
						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L
LOR						0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																			
PFAS NEMP 2.0 Table 1 Health Recreational Water																			
PFAS NEMP 2.0 Table 5 Freshwater 95%																			
Location Code	**Location Type**	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**														
MW309	On-base	Base	21 Apr 2021	0906_MW309_20210421	Normal	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.10	-	-
MW310	On-base	Base	16 Jan 2018	0906_MW310_D_180116	Normal	ES1802545	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			12 Apr 2018	0906_MW310_D_180412	Normal	EM1806331	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			31 Mar 2020	0906_MW310_20200331	Normal	ES2011457	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			30 Sep 2020	0906_MW310_20200930	Normal	ES2034862-AB	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			22 Apr 2021	0906_MW310_20210422	Normal	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			22 Oct 2021	0906_MW310_20211022	Normal	ES2139228	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			02 May 2022	0906_MW310_20220502	Normal	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			08 Nov 2022	0906_MW310_20221108	Normal	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			13 Apr 2023	0906_MW310_20230413	Normal	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			17 Oct 2023	0906_MW310_231017	Normal	EM2318641	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW311	On-base	Base	15 Jan 2018	0906_MW311_I_180115	Normal	ES1802545	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
				0906_QC101_180115	Field_D	ES1802545	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
				0906_QC201_180115	Interlab_D	581313	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-	-
			31 Mar 2020	0906_MW311_20200331	Normal	ES2011457	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
			08 Nov 2022	0906_MW311_20221108	Normal	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.60	-	-
			13 Apr 2023	0906_MW311_20230413	Normal	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.53	-	-
			17 Oct 2023	0906_MW311_2310117	Normal	EM2318641	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.56	-	-
MW312	Off-base	PO9	16 Jan 2018	0906_MW312_D_180115	Normal	ES1802566	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.10	-	-
			13 Apr 2018	0906_MW312_D_180413	Normal	EM1806331	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-
			01 Apr 2020	0906_MW312_200401	Normal	ES2011454	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-
			01 Oct 2020	0906_MW312_20201001	Normal	ES2034888	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-
			21 Oct 2021	0906_MW312_20211021	Normal	ES2139399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			03 May 2022	0906_MW312_20220503	Normal	EM2208339	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			08 Nov 2022	0906_MW312_20221108	Normal	EM2222499	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			17 Apr 2023	0906_MW312_20230417	Normal	EM2306923	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			13 Oct 2023	0906_MW312_231013	Normal	EM2318618	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-

																	Perfluorocarbons								
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							0.56	0.07															
PFAS NEMP 2.0 Table 1 Health Recreational Water							10	2															
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																		
SW104	Base	04 Dec 2017	0906_SW104_171204	Normal	ES1731266	0.27	0.02	0.34	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		16 Aug 2018	0906_SW104_180816	Normal	ES1824412	0.05	<0.01	0.17	<0.02	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		17 Oct 2018	0906_SW104_181017	Normal	ES1831100	0.38	0.02	0.67	0.03	<0.02	0.29	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		25 Mar 2020	0906_SW104_20200325	Normal	ES2011457	0.09	<0.01	0.15	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		02 Sep 2020	0906_SW104_200904	Normal	ES2031377	2.83	0.13	4.27	0.17	0.16	1.44	0.09	<0.02	<0.1	0.15	0.44	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		04 Sep 2020	0906_QC201_200904	Interlab_D	742937	2.3	0.10	3.29	0.13	0.13	0.99	0.06	<0.01	0.06	0.10	0.41	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
		29 Sep 2020	0906_SW104_20200929	Normal	ES2034862-AB	2.80	0.17	4.61	0.21	0.23	1.81	0.12	<0.02	<0.1	0.17	0.59	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		21 Apr 2021	0906_QC102_20210421	Field_D	ES2116327	0.26	0.02	0.46	0.03	0.02	0.20	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC202_20210421	Interlab_D	792803	0.27	0.02	0.41	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW104_20210421	Normal	ES2116327	0.28	0.02	0.48	0.04	0.02	0.20	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		20 Oct 2021	0906_QC105_20211020	Field_D	ES2139231	0.40	0.01	0.65	0.04	0.03	0.25	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC205_20211020	Interlab_D	837704	0.61	0.02	0.91	0.04	0.03	0.30	0.02	<0.01	<0.05	0.02	0.07	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
		21 Oct 2021	0906_SW104_20211020	Normal	ES2139228	0.41	0.01	0.63	0.05	0.04	0.22	<0.02	<0.02	<0.1	0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		01 May 2022	0906_QC101_20220501	Field_D	EM2208338	0.58	0.01	0.78	0.03	0.02	0.20	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC201_20220501	Interlab_D	889634	0.83	0.02	1.09	0.03	0.02	0.26	0.02	<0.01	<0.05	0.03	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW104_20220501	Normal	EM2208338	0.63	0.01	0.82	0.03	<0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		05 Nov 2022	0906_QC102_20221105	Field_D	EM2222404	3.19	0.10	4.63	0.20	0.18	1.44	0.09	<0.04	<0.2	0.10	0.35	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.09
			0906_QC202_20221105	Interlab_D	940477	3.1	0.04	4.7	0.17	0.18	1.6	0.12	<0.01	0.10	0.13	0.41	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW104_20221105	Normal	EM2222404	3.34	0.11	4.88	0.19	0.19	1.54	0.08	<0.04	<0.2	0.10	0.37	0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.09
		15 Apr 2023	0906_QC102_20230415	Field_D	EM2306945	1.98	0.06	2.90	0.10	0.10	0.92	0.07	<0.02	<0.1	0.07	0.27	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC202_20230415	Interlab_D	982807	3.0	0.09	4.2	0.10	0.14	1.2	0.11	<0.01	0.07	0.08	0.35	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW104_20230415	Normal	EM2306945	2.03	0.06	2.94	0.10	0.10	0.91	0.06	<0.02	<0.1	0.07	0.28	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		14 Oct 2023	0906_SW104_231014	Normal	EM2318641	0.30	<0.01	0.67	0.04	0.04	0.37	0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW206	PO7	20 Jun 2017	0906_SW001_170620	Normal	ES1715334	0.23	<0.01	0.34	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		07 Jul 2017	0906_SW001_07072017	Normal	ES1716880	0.27	0.01	0.36	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		13 Dec 2017	0906_SW206_171213	Normal	ES1732701	0.57	0.02	1.09	0.05	0.04	0.52	<0.02	<0.02	<0.1	0.03	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		25 Mar 2020	0906_SW206_20200325	Normal	ES2011453	0.38	0.01	0.54	<0.02	<0.02	0.16	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		01 Oct 2020	0906_SW206_20201001	Normal	ES2034866	1.21	0.06	1.87	0.07	0.08	0.66	0.04	<0.02	<0.1	0.08	0.21	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		20 Apr 2021	0906_SW206_20210420	Normal	ES2116333	0.13	0.01	0.25	0.03	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		21 Oct 2021	0906_SW206_20211021	Normal	ES2139237	0.01	<0.01	0.03	<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
		03 May 2022	0906_SW206_20220503	Normal	EM2208150	0.15	<0.01	0.23	0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		04 Nov 2022	0906_SW206_20221104	Normal	EM2222399	2.01	0.09	3.07	0.18	0.12	1.06	0.06	<0.02	<0.1	0.10	0.29	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		13 Apr 2023	0906_SW206_20230413	Normal	EM2306921	1.05	0.03	1.51	0.06	0.05	0.46	0.02	<0.02	<0.1	0.03	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		16 Oct 2023	0906_SW206_231016	Normal	EM2318614	0.10	<0.01	0.16	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW212	PO7	11 Dec 2017	0906_SW212_171211	Normal	ES1731989	<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
		18 Jun 2018	0906_SW212_180619	Normal	ES1818232	<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
		15 Aug 2019	0906_SW212_190815	Normal	ES1926282	<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
		27 Mar 2020	0906_SW212_20200327	Normal	ES2011453	<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
		30 Sep 2020	0906_SW212_20200930	Normal	ES2034866	0.09	<0.01	0.09	<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
			0906_SW212_20200930 Dup	Normal	ES2034866	<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
		23 Apr 2021	0906_SW212_20210423	Normal	ES2116333	<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
		19 Oct 2021	0906_SW212_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 May 2022	0906_SW212_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		13 Apr 2023	0906_SW212_20220413	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		15 Oct 2023	0906_SW212_231015	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW218	PO7	17 Jan 2018	0906_SW218_180117	Normal	ES1802545	<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
		25 Mar 2020	0906_SW218_20200325	Normal	ES2011453	0.03	<0.01	0.05	<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
		01 Oct 2020	0906_QC104_20201001	Field_D	ES2034866	0.06	0.01	0.36	0.08	0.05	0.30	<0.02	<0.02	<0.1	0.05	0.13	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC204_20201001	Interlab_D	749074	0.04	<0.01	0.23	0.04	0.03	0.19	0.01	<0.01	<0.05	0.04	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW218_20201001	Normal	ES2034866	0.10	0.02	0.39	0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		20 Apr 2021	0906_SW218_20210420	Normal	ES2116333	0.01	<0.01	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		21 Oct 2021	0906_SW218_20211021	Normal	ES2139237	0.27	0.01	0.51	0.04	0.04	0.24	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 May 2022	0906_SW218_20220503	Normal	EM2208150	0.24	0.01	0.36	0.03	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		04 Nov 2022	0906_SW218_20221104	Normal	EM2222399	0.63	0.04	0.97	0.04	0.04	0.34	<0.02	<0.02	<0.1	0.04	0.10	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		13 Apr 2023	0906_SW218_20230413	Normal	EM2306921	<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
					EM2307789	<0.02	<0.02	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		16 Oct 2023	0906_SW218_231016	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05

						Perfluorocarbons																		
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							0.56	0.07															
PFAS NEMP 2.0 Table 1 Health Recreational Water							10	2															
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																		
SW228	PO7	07 Dec 2017	0906_SW228_171207	Normal	ES1731266	2.90	0.17	4.33	0.21	0.19	1.43	0.10	<0.02	<0.1	0.14	0.51	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Apr 2018	0906_SW228_180412	Normal	EM1806331	0.30	0.04	0.53	0.02	0.02	0.23	<0.02	<0.02	<0.1	0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		07 Aug 2018	0906_SW228_A_180807	Normal	EM1812664	0.49	0.03	0.96	<0.02	0.02	0.47	0.02	<0.02	<0.1	<0.02	0.09	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_SW228_B_180807	Normal	EM1812664	0.49	0.03	0.98	<0.02	0.02	0.49	0.02	<0.02	<0.1	<0.02	0.10	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		04 Apr 2019	0906_QC101_190408	Field_D	ES1911335	0.81	0.06	1.41	0.10	0.09	0.60	0.04	<0.02	<0.1	0.11	0.43	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC201_190408	Interlab_D	650878	0.60	0.05	1.16	0.05	0.06	0.56	0.03	<0.01	<0.05	0.07	0.24	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW228_190408	Normal	ES1911335	0.77	0.06	1.39	0.10	0.08	0.62	0.04	<0.02	<0.1	0.12	0.43	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		27 Mar 2020	0906_QC102_20200327	Field_D	ES2011453	0.77	0.05	1.31	0.04	0.06	0.54	0.03	<0.02	<0.1	0.08	0.26	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC202_20200327	Interlab_D	712445	0.63	0.03	1.04	0.04	0.05	0.41	0.02	<0.01	<0.05	0.05	0.16	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW228_20200327	Normal	ES2011453	0.73	0.05	1.25	0.05	0.06	0.52	0.03	<0.02	<0.1	0.07	0.25	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		01 Oct 2020	0906_SW228_20201001	Normal	ES2034866	2.15	0.09	3.32	0.11	0.14	1.17	0.08	<0.02	<0.1	0.10	0.40	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		27 Apr 2021	0906_SW228_20210427	Normal	ES2116333	1.10	0.06	2.19	0.19	0.10	1.09	0.06	<0.02	<0.1	0.10	0.48	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		21 Oct 2021	0906_SW228_20211021	Normal	ES2139237	1.41	0.06	2.13	0.10	0.09	0.72	0.06	<0.02	<0.1	0.09	0.32	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 May 2022	0906_SW228_20220503	Normal	EM2208150	0.86	0.04	1.41	0.14	0.06	0.55	0.04	<0.02	<0.1	0.05	0.20	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		09 Nov 2022	0906_SW228_20221109	Normal	EM2222399	1.17	0.06	1.93	0.06	0.08	0.76	0.05	<0.02	<0.1	0.06	0.27	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		17 Apr 2023	0906_SW228_20230417	Normal	EM2306921	1.08	0.04	1.60	0.12	0.06	0.52	0.04	<0.02	<0.1	0.04	0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		16 Oct 2023	0906_SW228_231016	Normal	EM2318614	1.03	0.04	1.57	0.04	0.04	0.54	0.04	<0.02	<0.1	0.04	0.18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW234	PO7	11 Dec 2017	0906_SW234_171211	Normal	ES1731989	0.22	0.03	0.30	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		18 Jun 2018	0906_SW234_180618	Normal	ES1818232	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
		27 Mar 2020	0906_SW234_20200327	Normal	ES2011453	<0.01	0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		29 Sep 2020	0906_SW234_20200929	Normal	ES2034866	0.28	0.02	0.39	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		20 Apr 2021	0906_SW234_20210420	Normal	ES2116333	0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		19 Oct 2021	0906_SW234_20211019	Normal	ES2139237	0.04	<0.01	0.04	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		02 May 2022	0906_QC107_20220502	Field_D	EM2208150	0.02	<0.01	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_SW234_20220502	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 May 2022	0906_QC207_20220502	Interlab_D	889634	0.02	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
		08 Nov 2022	0906_SW234_20221108	Normal	EM2222399	0.02	<0.01	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		13 Apr 2023	0906_SW234_ 20230413	Normal	EM2306921	0.16	<0.01	0.22	0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
					EM2307789	0.15	<0.02	0.21	<0.02	<0.02	0.06	<0.02	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		15 Oct 2023	0906_SW234_231015	Normal	EM2318614	0.02	<0.01	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW236	PO7	15 Dec 2017	0906_SW236_171215	Normal	ES1732819	<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
		02 Oct 2020	0906_SW236_20201002	Normal	ES2034866	<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
		22 Apr 2021	0906_SW236_20210422	Normal	ES2116333	<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
		22 Oct 2021	0906_SW236_20211022	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 May 2022	0906_SW236_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		04 Nov 2022	0906_SW236_20221104	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		14 Apr 2023	0906_SW236_20230414	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		14 Oct 2023	0906_QC103_20231014	Field_D	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC203_20231014	Interlab_D	1036481	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW236_231014	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW240	PO7	20 Dec 2017	0906_QC101_171220	Field_D	ES1732819	<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
			0906_QC201_171220	Field_D	ES1732819	<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
				Interlab_D	580967	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW240_171220	Normal	ES1732819	<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
		02 Oct 2020	0906_SW240_20201002	Normal	ES2034866	<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
		22 Apr 2021	0906_SW240_20210422	Normal	ES2116333	<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
		22 Oct 2021	0906_SW240_20211022	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 May 2022	0906_SW240_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		04 Nov 2022	0906_SW240_20221104	Normal	EM2222399	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		14 Apr 2023	0906_SW240_20230414	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		14 Oct 2023	0906_SW240_231014	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW261	PO7	16 Jan 2018	0906_SW261_180116	Normal	ES1802545	<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
		03 Apr 2018	0906_SW261_180403	Normal	ES1810698	<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
		18 Jun 2018	0906_SW261_180618	Normal	ES1818232	<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
		15 Aug 2019	0906_SW261_190815	Normal	ES1926282	<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
		27 Mar 2020	0906_SW261_20200327	Normal	ES2011453	<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
		28 Sep 2020	0906_SW261_20200928	Normal	ES2034866	<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

						Perfluorocarbons																	
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							0.56	0.07															
PFAS NEMP 2.0 Table 1 Health Recreational Water							10	2															
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																		
		20 Apr 2021	0906_SW261_20210420	Normal	ES2116333	<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
		19 Oct 2021	0906_QC103_20211019	Field_D	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC203_20211019	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW261_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		28 Apr 2022	0906_SW261_20220428	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		17 Apr 2023	0906_QC105_20230417	Field_D	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC205_20230417	Interlab_D	982766	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW261_20230417	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		15 Oct 2023	0906_SW261_231015	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW262	PO7	16 Jan 2018	0906_SW262_180116	Normal	ES1802545	<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
		18 Jun 2018	0906_SW262_180618	Normal	ES1818232	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
		27 Mar 2020	0906_SW262_20200327	Normal	ES2011453	<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
		28 Sep 2020	0906_SW262_20200928	Normal	ES2034866	0.05	<0.01	0.05	<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
		20 Apr 2021	0906_SW262_20210420	Normal	ES2116333	<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
		19 Oct 2021	0906_SW262_20211019	Normal	ES2139237	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		28 Apr 2022	0906_SW262_20220428	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		08 Nov 2022	0906_SW262_20221108	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		17 Apr 2023	0906_SW262_20230417	Normal	EM2306921	0.05	<0.01	0.07	<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
					EM2307789	0.04	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		15 Oct 2023	0906_SW262_231015	Normal	EM2318614	0.02	<0.01	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW286	PO7	08 Apr 2018	0906_SW286_180408	Normal	ES1810698	<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
		15 Aug 2019	0906_SW286_190815	Normal	ES1926282	<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
		27 Mar 2020	0906_SW286_20200327	Normal	ES2011453	<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
		02 Oct 2020	0906_SW286_20201002	Normal	ES2034866	<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
		22 Apr 2021	0906_SW286_20210422	Normal	ES2116333	<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
		22 Oct 2021	0906_SW286_20211022	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 May 2022	0906_SW286_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		08 Nov 2022	0906_SW286_20221108	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		17 Apr 2023	0906_SW286_20230417	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		14 Oct 2023	0906_QC104_231014	Field_D	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC204_20231014	Interlab_D	1036481	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW286_231014	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW288	PO7	12 Apr 2018	0906_SW288_180412	Normal	EM1806331	<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
		15 Aug 2018	0906_SW288_180815	Normal	ES1824412	<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
		16 Aug 2018	0906_QC101_180816	Field_D	ES1824412	<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
			0906_QC201_180816	Interlab_D	613110	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

						Perfluorocarbons															
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							0.56	0.07															
PFAS NEMP 2.0 Table 1 Health Recreational Water							10	2															
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																		
			0906_SW288_180816	Normal	ES1824412	<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
		04 Apr 2019	0906_SW288_190408	Normal	ES1911335	<0.01	<0.01	<0.01	<0.02	<0.02	<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
		27 Mar 2020	0906_SW288_20200327	Normal	ES2011453	<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
		01 Oct 2020	0906_SW288_20201001	Normal	ES2034866	<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
		27 Apr 2021	0906_SW288_20210427	Normal	ES2116333	<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
		21 Oct 2021	0906_SW288_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 May 2022	0906_SW288_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		09 Nov 2022	0906_SW288_20221109	Normal	EM2222399	0.02	<0.01	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		17 Apr 2023	0906_SW288_20230417	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		16 Oct 2023	0906_SW288_231016	Normal	EM2318614	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW289	PO7	12 Apr 2018	0906_QC101_180412	Field_D	EM1806331	0.21	0.03	0.43	<0.02	0.02	0.22	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC201_180412	Interlab_D	594506	0.18	0.03	0.37	0.02	0.02	0.19	0.01	<0.01	<0.05	0.02	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW289_180412	Normal	EM1806331	0.20	0.03	0.40	<0.02	<0.02	0.20	<0.02	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		04 Apr 2019	0906_SW289_190408	Normal	ES1911335	0.42	0.03	0.74	0.05	0.04	0.32	0.02	<0.02	<0.1	0.06	0.18	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		27 Mar 2020	0906_SW289_20200327	Normal	ES2011453	0.79	0.03	1.24	0.03	0.04	0.45	0.02	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		01 Oct 2020	0906_SW289_20201001	Normal	ES2034866	0.05	0.01	0.34	0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		27 Apr 2021	0906_SW289_20210427	Normal	ES2116333	0.24	0.02	0.58	<0.02	<0.02	0.34	<0.02	<0.02	<0.1	<0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		21 Oct 2021	0906_SW289_20211021	Normal	ES2139237	1.15	0.04	1.84	0.11	0.07	0.69	0.06	<0.02	<0.1	0.06	0.22	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 May 2022	0906_SW289_20220503	Normal	EM2208150	0.65	0.02	0.94	0.04	0.03	0.29	0.02	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		09 Nov 2022	0906_SW289_20221109	Normal	EM2222399	1.54	0.08	2.68	0.17	0.11	1.14	0.08	<0.02	<0.1	0.08	0.35	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		17 Apr 2023	0906_SW289_20230417	Normal	EM2306921	1.03	0.03	1.52	0.10	0.05	0.49	0.03	<0.02	<0.1	0.02	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		16 Oct 2023	0906_SW289_231016	Normal	EM2318614	0.98	0.03	1.56	0.04	0.04	0.58	0.03	<0.02	<0.1	0.03	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW294	PO7	18 Jun 2018	0906_SW294_180618	Normal	ES1818232	0.01	0.07	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
		15 Aug 2019	0906_SW294_190815	Normal	ES1926282	<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
		27 Mar 2020	0906_SW294_20200327	Normal	ES2011453	<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
		28 Sep 2020	0906_SW294_20200928	Normal	ES2034866	0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		20 Apr 2021	0906_SW294_20210420	Normal	ES2116333	<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
		19 Oct 2021	0906_SW294_20211019	Normal	ES2139237	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		28 Apr 2022	0906_SW294_20220428	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		13 Apr 2023	0906_SW294_20230413	Normal	EM2306921	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		15 Oct 2023	0906_SW294_231015	Normal	EM2318614	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW309	PO4	15 Aug 2019	0906_SW309_190815	Normal	ES1926282	<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
		27 Mar 2020	0906_SW309_20200327	Normal	ES2011459	<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
		28 Sep 2020	0906_SW309_20200928	Normal	ES2034885	<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
		20 Apr 2021	0906_SW309_20210420	Normal	ES2116324	<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
		19 Oct 2021	0906_SW309_20211019	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		02 May 2022	0906_SW309_20220502	Normal	EM2208334	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		08 Nov 2022	0906_SW309_20221108	Normal	EM2222397	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		14 Apr 2023	0906_SW309_20230414	Normal	EM2306919	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Oct 2023	0906_SW309_231012	Normal	EM2318611	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW310	PO7	27 Mar 2020	0906_SW310_20200327	Normal	ES2011453	0.58	0.02	0.82	0.02	0.02	0.24	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		29 Sep 2020	0906_SW310_20200929	Normal	ES2034866	1.60	0.05	2.11	0.07	0.05	0.51	0.03	<0.02	<0.1	0.06	0.16	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		21 Apr 2021	0906_QC104_20210421	Field_D	ES2116333	0.92	0.03	1.35	0.06	0.03	0.43	<0.02	<0.02	<0.1	0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC204_20210421	Interlab_D	792774	1.0	0.03	1.36	0.05	0.02	0.36	0.02	<0.01	<0.05	0.04	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW310_20210421	Normal	ES2116333	0.85	0.02	1.23	0.10	0.03	0.38	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		19 Oct 2021	0906_SW310_20211019	Normal	ES2139237	1.21	0.02	1.47	0.04	0.02	0.26	0.02	<0.02	<0.1	0.03	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		30 Apr 2022	0906_SW310_20220430	Normal	EM2208150	0.04	<0.01	0.04	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		04 Nov 2022	0906_QC101_20221104	Field_D	EM2222404	0.48	0.01	0.60	<0.02	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0906_QC201_20221104	Interlab_D	940477	0.71	<0.01	0.83	0.01	<0.01	0.12	<0.01	<0.01	<0.05	0.02	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW310_20221104	Normal	EM2222399	0.55	0.01	0.68	<0.02	<0.02	0.13	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		14 Apr 2023	0906_SW310_20230414	Normal	EM2306921	1.48	0.03	2.01	0.12	0.05	0.53	0.02	<0.02	<0.1	0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
					EM2307789	1.31	0.03	1.83	0.10	0.04	0.52	<0.02	<0.02	<0.10	0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		16 Oct 2023	0906_SW310_231016	Normal	EM2318614	0.63	0.02	0.91	<0.02	0.02	0.28	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05

						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	ug/L
LOR						0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																			
PFAS NEMP 2.0 Table 1 Health Recreational Water																			
PFAS NEMP 2.0 Table 5 Freshwater 95%																			
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**														
SW104	Base	04 Dec 2017	0906_SW104_171204	Normal	ES1731266	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.39	-	-
		16 Aug 2018	0906_SW104_180816	Normal	ES1824412	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.17	-	-
		17 Oct 2018	0906_SW104_181017	Normal	ES1831100	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.75	-	-
		25 Mar 2020	0906_SW104_20200325	Normal	ES2011457	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15	-	-
		02 Sep 2020	0906_SW104_200904	Normal	ES2031377	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.48	-	-
		04 Sep 2020	0906_QC201_200904	Interlab_D	742937	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	4.4	2.4	3.39
		29 Sep 2020	0906_SW104_20200929	Normal	ES2034862-AB	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	6.18	-	-
		21 Apr 2021	0906_QC102_20210421	Field_D	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	0.63	-	-
			0906_QC202_20210421	Interlab_D	792803	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.51	0.29	0.43
			0906_SW104_20210421	Normal	ES2116327	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.68	-	-
		20 Oct 2021	0906_QC105_20211020	Field_D	ES2139231	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.79	-	-
			0906_QC205_20211020	Interlab_D	837704	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.14	0.63	0.93
		21 Oct 2021	0906_SW104_20211020	Normal	ES2139228	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.82	-	-
		01 May 2022	0906_QC101_20220501	Field_D	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.89	-	-
			0906_QC201_20220501	Interlab_D	889634	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.28	0.85	1.11
			0906_SW104_20220501	Normal	EM2208338	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.91	-	-
		05 Nov 2022	0906_QC102_20221105	Field_D	EM2222404	<0.04	<0.09	<0.09	<0.09	<0.09	<0.04	<0.04	<0.05	0.05	<0.05	<0.05	5.74	-	-
			0906_QC202_20221105	Interlab_D	940477	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	0.01	<0.01	5.98	3.14	4.74
			0906_SW104_20221105	Normal	EM2222404	<0.04	<0.09	<0.09	<0.09	<0.09	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	5.97	-	-
		15 Apr 2023	0906_QC102_20230415	Field_D	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.61	-	-
			0906_QC202_20230415	Interlab_D	982807	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	5.23	3.09	4.29
			0906_SW104_20230415	Normal	EM2306945	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.65	-	-
		14 Oct 2023	0906_SW104_231014	Normal	EM2318641	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.84	-	-
SW206	PO7	20 Jun 2017	0906_SW001_170620	Normal	ES1715334	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.36		
		07 Jul 2017	0906_SW001_07072017	Normal	ES1716880	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.37		
		13 Dec 2017	0906_SW206_171213	Normal	ES1732701	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.32		
		25 Mar 2020	0906_SW206_20200325	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.59		
		01 Oct 2020	0906_SW206_20201001	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.44		
		20 Apr 2021	0906_SW206_20210420	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.31		
		21 Oct 2021	0906_SW206_20211021	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03		
		03 May 2022	0906_SW206_20220503	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25		
		04 Nov 2022	0906_SW206_20221104	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.96		
		13 Apr 2023	0906_SW206_20230413	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.81		
		16 Oct 2023	0906_SW206_231016	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.16		
SW212	PO7	11 Dec 2017	0906_SW212_171211	Normal	ES1731989	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		18 Jun 2018	0906_SW212_180619	Normal	ES1818232	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		15 Aug 2019	0906_SW212_190815	Normal	ES1926282	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		27 Mar 2020	0906_SW212_20200327	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		30 Sep 2020	0906_SW212_20200930	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09		
			0906_SW212_20200930 Dup	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		23 Apr 2021	0906_SW212_20210423	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		19 Oct 2021	0906_SW212_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		03 May 2022	0906_SW212_20220503	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		13 Apr 2023	0906_SW212_20220413	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		15 Oct 2023	0906_SW212_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
SW218	PO7	17 Jan 2018	0906_SW218_180117	Normal	ES1802545	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		25 Mar 2020	0906_SW218_20200325	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05		
		01 Oct 2020	0906_QC104_20201001	Field_D	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.71		
			0906_QC204_20201001	Interlab_D	749074	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.47	0.04	0.23
			0906_SW218_20201001	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72		
		20 Apr 2021	0906_SW218_20210420	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05		
		21 Oct 2021	0906_SW218_20211021	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66		
		03 May 2022	0906_SW218_20220503	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43		
		04 Nov 2022	0906_SW218_20221104	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.25		
		13 Apr 2023	0906_SW218_20230413	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02		
					EM2307789	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03		
		16 Oct 2023	0906_SW218_231016	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		

						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	ug/L
LOR						0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																			
PFAS NEMP 2.0 Table 1 Health Recreational Water																			
PFAS NEMP 2.0 Table 5 Freshwater 95%																			
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**														
SW228	PO7	07 Dec 2017	0906_SW228_171207	Normal	ES1731266	<0.02	0.06	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.77		
		12 Apr 2018	0906_SW228_180412	Normal	EM1806331	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.73		
		07 Aug 2018	0906_SW228_A_180807	Normal	EM1812664	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14		
			0906_SW228_B_180807	Normal	EM1812664	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.17		
		04 Apr 2019	0906_QC101_190408	Field_D	ES1911335	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.28		
			0906_QC201_190408	Interlab_D	650878	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.7	0.65	1.21
			0906_SW228_190408	Normal	ES1911335	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	2.31		
		27 Mar 2020	0906_QC102_20200327	Field_D	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.85		
			0906_QC202_20200327	Interlab_D	712445	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.43	0.66	1.07
			0906_SW228_20200327	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.79		
		01 Oct 2020	0906_SW228_20201001	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.28		
		27 Apr 2021	0906_SW228_20210427	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.22		
		21 Oct 2021	0906_SW228_20211021	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.88		
		03 May 2022	0906_SW228_20220503	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.96		
		09 Nov 2022	0906_SW228_20221109	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.54		
		17 Apr 2023	0906_SW228_20230417	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.10		
		16 Oct 2023	0906_SW228_231016	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.95		
SW234	PO7	11 Dec 2017	0906_SW234_171211	Normal	ES1731989	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.41		
		18 Jun 2018	0906_SW234_180618	Normal	ES1818232	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.08		
		27 Mar 2020	0906_SW234_20200327	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	<0.05	<0.05	0.25		
		29 Sep 2020	0906_SW234_20200929	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.11	<0.05	<0.05	0.60		
		20 Apr 2021	0906_SW234_20210420	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.34	<0.05	<0.05	0.42		
		19 Oct 2021	0906_SW234_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04		
		02 May 2022	0906_QC107_20220502	Field_D	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.23	<0.05	<0.05	0.25		
			0906_SW234_20220502	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.22	<0.05	<0.05	0.22		
		03 May 2022	0906_QC207_20220502	Interlab_D	889634	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	0.28	<0.01	<0.01	0.34	0.02	0.02
		08 Nov 2022	0906_SW234_20221108	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02		
		13 Apr 2023	0906_SW234_ 20230413	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.24		
					EM2307789	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.21		
		15 Oct 2023	0906_SW234_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02		
SW236	PO7	15 Dec 2017	0906_SW236_171215	Normal	ES1732819	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		02 Oct 2020	0906_SW236_20201002	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		22 Apr 2021	0906_SW236_20210422	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		22 Oct 2021	0906_SW236_20211022	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		03 May 2022	0906_SW236_20220503	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		04 Nov 2022	0906_SW236_20221104	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		14 Apr 2023	0906_SW236_20230414	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		14 Oct 2023	0906_QC103_20231014	Field_D	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
			0906_QC203_20231014	Interlab_D	1036481	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			0906_SW236_231014	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
SW240	PO7	20 Dec 2017	0906_QC101_171220	Field_D	ES1732819	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
			0906_QC201_171220	Field_D	ES1732819	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
				Interlab_D	580967	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1		
			0906_SW240_171220	Normal	ES1732819	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		02 Oct 2020	0906_SW240_20201002	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		22 Apr 2021	0906_SW240_20210422	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		22 Oct 2021	0906_SW240_20211022	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		03 May 2022	0906_SW240_20220503	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		04 Nov 2022	0906_SW240_20221104	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01		
		14 Apr 2023	0906_SW240_20230414	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		14 Oct 2023	0906_SW240_231014	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
SW261	PO7	16 Jan 2018	0906_SW261_180116	Normal	ES1802545	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		03 Apr 2018	0906_SW261_180403	Normal	ES1810698	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		18 Jun 2018	0906_SW261_180618	Normal	ES1818232	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		15 Aug 2019	0906_SW261_190815	Normal	ES1926282	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		27 Mar 2020	0906_SW261_20200327	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		28 Sep 2020	0906_SW261_20200928	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		

						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	ug/L
LOR						0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																			
PFAS NEMP 2.0 Table 1 Health Recreational Water																			
PFAS NEMP 2.0 Table 5 Freshwater 95%																			
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**														
		20 Apr 2021	0906_SW261_20210420	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		19 Oct 2021	0906_QC103_20211019	Field_D	ES2139231	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
			0906_QC203_20211019	Interlab_D	837704	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			0906_SW261_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		28 Apr 2022	0906_SW261_20220428	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		17 Apr 2023	0906_QC105_20230417	Field_D	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
			0906_QC205_20230417	Interlab_D	982766	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			0906_SW261_20230417	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		15 Oct 2023	0906_SW261_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
SW262	PO7	16 Jan 2018	0906_SW262_180116	Normal	ES1802545	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		18 Jun 2018	0906_SW262_180618	Normal	ES1818232	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.08		
		27 Mar 2020	0906_SW262_20200327	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		28 Sep 2020	0906_SW262_20200928	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05		
		20 Apr 2021	0906_SW262_20210420	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		19 Oct 2021	0906_SW262_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01		
		28 Apr 2022	0906_SW262_20220428	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		08 Nov 2022	0906_SW262_20221108	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		17 Apr 2023	0906_SW262_20230417	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07		
					EM2307789	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04		
		15 Oct 2023	0906_SW262_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02		
SW286	PO7	08 Apr 2018	0906_SW286_180408	Normal	ES1810698	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		15 Aug 2019	0906_SW286_190815	Normal	ES1926282	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		27 Mar 2020	0906_SW286_20200327	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		02 Oct 2020	0906_SW286_20201002	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		22 Apr 2021	0906_SW286_20210422	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		22 Oct 2021	0906_SW286_20211022	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		03 May 2022	0906_SW286_20220503	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		08 Nov 2022	0906_SW286_20221108	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		17 Apr 2023	0906_SW286_20230417	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		14 Oct 2023	0906_QC104_231014	Field_D	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
			0906_QC204_20231014	Interlab_D	1036481	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			0906_SW286_231014	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
SW288	PO7	12 Apr 2018	0906_SW288_180412	Normal	EM1806331	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		15 Aug 2018	0906_SW288_180815	Normal	ES1824412	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		16 Aug 2018	0906_QC101_180816	Field_D	ES1824412	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
			0906_QC201_180816	Interlab_D	613110	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01

						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	ug/L
LOR						0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																			
PFAS NEMP 2.0 Table 1 Health Recreational Water																			
PFAS NEMP 2.0 Table 5 Freshwater 95%																			
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**														
			0906_SW288_180816	Normal	ES1824412	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		04 Apr 2019	0906_SW288_190408	Normal	ES1911335	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04		
		27 Mar 2020	0906_SW288_20200327	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		01 Oct 2020	0906_SW288_20201001	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		27 Apr 2021	0906_SW288_20210427	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		21 Oct 2021	0906_SW288_20211021	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		03 May 2022	0906_SW288_20220503	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		09 Nov 2022	0906_SW288_20221109	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02		
		17 Apr 2023	0906_SW288_20230417	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		16 Oct 2023	0906_SW288_231016	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
SW289	PO7	12 Apr 2018	0906_QC101_180412	Field_D	EM1806331	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.55		
			0906_QC201_180412	Interlab_D	594506	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.54		
			0906_SW289_180412	Normal	EM1806331	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51		
		04 Apr 2019	0906_SW289_190408	Normal	ES1911335	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14		
		27 Mar 2020	0906_SW289_20200327	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.48		
		01 Oct 2020	0906_SW289_20201001	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66		
		27 Apr 2021	0906_SW289_20210427	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.70		
		21 Oct 2021	0906_SW289_20211021	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.42		
		03 May 2022	0906_SW289_20220503	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14		
		09 Nov 2022	0906_SW289_20221109	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.59		
		17 Apr 2023	0906_SW289_20230417	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.88		
		16 Oct 2023	0906_SW289_231016	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.86		
SW294	PO7	18 Jun 2018	0906_SW294_180618	Normal	ES1818232	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08		
		15 Aug 2019	0906_SW294_190815	Normal	ES1926282	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		27 Mar 2020	0906_SW294_20200327	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		28 Sep 2020	0906_SW294_20200928	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02		
		20 Apr 2021	0906_SW294_20210420	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03		
		19 Oct 2021	0906_SW294_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01		
		28 Apr 2022	0906_SW294_20220428	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	<0.05	<0.05	0.18		
		13 Apr 2023	0906_SW294_20230413	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		15 Oct 2023	0906_SW294_231015	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01		
SW309	PO4	15 Aug 2019	0906_SW309_190815	Normal	ES1926282	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		27 Mar 2020	0906_SW309_20200327	Normal	ES2011459	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		28 Sep 2020	0906_SW309_20200928	Normal	ES2034885	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		20 Apr 2021	0906_SW309_20210420	Normal	ES2116324	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		19 Oct 2021	0906_SW309_20211019	Normal	ES2139303	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		02 May 2022	0906_SW309_20220502	Normal	EM2208334	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		08 Nov 2022	0906_SW309_20221108	Normal	EM2222397	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		14 Apr 2023	0906_SW309_20230414	Normal	EM2306919	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
		12 Oct 2023	0906_SW309_231012	Normal	EM2318611	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01		
SW310	PO7	27 Mar 2020	0906_SW310_20200327	Normal	ES2011453	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.92		
		29 Sep 2020	0906_SW310_20200929	Normal	ES2034866	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.56		
		21 Apr 2021	0906_QC104_20210421	Field_D	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.57		
			0906_QC204_20210421	Interlab_D	792774	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.63	1.03	1.39
			0906_SW310_20210421	Normal	ES2116333	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.46		
		19 Oct 2021	0906_SW310_20211019	Normal	ES2139237	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.67		
		30 Apr 2022	0906_SW310_20220430	Normal	EM2208150	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04		
		04 Nov 2022	0906_QC101_20221104	Field_D	EM2222404	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64		
			0906_QC201_20221104	Interlab_D	940477	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.9	0.71	0.83
			0906_SW310_20221104	Normal	EM2222399	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72		
		14 Apr 2023	0906_SW310_20230414	Normal	EM2306921	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.35		
					EM2307789	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.10		
		16 Oct 2023	0906_SW310_231016	Normal	EM2318614	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.03		

				Perfluorocarbons																																	
				Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	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	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water					**0.56**	**0.07**																															
PFAS NEMP 2.0 Table 1 Health Recreational Water					***10***	***2***																															
PFAS NEMP 2.0 Table 5 Freshwater 95%				0.13	220																																
Location Code	**Date**	**Field ID**	**Sample Type**																																		
SW104	04 Nov 2021	0906_SW104_211104	Normal	0.22	ND	**0.26**	ND	ND	0.04	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.29	0.29
				0.29	ND	**0.37**	ND	ND	0.08	ND	ND	ND	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.41	0.41
	05 Nov 2021	0906_SW104_211105	Normal	1.08	0.02	**1.35**	ND	0.02	0.27	ND	ND	ND	ND	0.09	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.48	1.46
	12 Nov 2021	SW104 211112	Normal	0.15	ND	**0.2**	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.20	0.20
	06 Jan 2022	0906_SW104_A_220106	Normal	0.05	ND	0.07	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.07	0.07
				0.07	ND	**0.1**	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.10	0.10
				0.09	ND	**0.12**	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	0.12
		0906_SW104_B_220106	Normal	0.03	ND	0.04	ND	ND	0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.04	0.04
				0.05	ND	**0.08**	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.08	0.08
				0.08	ND	**0.12**	ND	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	0.12
	07 Jan 2022	0906_SW104_A_220107	Normal	1.08	0.03	**1.34**	0.03	0.03	0.26	0.02	ND	ND	0.03	0.09	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.59	1.54
		0906_SW104_B_220107	Normal	1.01	0.03	**1.25**	0.03	0.03	0.24	0.02	ND	ND	0.04	0.09	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.49	1.44
	28 Jan 2022	0906_SW104_2202128	Normal	0.49	0.03	**0.98**	0.06	0.07	0.49	0.02	ND	ND	0.03	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.32	1.23
	29 Jan 2022	0906_SW104_2202129	Normal	0.15	ND	**0.21**	ND	ND	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21	0.21
				0.15	ND	**0.21**	ND	ND	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21	0.21
				0.25	0.01	**0.37**	ND	ND	0.12	ND	ND	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.40	0.40
				0.53	0.03	**0.76**	0.03	0.03	0.23	ND	ND	ND	ND	0.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.93	0.90
	24 Feb 2022	0906_SW104_220224	Normal	0.08	ND	**0.16**	ND	ND	0.08	ND	ND	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18
				0.11	ND	**0.21**	ND	ND	0.10	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24	0.24
				0.12	ND	**0.23**	ND	ND	0.11	ND	ND	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.25	0.25
				0.14	0.01	**0.27**	0.02	ND	0.13	ND	ND	ND	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34	0.34
	25 Feb 2022	0906_SW104_220225	Normal	0.06	ND	**0.09**	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.09	0.09
				0.10	ND	**0.16**	ND	ND	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.16	0.16
				0.12	ND	**0.18**	ND	ND	0.06	ND	ND	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.20	0.20
				0.13	ND	**0.23**	ND	ND	0.10	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.26	0.26
				0.14	ND	**0.2**	ND	ND	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.20	0.20
				0.14	ND	**0.21**	ND	ND	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21	0.21
	01 Mar 2022	0906_SW104A_220228	Normal	0.28	0.01	**0.5**	0.03	0.02	0.22	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.61	0.59
		0906_SW104B_220228	Normal	0.02	ND	**0.08**	ND	ND	0.06	ND	ND	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.10	0.10
	07 Apr 2022	0906_SW104_2204071150	Normal	0.14	ND	**0.21**	ND	ND	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21	0.21
	08 Apr 2022	0906_SW104_220408	Normal	0.08	ND	**0.11**	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11	0.11
	09 Apr 2022	0906_SW104_220409	Normal	0.13	ND	**0.21**	ND	ND	0.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21	0.21
				0.15	ND	**0.23**	ND	ND	0.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.23	0.23
				0.29	0.02	**0.5**	0.02	ND	0.21	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59	0.59
				0.30	0.01	**0.54**	ND	0.02	0.24	ND	ND	ND	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.61	0.59
	27 Apr 2022	0906_SW104_220427	Normal	0.34	0.02	**0.63**	0.04	0.04	0.29	ND	ND	ND	ND	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.80	0.76
				0.60	0.02	**0.82**	0.02	ND	0.22	ND	ND	ND	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.90	0.90
				0.70	0.03	**1.13**	0.04	0.04	0.43	0.02	ND	ND	ND	0.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.34	1.28
	28 Apr 2022	0906_SW104_220428	Normal	0.30	0.01	**0.48**	0.02	ND	0.18	ND	ND	ND	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55	0.55
				0.55	0.02	**0.85**	0.03	0.03	0.30	0.02	ND	ND	ND	0.10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.05	1.00
	12 May 2022	0906_SW104_220512	Normal	0.06	ND	**0.08**	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.08	0.08
				0.08	ND	**0.1**	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.10	0.10
				0.08	ND	**0.1**	ND		0.02			ND	ND	ND	ND															ND	ND	ND	ND		0.10
				0.09	ND	**0.11**	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11	0.11
				0.09	ND	**0.13**	ND		0.04			ND	ND	ND	ND															ND	ND	ND	ND		0.13
				0.10	ND	**0.12**	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	0.12
				0.12	ND	**0.17**	ND		0.05			ND	ND	ND	ND															ND	ND	ND	ND		0.17
				0.16	ND	**0.21**	ND		0.05			ND	ND	ND	ND															ND	ND	ND	ND		0.21
				0.27	0.01	**0.49**	0.03	0.03	0.22	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.61	0.58
	13 May 2022	0906_SW104_220513	Normal	0.36	0.01	**0.48**	ND		0.12			ND	ND	0.03	ND															ND	ND	ND	ND		0.52
	26 May 2022	0906_SW104_260522	Normal	0.08	ND	**0.16**	ND	ND	0.08	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.19	0.19
				0.08	ND	**0.12**	ND	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	0.12
				0.14	ND	**0.29**	0.03	ND	0.15	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.37	0.37
	27 May 2022	0906_SW104_270522	Normal	0.14	ND	**0.23**	ND	ND	0.09	ND	ND	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.25	0.25
				0.16	ND	**0.28**	ND	ND	0.12	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.31	0.31
	17 Jul 2022	0906_SW104_220717	Normal	0.08	ND	**0.1**	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.10	0.10
				0.11	ND	**0.15**	ND	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	0.15
				0.19	0.01	**0.29**	0.02	ND	0.10	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.35	0.35
				0.23	0.01	**0.41**	0.05	0.02	0.18	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.54	0.52
				0.25	0.01	**0.39**	0.03	ND	0.14	ND	ND	ND	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.47	0.47
	31 Jul 2022	0906_SW104_220731	Normal	0.25	0.01	**0.38**	0.04	ND	0.13	ND	ND	ND	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.47	0.47
	01 Aug 2022	0906_SW104_220801	Normal	0.05	ND	0.07	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.07	0.07
				0.07	ND	**0.09**	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.09	0.09
				0.08	ND	**0.11**	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11	0.11
				0.12	ND	**0.15**	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	0.15
	04 Aug 2022	0906_SW104_220804	Normal	0.05	ND	0.07	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.07	0.07
				0.08	ND	**0.1**	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.10	0.10
				0.08	ND	**0.11**	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11	0.11
				0.11	ND	**0.14**	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.14	0.14
				0.12	ND	**0.15**	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	0.15
				0.24	ND	**0.32**	ND	ND	0.08	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.35	0.35
				0.26	0.01	**0.41**	ND	ND	0.15	ND	ND	ND	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.46	0.46
				0.57	0.02	**0.8**	ND	ND	0.23	ND	ND	ND	ND	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.89	0.89

APPENDIX

C

MANN KENDALL OUTPUTS

Cardno

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Stantec

Trend Report

Report Date & Time: 2024-01-12 04:04:01

Data File Name: Onsite.csv

Report Title: Groundwater Trend Data

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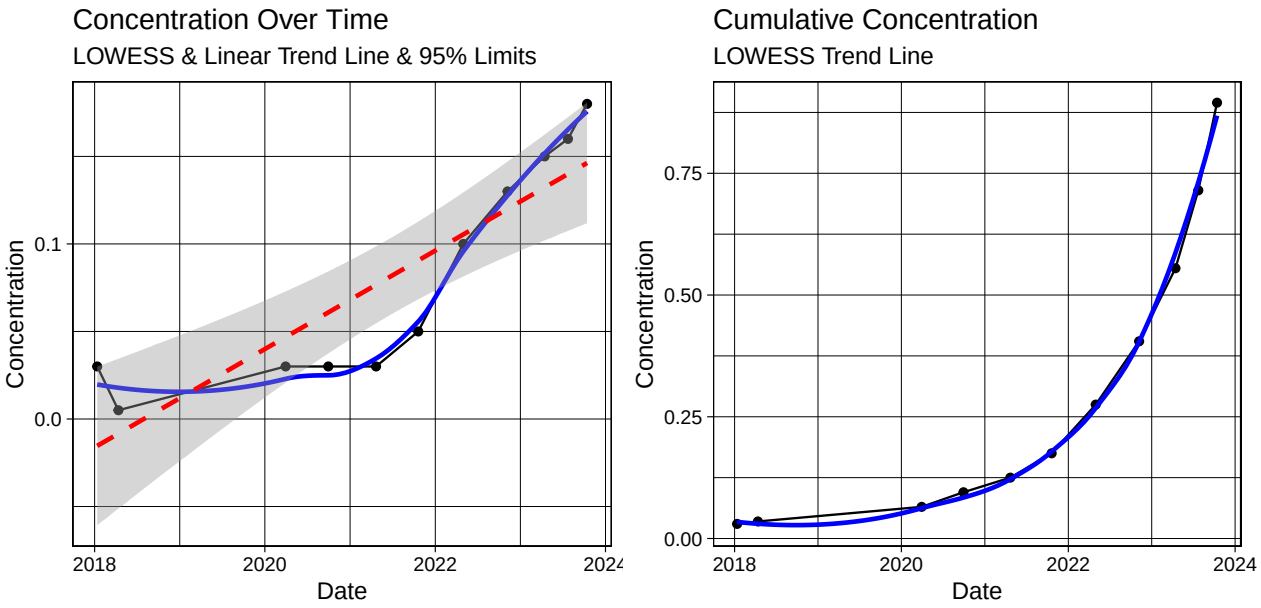
Kendall Trend Test Results Continuous	
n	11
z	3.68
p	0
S	47
varS	156.33
tau	0.91
mean	0.08
sd	0.06
cov	0.78
results	INCREASING

Report for ID : MW300 and Analyte : Sum of PFHxS and PFOS



Trend Report

Report Date & Time: 2024-01-12 04:03:15

Data File Name: Gumly Gumly.csv

Report Title: Groundwater Trend Data

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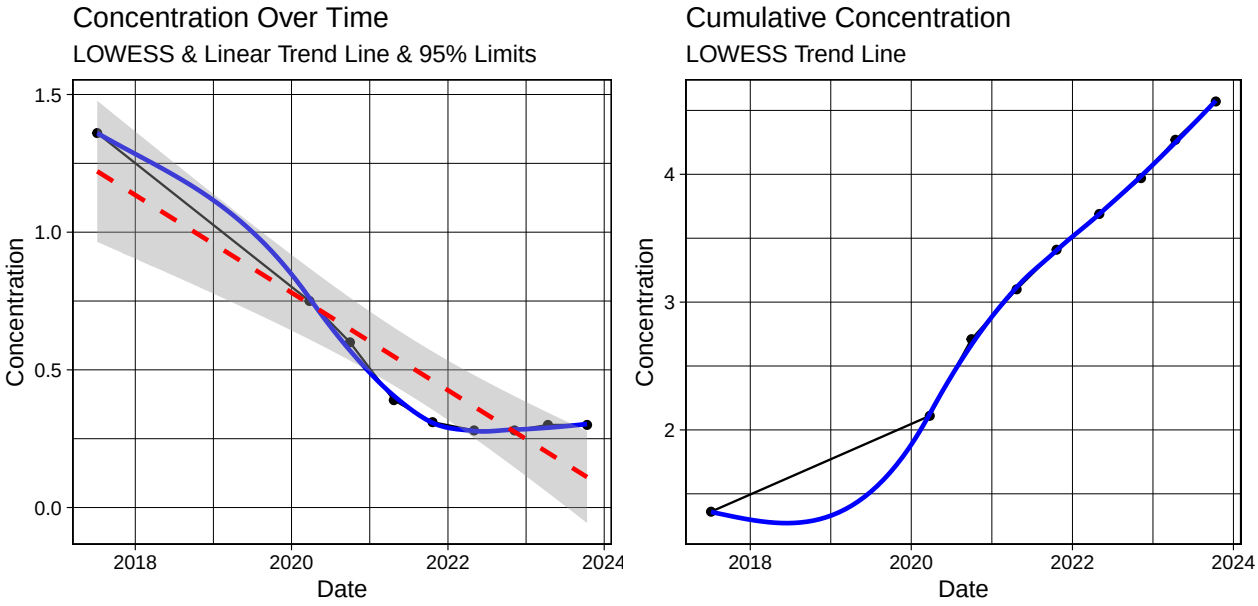
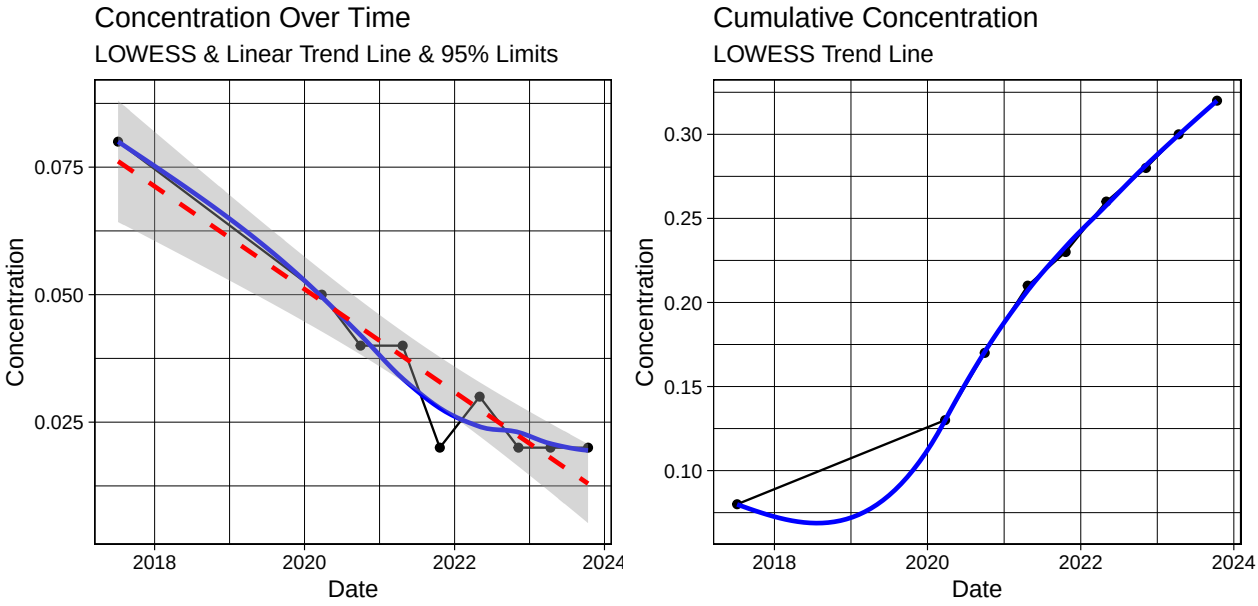
Kendall Trend Test Results Continuous	
n	9
z	-2.64
p	0.01
S	-26
varS	90
tau	-0.74
mean	0.51
sd	0.36
cov	0.71
results	DECREASING

Report for ID : MW200 and Analyte : Perfluorooctane sulfonic acid (PFOS)



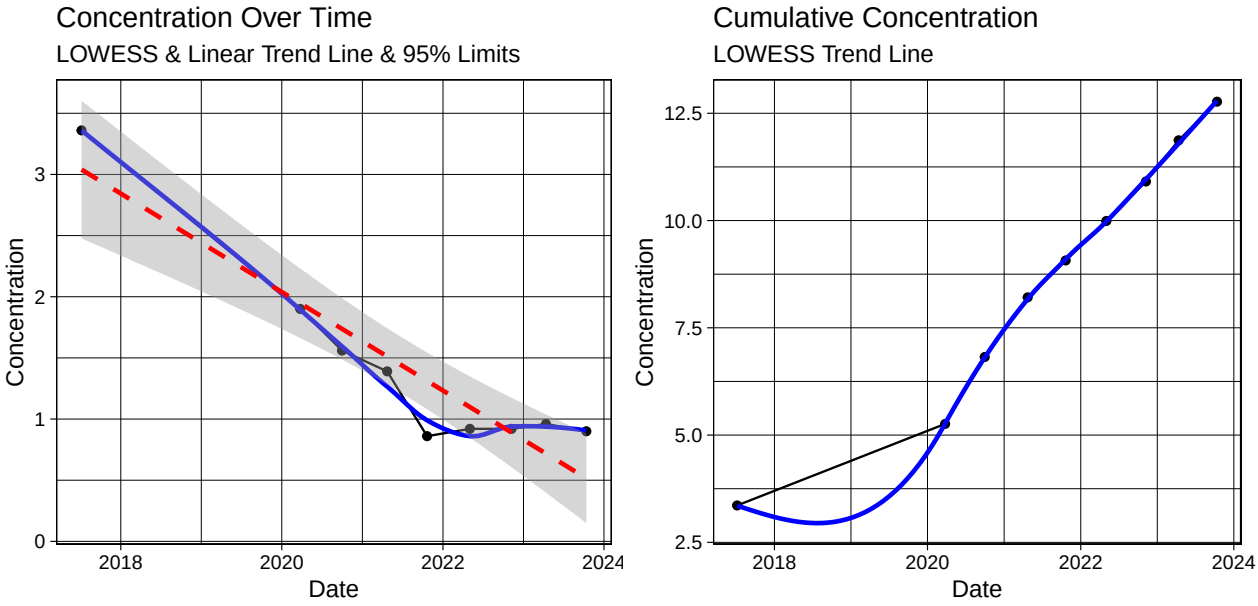
Kendall Trend Test Results Continuous	
n	9
z	-2.87
p	0
S	-27
varS	82.33
tau	-0.84
mean	0.04
sd	0.02
cov	0.56
results	DECREASING

Report for ID : MW200 and Analyte : Perfluorooctanoate (PFOA)



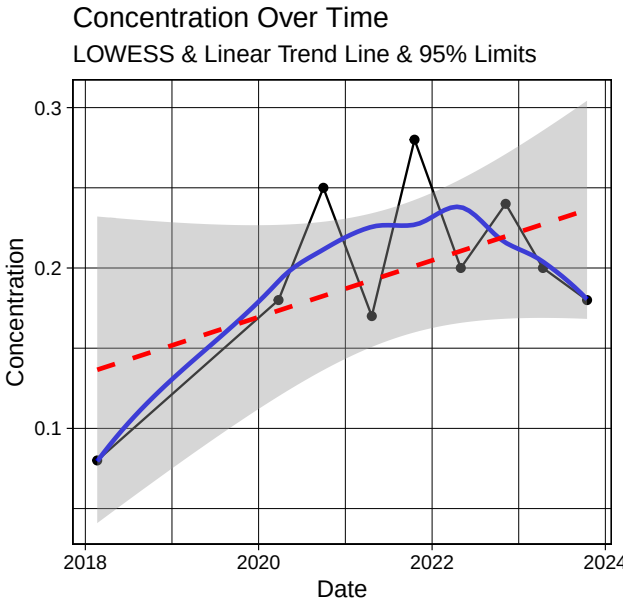
Kendall Trend Test Results Continuous	
n	9
z	-2.31
p	0.02
S	-23
varS	91
tau	-0.65
mean	1.42
sd	0.81
cov	0.57
results	DECREASING

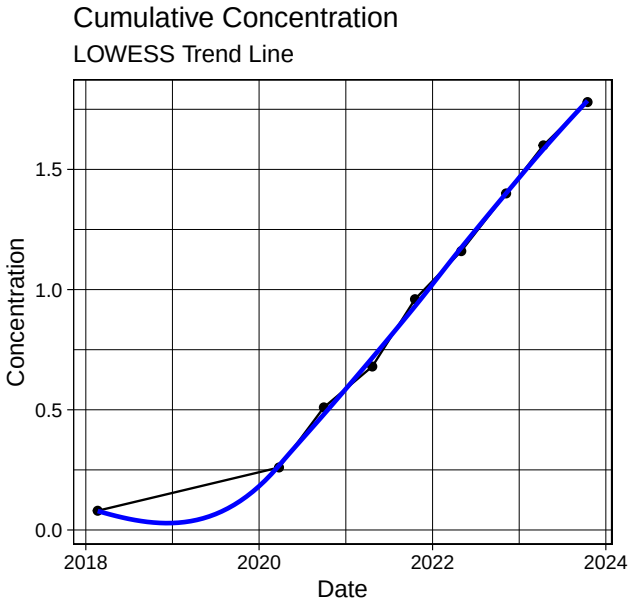
Report for ID : MW200 and Analyte : Sum of PFHxS and PFOS



Kendall Trend Test Results Continuous	
n	9
z	0.53
p	0.6
S	6
varS	90
tau	0.17
mean	0.2
sd	0.06
cov	0.29
results	NO CLEAR TREND

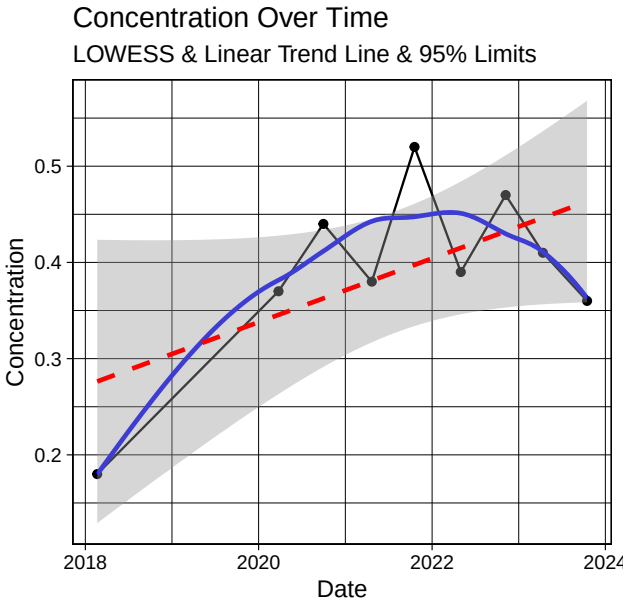
Report for ID : MW233 and Analyte : Perfluorooctane sulfonic acid (PFOS)

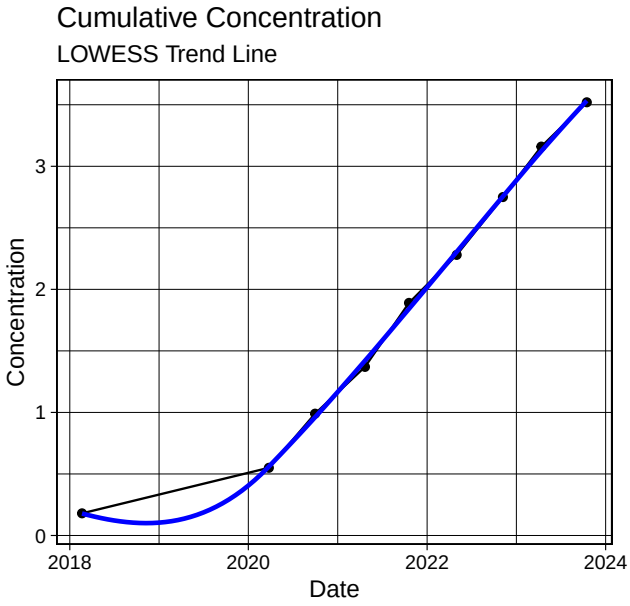




Kendall Trend Test Results Continuous	
n	9
z	0.73
p	0.47
S	8
varS	92
tau	0.22
mean	0.39
sd	0.09
cov	0.24
results	NO CLEAR TREND

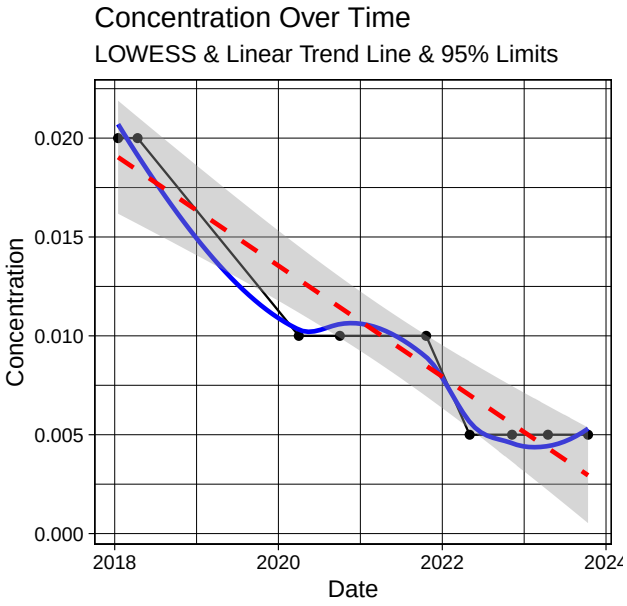
Report for ID : MW233 and Analyte : Sum of PFHxS and PFOS

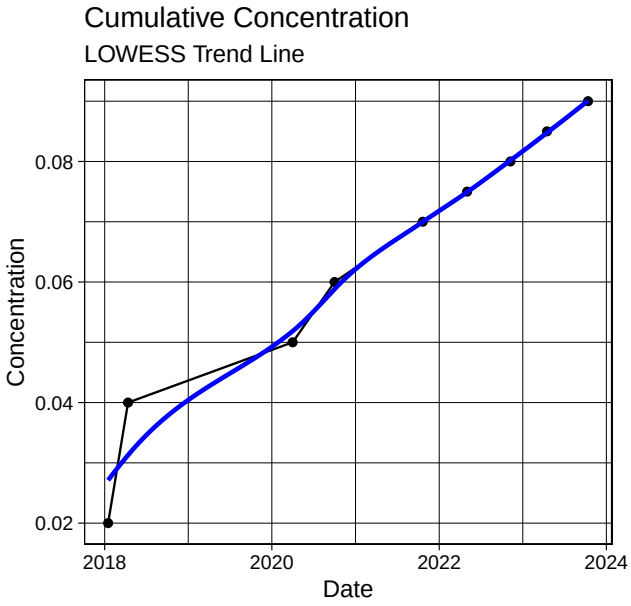




Kendall Trend Test Results Continuous	
n	9
z	-2.82
p	0
S	-26
varS	78.67
tau	-0.85
mean	0.01
sd	0.01
cov	0.61
results	DECREASING

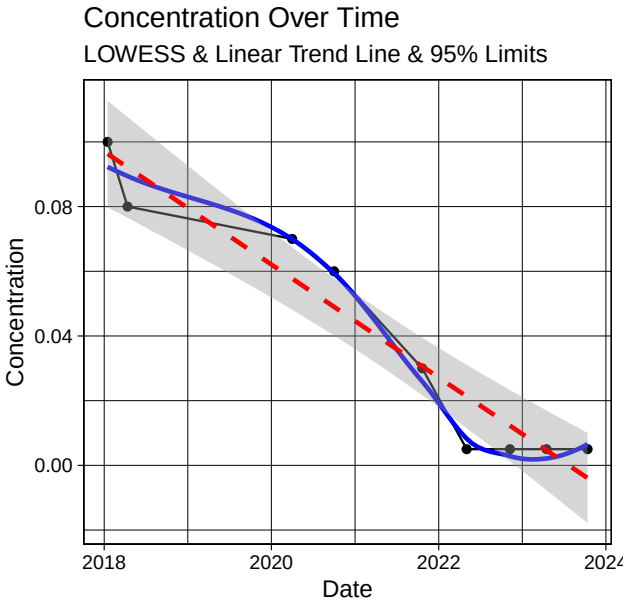
Report for ID : MW312 and Analyte : Perfluorooctane sulfonic acid (PFOS)

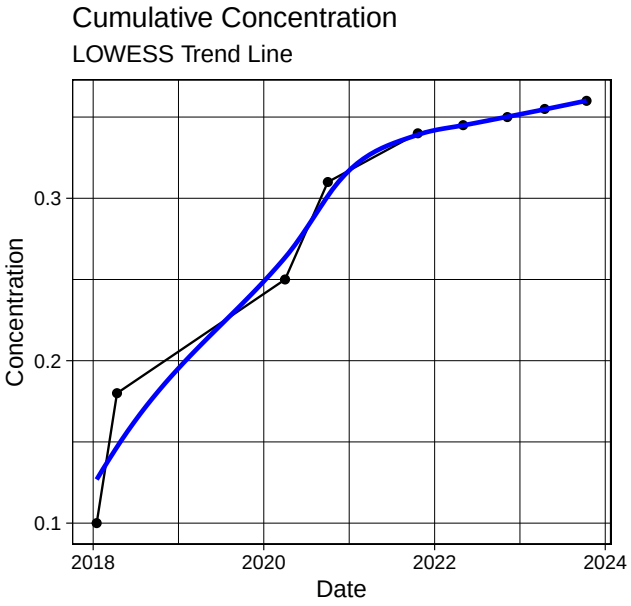




Kendall Trend Test Results Continuous	
n	9
z	-3.18
p	0
S	-30
varS	83.33
tau	-0.91
mean	0.04
sd	0.04
cov	0.95
results	DECREASING

Report for ID : MW312 and Analyte : Sum of PFHxS and PFOS





Location	Monitoring Event	Deviation	Comments	Impact on Existing Dataset & Program
Groundwater				
MW210	E5	Sampled from different tap	Previous tap not working.	No impact - connected to same bore. Other monitoring wells upgradient. Results consistent with previous sampling events.
	E8	Not Sampled. Alternate location sampled.	Due to the previous sampling point being decommissioned, a nearby sampling point connected to a bore screened within the same aquifer (i.e. Lachlan) and located approximately 20 m from MW210, was identified in consultation with the Gumly Irrigation District representative (MW260).	Minimal impact – Sampled location (MW260) is screened within the same aquifer as MW210 and located in the same general area so is considered representative.
MW211	E5	Not Sampled	Electrical fault.	Minimal impact – Location was sampled in the E3, E4, E6 and E8 sampling events. Historical results at this location have been <LOR. Other monitoring wells upgradient were sampled during E5.
	E7	Not Sampled	Not scheduled to be operated during the month of April 2023 due to associated energy penalties. As MW211 is a drinking water supply bore which is sampled from a tap it was unable to be sampled without RWCC incurring a substantial penalty, and as such Riverina Water declined to turn on the bore.	Minimal impact – Location was sampled in the E3, E4, E6 and E8 sampling events. Historical results at this location have been <LOR. Riverina Water completed internal biannual sampling for PFAS in August 2023, with all results below LOR. Alternate locations targeting the Lachlan aquifer in close proximity to MW211 were also sampled (GW025234_I and GW025234_D), with results <LOR.
MW212	E7	Not Sampled	Not scheduled to be operated during the month of April 2023 due to associated energy penalties. As MW212 is a drinking water supply bore which is sampled from a tap it was unable to be sampled without RWCC incurring a substantial penalty, and as such Riverina Water declined to turn on the bore.	Minimal impact – Location was sampled in all other events. All results at this location have been <LOR. Riverina Water completed internal biannual sampling for PFAS in August 2023, with all results below LOR. Alternate locations targeting the Lachlan aquifer in close proximity to MW212 were also sampled (GW025234_I and GW025234_D), with results <LOR.
MW213	E6	Not Sampled	Bore under water and not operational	Minimal impact – Location was sampled in E3 – E5 and E8 sampling events. All results at this location have been <LOR.

Location	Monitoring Event	Deviation	Comments	Impact on Existing Dataset & Program
MW213	E7	Not Sampled	Not scheduled to be operated during the month of April 2023 due to associated energy penalties. As MW213 is a drinking water supply bore which is sampled from a tap it was unable to be sampled without RWCC incurring a substantial penalty, and as such Riverina Water declined to turn on the bore.	Minimal impact – Location was sampled in E3 – E5 and E8 sampling events. All results at this location have been <LOR. Riverina Water completed internal biannual sampling for PFAS in August 2023, with all results below LOR. Alternate locations targeting the Lachlan aquifer in close proximity to MW213 were also sampled (GW025234_I and GW025234_D), with results <LOR.
MW235	E8	Not Sampled	MW235 had not been brought into operation as a new property owner has taken over the groundwater bore system used for irrigation which the sampling location is connected to.	Minimal impact – Location last sampled in the November 2022 sampling event. Historical results at this location have been <LOR. The bore system used for irrigation is currently offline, eliminating any potential exposure pathways.
MW250	E5	Sample Lost	Sample was collected by Cardno, as evidenced by electronic sampling record and water quality parameters. It is understood that this sample was submitted to the laboratory (ALS) alongside all the other samples, however ALS has come back and said that they cannot find it in their system.	Minimal impact – Location was sampled in E3, E4 and E6 - E8 sampling events. Other monitoring wells upgradient and downgradient in same formation were sampled during this event. MW249, which is co-located with MW250 but in the Lachlan Formation, was also sampled during this event.
MW251	E6	Not Sampled	Unable to access location due to flood water.	Minimal impact – Location was sampled in all other events. All results at this location were <LOR.
MW252	E6	Not Sampled	Unable to access location due to flood water.	Minimal impact – Location was sampled in all other events. All results at this location were <LOR.
MW257	E3, E4	Not sampled	Insufficient water within the bore for sampling.	Minimal impact – Location was sampled in the following E5 - E8 sampling events. Results were below LOR.
MW301	E3, E4, E5, E6, E7, E8	Not sampled	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW303	E3, E4, E5, E6, E7, E8	Not sampled	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW305	E3, E4, E5, E6, E7, E8	Not sampled	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.

Location	Monitoring Event	Deviation	Comments	Impact on Existing Dataset & Program
MW307	E3, E4, E5, E6, E7, E8	Not sampled	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW309	E4, E5, E6, E7, E8	Not sampled	Insufficient water within the bore for sampling.	No impact – wells historically have been dry throughout the DSI and OMP, except for E3.
MW311	E3, E4, E5	Not sampled	Location dry	Minimal impact – Location was sampled in the following E6 - E8 sampling events. PFOS+PFHxS concentrations have been reported above drinking water criteria and below recreational criteria.
MW312	E3	Not sampled	Unable to sample, as private property access was not granted.	Minimal impact – Location was sampled in the following E4 - E8 sampling events. PFOS+PFHxS concentrations were reported above LOR but below drinking water criteria in E4 and were reported <LOR in E5 – E8.
MW313	E3	Not sampled	Unable to sample, as private property access was not granted.	No impact – wells historically have been dry throughout the DSI and OMP.
	E4, E5, E6, E7, E8		Location dry	
GW025234_I and GW025234_D	E7	Additional wells sampled, not in SAQP	Replacement monitoring wells for Riverina Water bores.	No impact – location was suggested by Riverina Water as an alternative monitoring location to MW211, MW212 and MW213 and was sampled by Cardno at the request of Defence. Results were <LOR, in line with expectations.
Rinsate blank samples	E3	Alternate sampling frequency	Rinsate collected on 27/04/2021 not analysed, whilst two rinsates were collected on 20/04/2021, 21/04/2021, 22/04/2021 and 23/04/2021 and analysed.	Minimal impact – no PFAS compounds were reported above LOR in any rinsate blank sample, indicating that decontamination was adequate. Total number of rinsate blank samples collected meets the requirement for one per day.

Location	Monitoring Event	Deviation	Comments	Impact on Existing Dataset & Program
	E4	Alternate sampling frequency	Rinsate not collected on one day of sampling (24/10/21).	This is considered to have little to no impact on the investigation as only one groundwater sample was collected on this day. There were also no PFAS compounds reported above LOR in any rinsate blank samples, indicating that decontamination was adequate.
Surface Water				
SW212	E6	Not sampled	Water level too high, unable to access due to flood water.	Minimal impact – Location was sampled in all other events. Downstream locations were sampled in this event. Results at this location have been <LOR since 2020.
SW236	E6	Location moved	Due to high water level sampling location was moved 10 m east.	Minimal impact – review of results from this sampling point are consistent with historical results.
SW261	E5	Sampling forms not available	Software malfunction	Minimal impact- Laboratory Analysis Available
	E6	Not sampled	Water level too high, unable to access due to flood water.	Minimal impact – Location was sampled in all other events. Upstream locations were sampled in this event. All results at this location have been <LOR.
SW262	E6	Location moved	Due to high water level sampling location was moved 15 m south.	Minimal impact – review of results from this sampling point are consistent with historical results.
SW286	E6	Location moved	Due to high water level sampling location was moved 15 m south.	Minimal impact – review of results from this sampling point are consistent with historical results.
SW294	E6	Not sampled	Water level too high, unable to access due to flood water.	Minimal impact – Location was sampled in all other events. Upstream and downstream locations were sampled in this event. All results at this location have below drinking water criteria and have been consistent throughout the OMP.
SW309	E6	Location moved	Due to high water level sampling location was moved 20 m west and 10 m south.	Minimal impact – review of results from this sampling point are consistent with historical results.

Location	Monitoring Event	Deviation	Comments	Impact on Existing Dataset & Program
Table Notes: E3 – 3rd sampling event held in April 2021. E4 – 4th sampling event held in October 2021. E5 – 5th sampling event held in April/May 2022. E6 – 6th sampling event held in November 2022. E7 – 7th sampling event held in April 2023. E8 – 8th sampling event held in October 2023.				

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Trend Report

Report Date & Time: 2024-01-15 00:54:10

Data File Name: Downgradient of Gumly Gumly.csv

Report Title: Groundwater Trend Data

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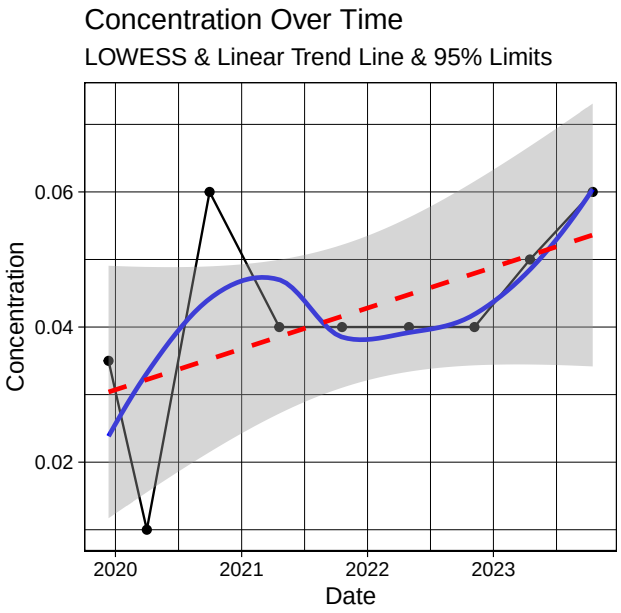
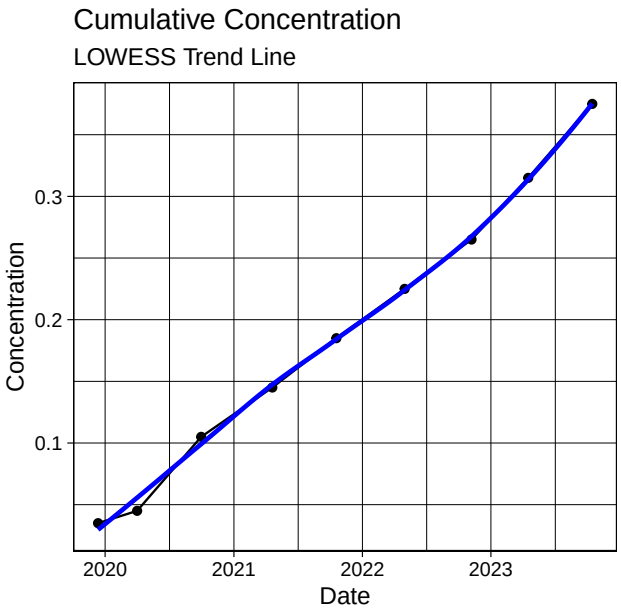
Kendall Trend Test Results Continuous	
n	9
z	1.76
p	0.08
S	17
varS	82.33
tau	0.53
mean	0.04
sd	0.01
cov	0.36
results	POSSIBLY INCREASING

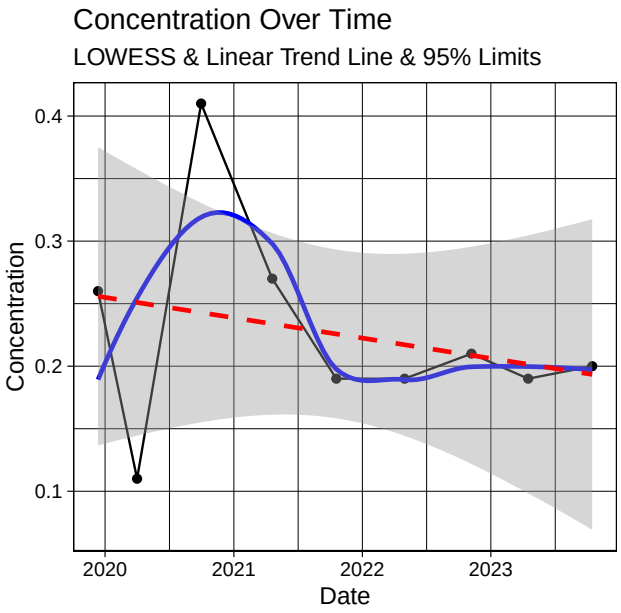
Report for ID : MW240 and Analyte : Perfluorooctane sulfonic acid (PFOS)

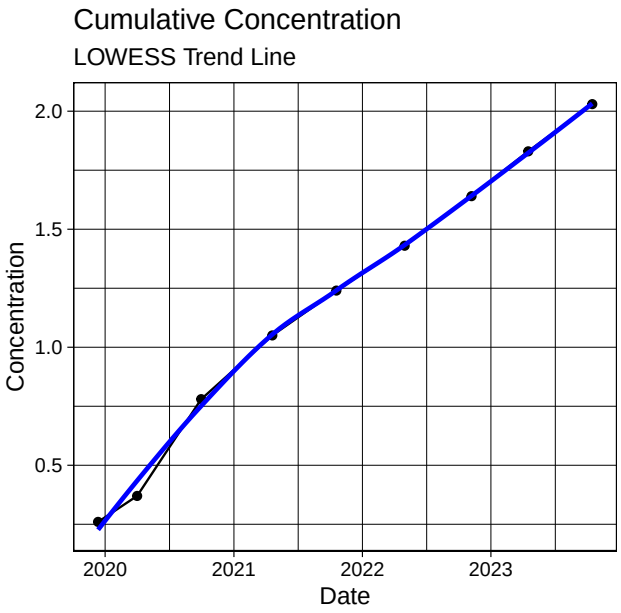




Kendall Trend Test Results Continuous	
n	9
z	-0.43
p	0.67
S	-5
varS	88.33
tau	-0.15
mean	0.23
sd	0.08
cov	0.37
results	STABLE

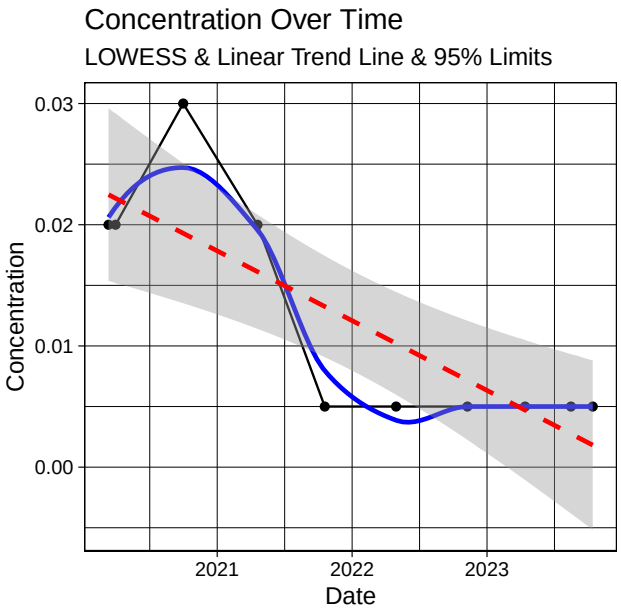
Report for ID : MW240 and Analyte : Sum of PFHxS and PFOS

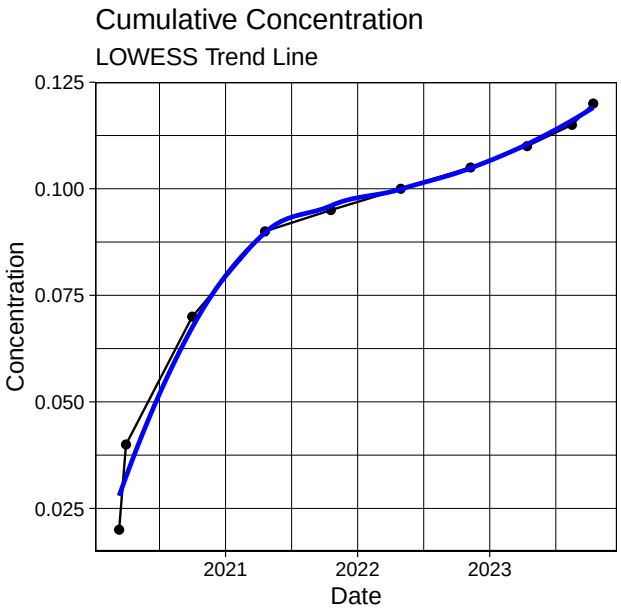




Kendall Trend Test Results Continuous	
n	10
z	-2.28
p	0.02
S	-23
varS	93
tau	-0.66
mean	0.01
sd	0.01
cov	0.79
results	DECREASING

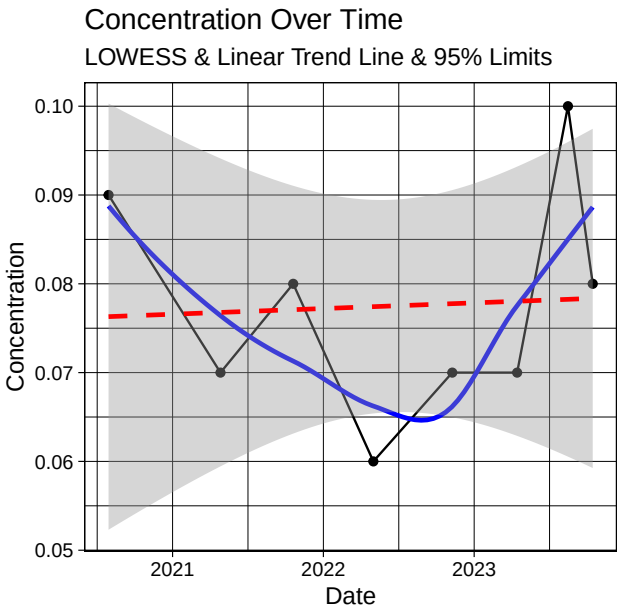
Report for ID : MW245 and Analyte : Sum of PFHxS and PFOS

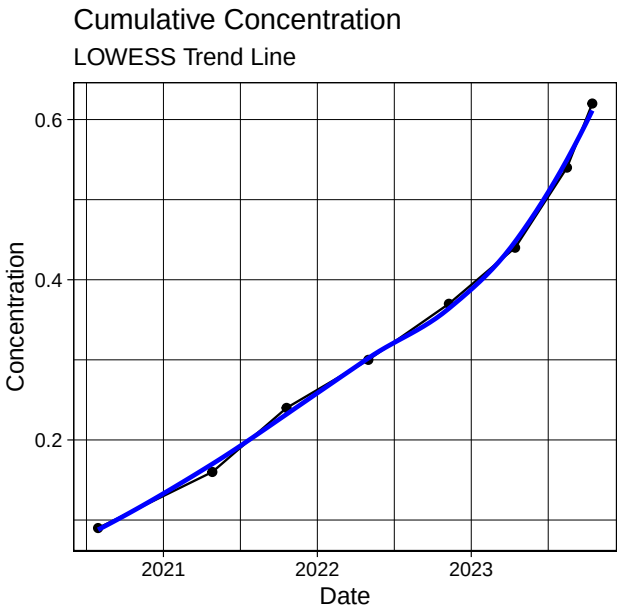




Kendall Trend Test Results Continuous	
n	8
z	0.13
p	0.9
S	2
varS	60.67
tau	0.08
mean	0.08
sd	0.01
cov	0.17
results	NO CLEAR TREND

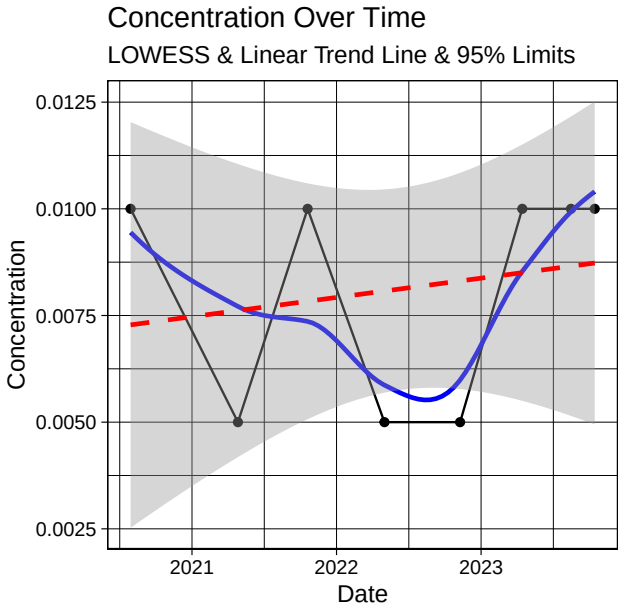
Report for ID : MW248 and Analyte : Perfluorooctane sulfonic acid (PFOS)

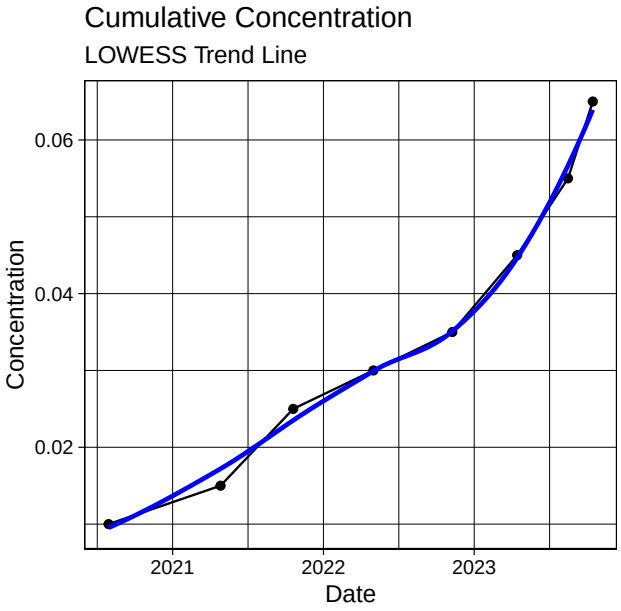




Kendall Trend Test Results Continuous	
n	8
z	0.6
p	0.55
S	5
varS	45
tau	0.24
mean	0.01
sd	0
cov	0.32
results	NO CLEAR TREND

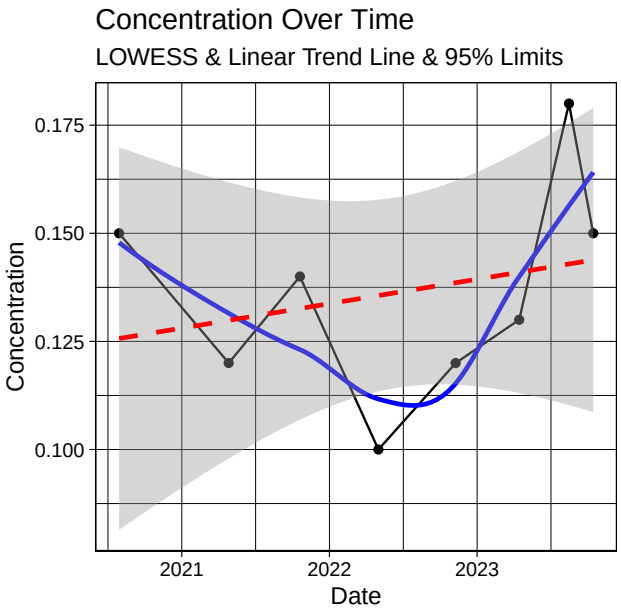
Report for ID : MW248 and Analyte : Perfluorooctanoate (PFOA)

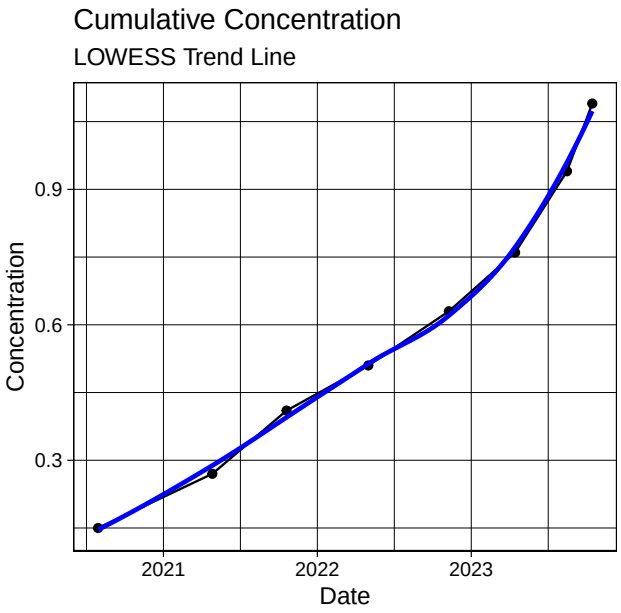




Kendall Trend Test Results Continuous	
n	8
z	0.63
p	0.53
S	6
varS	63.33
tau	0.22
mean	0.14
sd	0.02
cov	0.18
results	NO CLEAR TREND

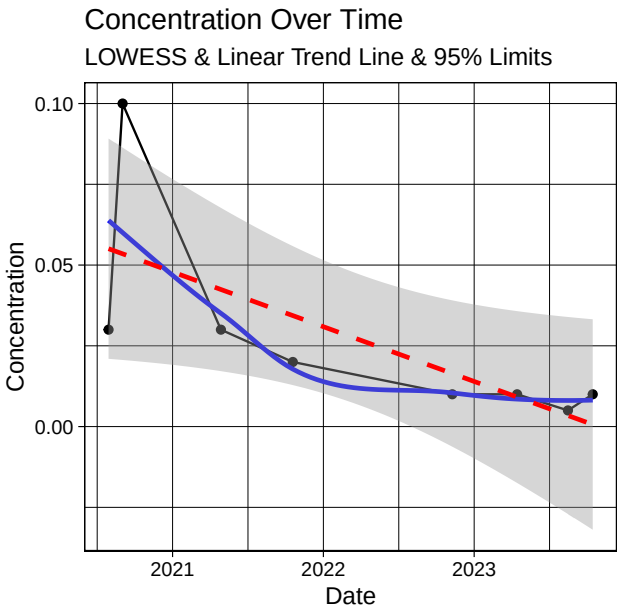
Report for ID : MW248 and Analyte : Sum of PFHxS and PFOS

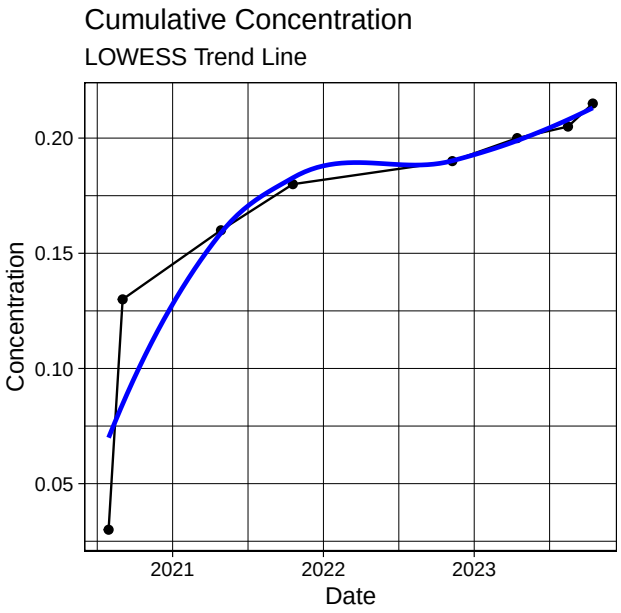




Kendall Trend Test Results Continuous	
n	8
z	-2.44
p	0.01
S	-20
varS	60.67
tau	-0.77
mean	0.03
sd	0.03
cov	1.16
results	DECREASING

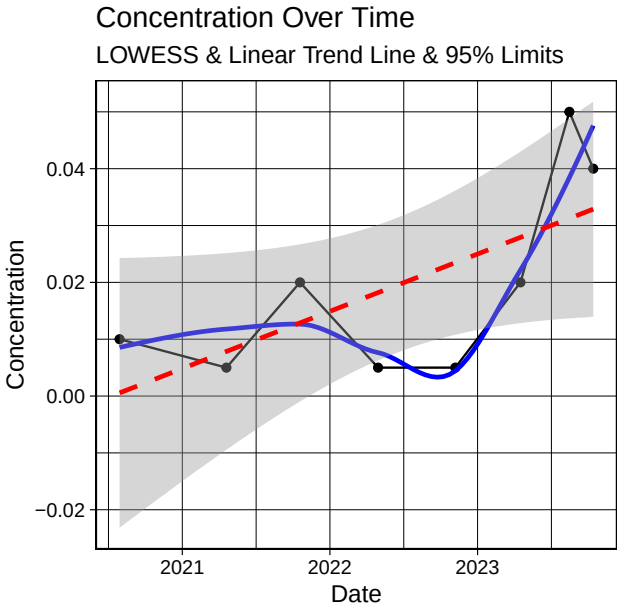
Report for ID : MW250 and Analyte : Sum of PFHxS and PFOS

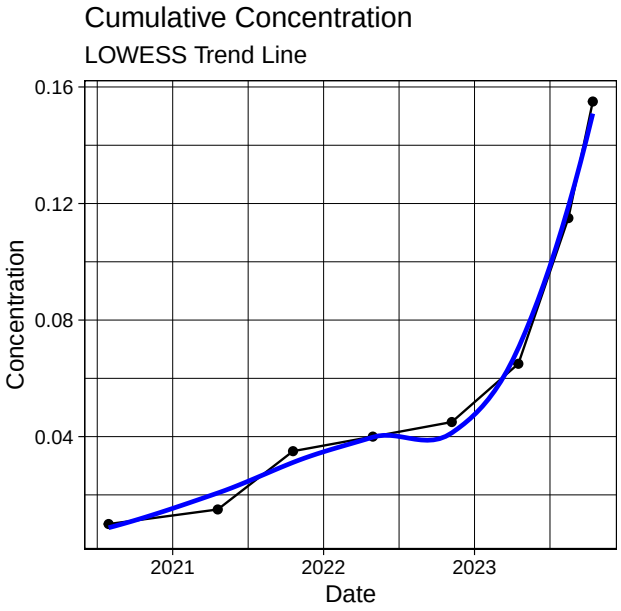




Kendall Trend Test Results Continuous	
n	8
z	1.41
p	0.16
S	12
varS	60.67
tau	0.46
mean	0.02
sd	0.02
cov	0.89
results	NO CLEAR TREND

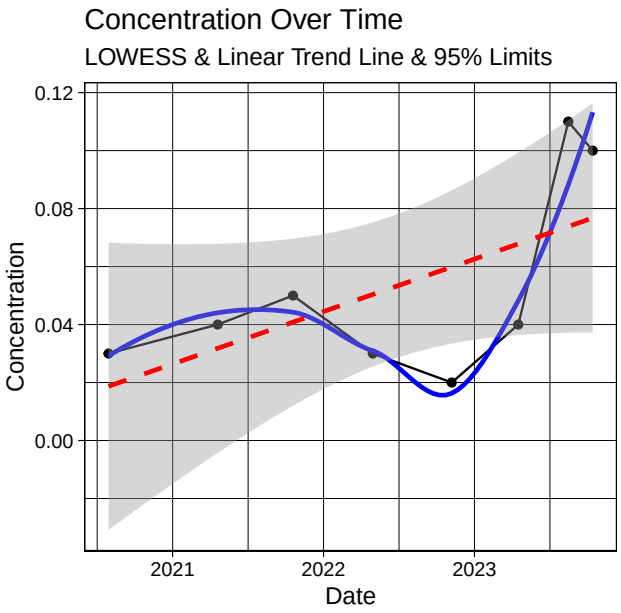
Report for ID : MW253 and Analyte : Perfluorooctane sulfonic acid (PFOS)

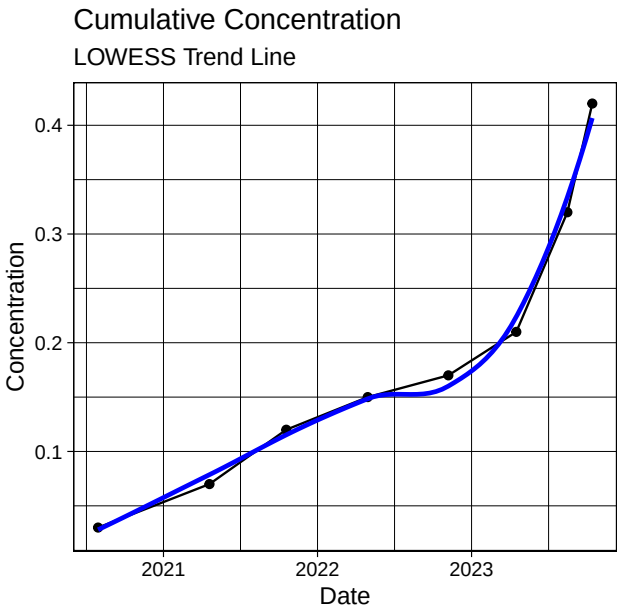




Kendall Trend Test Results Continuous	
n	8
z	1.13
p	0.26
S	10
varS	63.33
tau	0.37
mean	0.05
sd	0.03
cov	0.64
results	NO CLEAR TREND

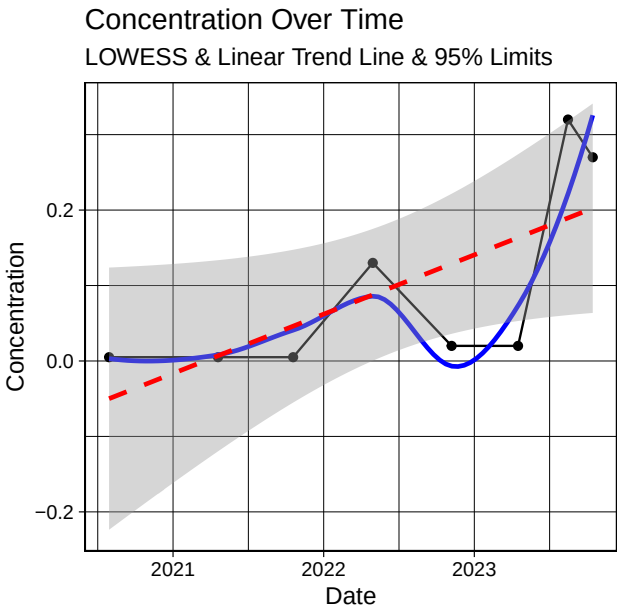
Report for ID : MW253 and Analyte : Sum of PFHxS and PFOS

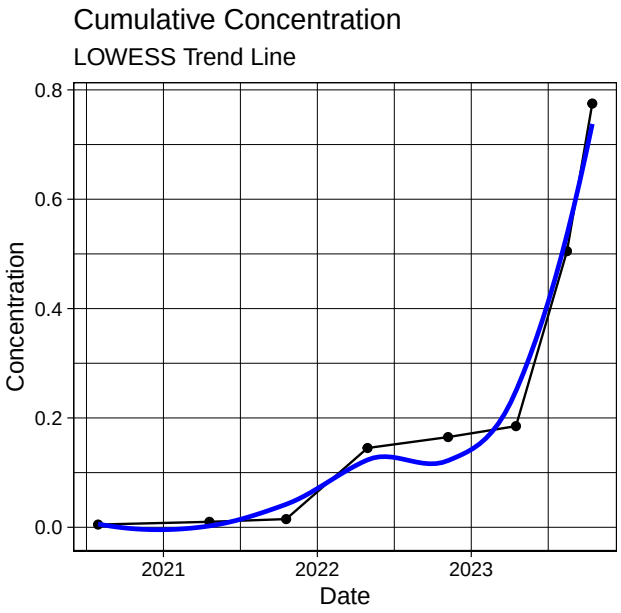




Kendall Trend Test Results Continuous	
n	8
z	2.18
p	0.03
S	18
varS	60.67
tau	0.69
mean	0.1
sd	0.13
cov	1.34
results	INCREASING

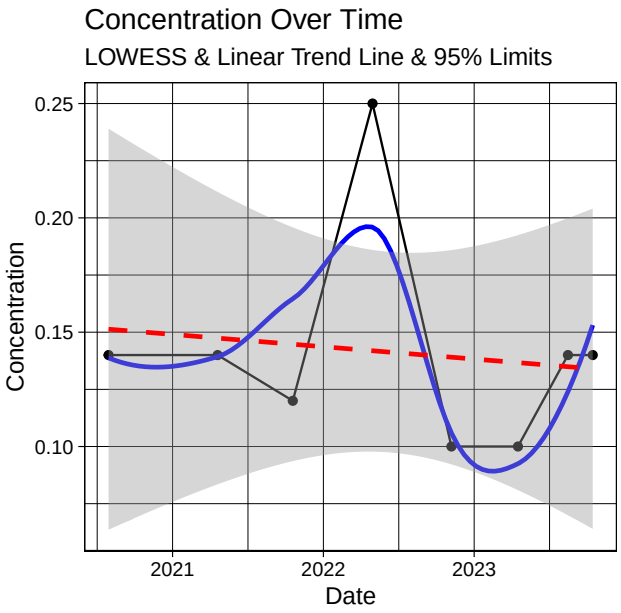
Report for ID : MW254 and Analyte : Perfluorooctane sulfonic acid (PFOS)

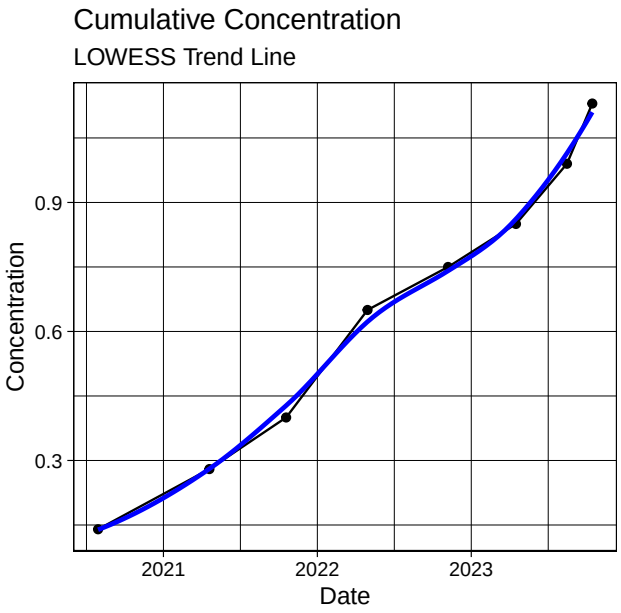




Kendall Trend Test Results Continuous	
n	8
z	-0.27
p	0.79
S	-3
varS	55.67
tau	-0.12
mean	0.14
sd	0.05
cov	0.34
results	STABLE

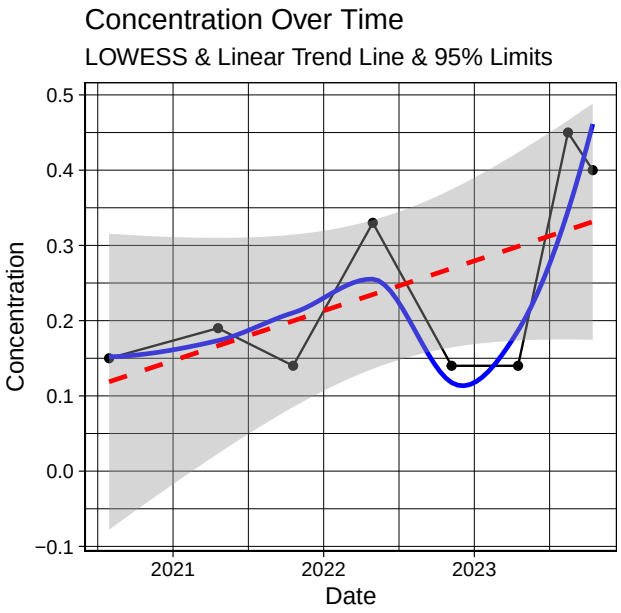
Report for ID : MW254 and Analyte : Perfluorooctanoate (PFOA)

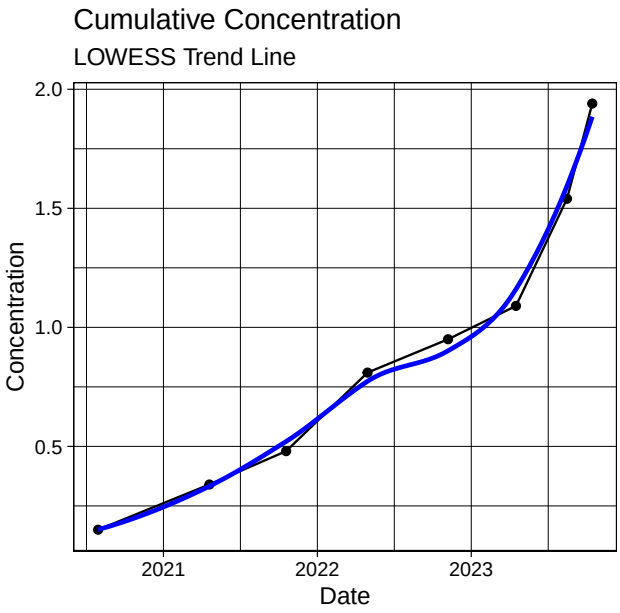




Kendall Trend Test Results Continuous	
n	8
z	0.76
p	0.44
S	7
varS	61.67
tau	0.26
mean	0.24
sd	0.13
cov	0.54
results	NO CLEAR TREND

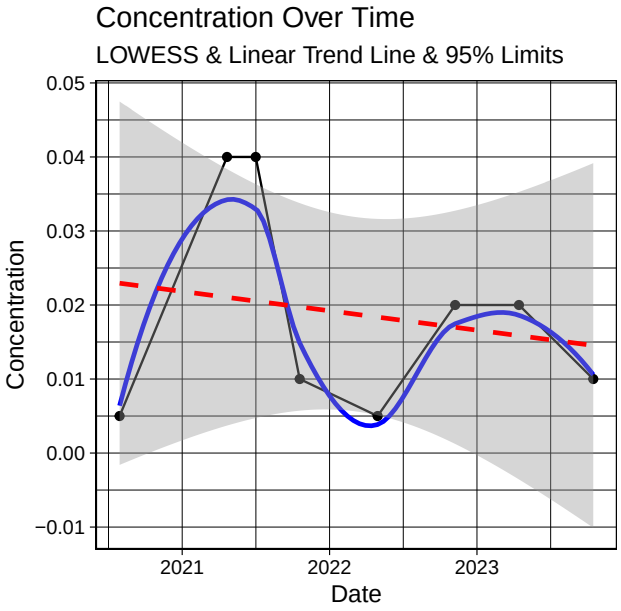
Report for ID : MW254 and Analyte : Sum of PFHxS and PFOS

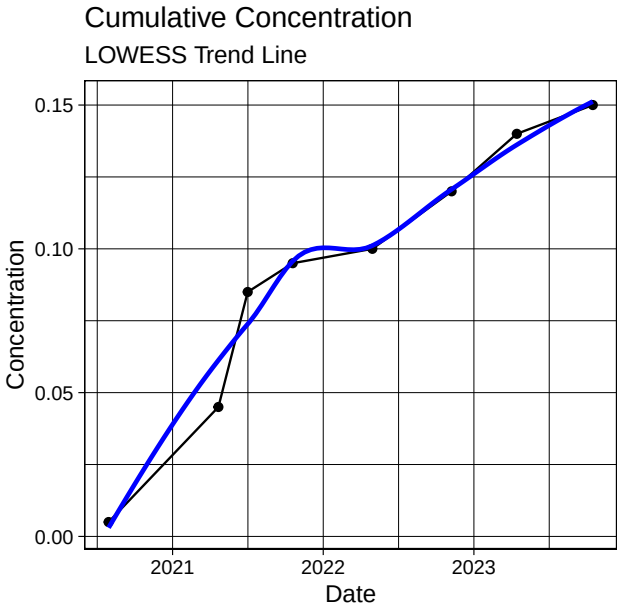




Kendall Trend Test Results Continuous	
n	8
z	-0.13
p	0.9
S	-2
varS	61.33
tau	-0.08
mean	0.02
sd	0.01
cov	0.76
results	STABLE

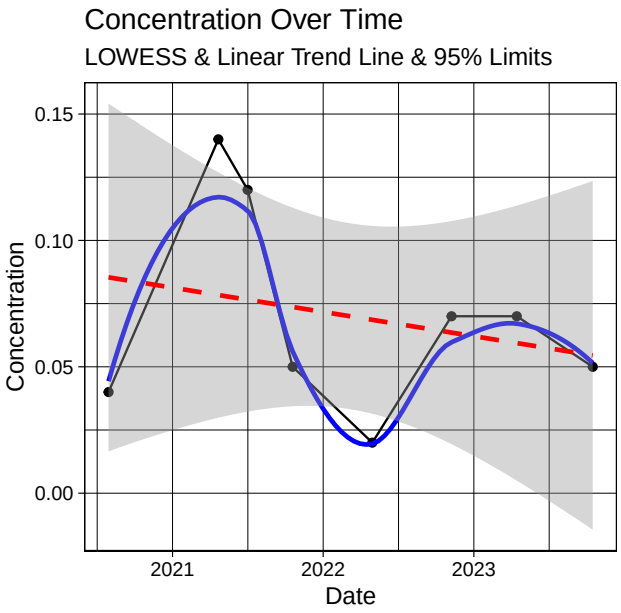
Report for ID : MW255 and Analyte : Perfluorooctane sulfonic acid (PFOS)

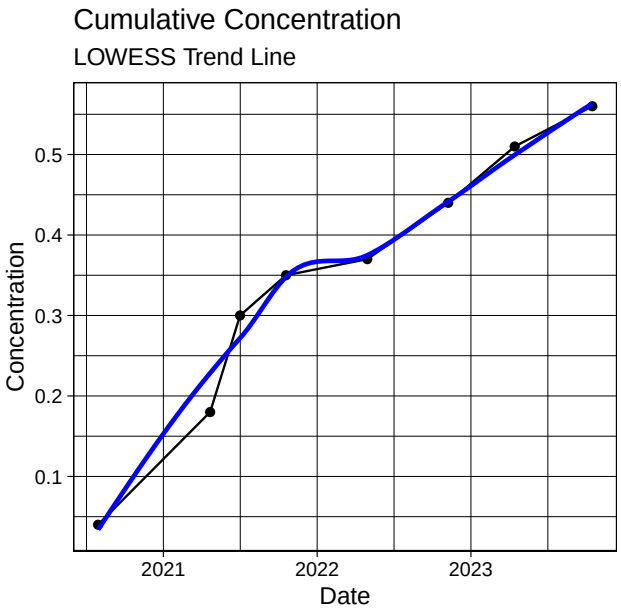




Kendall Trend Test Results Continuous	
n	8
z	-0.38
p	0.71
S	-4
varS	63.33
tau	-0.15
mean	0.07
sd	0.04
cov	0.58
results	STABLE

Report for ID : MW255 and Analyte : Sum of PFHxS and PFOS





APPENDIX

D

DEVIATIONS FROM THE OMP

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Location	Monitoring Event	Deviation	Comments	Impact on Existing Dataset & Program
Groundwater				
MW210	E5	Sampled from different tap	Previous tap not working.	No impact - connected to same bore. Other monitoring wells upgradient. Results consistent with previous sampling events.
	E8	Not Sampled. Alternate location sampled.	Due to the previous sampling point being decommissioned, a nearby sampling point connected to a bore screened within the same aquifer (i.e. Lachlan) and located approximately 20 m from MW210, was identified in consultation with the Gumly Irrigation District representative (MW260).	Minimal impact – Sampled location (MW260) is screened within the same aquifer as MW210 and located in the same general area so is considered representative.
MW211	E5	Not Sampled	Electrical fault.	Minimal impact – Location was sampled in the E3, E4, E6 and E8 sampling events. Historical results at this location have been <LOR. Other monitoring wells upgradient were sampled during E5.
	E7	Not Sampled	Not scheduled to be operated during the month of April 2023 due to associated energy penalties. As MW211 is a drinking water supply bore which is sampled from a tap it was unable to be sampled without RWCC incurring a substantial penalty, and as such Riverina Water declined to turn on the bore.	Minimal impact – Location was sampled in the E3, E4, E6 and E8 sampling events. Historical results at this location have been <LOR. Riverina Water completed internal biannual sampling for PFAS in August 2023, with all results below LOR. Alternate locations targeting the Lachlan aquifer in close proximity to MW211 were also sampled (GW025234_I and GW025234_D), with results <LOR.
MW212	E7	Not Sampled	Not scheduled to be operated during the month of April 2023 due to associated energy penalties. As MW212 is a drinking water supply bore which is sampled from a tap it was unable to be sampled without RWCC incurring a substantial penalty, and as such Riverina Water declined to turn on the bore.	Minimal impact – Location was sampled in all other events. All results at this location have been <LOR. Riverina Water completed internal biannual sampling for PFAS in August 2023, with all results below LOR. Alternate locations targeting the Lachlan aquifer in close proximity to MW212 were also sampled (GW025234_I and GW025234_D), with results <LOR.
MW213	E6	Not Sampled	Bore under water and not operational	Minimal impact – Location was sampled in E3 – E5 and E8 sampling events. All results at this location have been <LOR.

Location	Monitoring Event	Deviation	Comments	Impact on Existing Dataset & Program
MW213	E7	Not Sampled	Not scheduled to be operated during the month of April 2023 due to associated energy penalties. As MW213 is a drinking water supply bore which is sampled from a tap it was unable to be sampled without RWCC incurring a substantial penalty, and as such Riverina Water declined to turn on the bore.	Minimal impact – Location was sampled in E3 – E5 and E8 sampling events. All results at this location have been <LOR. Riverina Water completed internal biannual sampling for PFAS in August 2023, with all results below LOR. Alternate locations targeting the Lachlan aquifer in close proximity to MW213 were also sampled (GW025234_I and GW025234_D), with results <LOR.
MW235	E8	Not Sampled	MW235 had not been brought into operation as a new property owner has taken over the groundwater bore system used for irrigation which the sampling location is connected to.	Minimal impact – Location last sampled in the November 2022 sampling event. Historical results at this location have been <LOR. The bore system used for irrigation is currently offline, eliminating any potential exposure pathways.
MW250	E5	Sample Lost	Sample was collected by Cardno, as evidenced by electronic sampling record and water quality parameters. It is understood that this sample was submitted to the laboratory (ALS) alongside all the other samples, however ALS has come back and said that they cannot find it in their system.	Minimal impact – Location was sampled in E3, E4 and E6 - E8 sampling events. Other monitoring wells upgradient and downgradient in same formation were sampled during this event. MW249, which is co-located with MW250 but in the Lachlan Formation, was also sampled during this event.
MW251	E6	Not Sampled	Unable to access location due to flood water.	Minimal impact – Location was sampled in all other events. All results at this location were <LOR.
MW252	E6	Not Sampled	Unable to access location due to flood water.	Minimal impact – Location was sampled in all other events. All results at this location were <LOR.
MW257	E3, E4	Not sampled	Insufficient water within the bore for sampling.	Minimal impact – Location was sampled in the following E5 - E8 sampling events. Results were below LOR.
MW301	E3, E4, E5, E6, E7, E8	Not sampled	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW303	E3, E4, E5, E6, E7, E8	Not sampled	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW305	E3, E4, E5, E6, E7, E8	Not sampled	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.

Location	Monitoring Event	Deviation	Comments	Impact on Existing Dataset & Program
MW307	E3, E4, E5, E6, E7, E8	Not sampled	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW309	E4, E5, E6, E7, E8	Not sampled	Insufficient water within the bore for sampling.	No impact – wells historically have been dry throughout the DSI and OMP, except for E3.
MW311	E3, E4, E5	Not sampled	Location dry	Minimal impact – Location was sampled in the following E6 - E8 sampling events. PFOS+PFHxS concentrations have been reported above drinking water criteria and below recreational criteria.
MW312	E3	Not sampled	Unable to sample, as private property access was not granted.	Minimal impact – Location was sampled in the following E4 - E8 sampling events. PFOS+PFHxS concentrations were reported above LOR but below drinking water criteria in E4 and were reported <LOR in E5 – E8.
MW313	E3	Not sampled	Unable to sample, as private property access was not granted.	No impact – wells historically have been dry throughout the DSI and OMP.
	E4, E5, E6, E7, E8		Location dry	
GW025234_I and GW025234_D	E7	Additional wells sampled, not in SAQP	Replacement monitoring wells for Riverina Water bores.	No impact – location was suggested by Riverina Water as an alternative monitoring location to MW211, MW212 and MW213 and was sampled by Cardno at the request of Defence. Results were <LOR, in line with expectations.
Rinsate blank samples	E3	Alternate sampling frequency	Rinsate collected on 27/04/2021 not analysed, whilst two rinsates were collected on 20/04/2021, 21/04/2021, 22/04/2021 and 23/04/2021 and analysed.	Minimal impact – no PFAS compounds were reported above LOR in any rinsate blank sample, indicating that decontamination was adequate. Total number of rinsate blank samples collected meets the requirement for one per day.

Location	Monitoring Event	Deviation	Comments	Impact on Existing Dataset & Program
	E4	Alternate sampling frequency	Rinsate not collected on one day of sampling (24/10/21).	This is considered to have little to no impact on the investigation as only one groundwater sample was collected on this day. There were also no PFAS compounds reported above LOR in any rinsate blank samples, indicating that decontamination was adequate.
Surface Water				
SW212	E6	Not sampled	Water level too high, unable to access due to flood water.	Minimal impact – Location was sampled in all other events. Downstream locations were sampled in this event. Results at this location have been <LOR since 2020.
SW236	E6	Location moved	Due to high water level sampling location was moved 10 m east.	Minimal impact – review of results from this sampling point are consistent with historical results.
SW261	E5	Sampling forms not available	Software malfunction	Minimal impact- Laboratory Analysis Available
	E6	Not sampled	Water level too high, unable to access due to flood water.	Minimal impact – Location was sampled in all other events. Upstream locations were sampled in this event. All results at this location have been <LOR.
SW262	E6	Location moved	Due to high water level sampling location was moved 15 m south.	Minimal impact – review of results from this sampling point are consistent with historical results.
SW286	E6	Location moved	Due to high water level sampling location was moved 15 m south.	Minimal impact – review of results from this sampling point are consistent with historical results.
SW294	E6	Not sampled	Water level too high, unable to access due to flood water.	Minimal impact – Location was sampled in all other events. Upstream and downstream locations were sampled in this event. All results at this location have below drinking water criteria and have been consistent throughout the OMP.
SW309	E6	Location moved	Due to high water level sampling location was moved 20 m west and 10 m south.	Minimal impact – review of results from this sampling point are consistent with historical results.

Location	Monitoring Event	Deviation	Comments	Impact on Existing Dataset & Program
Table Notes: E3 – 3rd sampling event held in April 2021. E4 – 4th sampling event held in October 2021. E5 – 5th sampling event held in April/May 2022. E6 – 6th sampling event held in November 2022. E7 – 7th sampling event held in April 2023. E8 – 8th sampling event held in October 2023.				

>

APPENDIX

E

E3 FACTUAL REPORT

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PFAS OMP Factual Report

Biannual Sampling Event – April 2021

RAAF Base Wagga

DEF19008

Prepared for
Department of Defence

4 March 2022

Cardno

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[redacted]

Associate Environmental Geoscientist

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0	28/05/2021	Issued Draft		
1	29/06/2021	Revised Draft to address Defence comments		
2	04/08/2021	Final		
3	04/03/2022	Revised Final		

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Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Cardno is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

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List of Abbreviations and Units

Chemical Names

DOC	Dissolved Organic Carbon
DO	Dissolved Oxygen
PFAS	Per- and Poly-fluoroalkyl Substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Per-fluoro-octanoic Acid
PFOS	Per-fluoro-octane Sulfonate
TDS	Total Dissolved Solids (salinity of water)
TSS	Total Suspended Solids

Technical Terms

AFFF	Aqueous Film-Forming Foam
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
AS	Australian Standard
AST	Above-ground Storage Tank
BGL	Below Ground Level
COC	Chain of Custody
DQI	Data Quality Indicator
DQO	Data Quality Objective
EC	Electrical Conductivity
EPA	Environment Protection Authority
ESA	Environmental Site Assessment
HIL	Health Investigation Level
HSL	Health Screening Level
LOR	Limit of Reporting
N/A	Not Applicable
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environmental Protection Measure
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan
SEPP	State Environment Protection Policy

Units

ha	Hectares
mBGL	Metres Below Ground Level
mbTOC	Metres below Top of Casing
mg/kg	Milligram per Kilogram (approximately equivalent to ppm)
mg/L	Milligram per Litre
ppm	Parts per Million
µg/L	Micrograms per Litre
µS/cm	Micro Siemens per Centimetre (Electrical Conductivity - Water)

Site Specific

OMP	Ongoing Monitoring Plan
RAAF	Royal Australian Air Force

1 Introduction

1 1 Background

Cardno was engaged by the Australian Department of Defence (Defence) to carry out the Per- and Poly-Fluoroalkyl Substances (PFAS) Ongoing Monitoring Plan (OMP; Jacobs, 2019b) at RAAF Base Wagga ("the site"). The site is located outside of Wagga Wagga in Forest Hill, New South Wales, as shown in Figure 1, Appendix A.

The OMP was carried out in accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP):

> Cardno, 22 April 2021, Reference: DEF19008, *PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP) RAAF Base Wagga*.

For the purposes of this report:

> The Management Area is defined as RAAF Base Wagga, the neighbouring Wagga Airfield, neighbouring properties in the greater Wagga Wagga area, and public lands such as the Murrumbidgee River and Marshalls Creek (Figure 1, Appendix A).

1 Purpose Ob ectives

The objective of the OMP is to assess the changes in the nature and extent of PFAS in groundwater and surface water, specifically where there is an identified potentially elevated risk to a receptor or a potential future risk to a receptor associated with Defence's historical use of Aqueous Film Forming Foam (AFFF). The OMP will also provide confirmation of our current understanding of risk.

The purpose of this PFAS OMP factual report is to provide an up-to-date status of the condition of the site as it is currently understood in relation to the most recent sampling event.

The objectives of the report are to provide:

> A succinct summary of the April 2021 sampling event and provision of analytical results with supporting tables and figures;

> Confirmation of the current understanding of risk; and

> Supporting data for the assessment of management actions, where relevant.

1 Relevant Guidelines

This assessment has been undertaken in general accordance with applicable industry standards for a site investigation for the purpose, objectives and scope identified in this report. These standards are set out in:

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

> Australian Standard AS 4482-2005 *Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds*.

> Department of Defence, Department of Energy, 2018, *Quality System Manual Schedule B15*.

> Heads of Environmental Protection Authority's Australia and New Zealand (HEPA), January 2020, *PFAS National Environmental Management Plan (NEMP) Version 2.0*.

> National Environment Protection Council (NEPC), 1999, *National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013)* (ASC NEPM).

> National Health and Medical Research Council (NHMR), August 2019, *Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water*.

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

> U.S. Environmental Protection Agency (EPA), 2000, '*Guidance for the Data Quality Objectives Process (EPA QA/G-4)*'.

> USEPA, 2002, '*Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8)'.*

Scope of Work

Cardno carried out the following tasks in order to satisfy the purpose and objectives of this assessment.

1 Review / Revision o the SAQP

Cardno undertook a review of the SAQP prior to commencement of sampling and revised the SAQP to include additional monitoring wells installed by Jacobs that will be sampled as part of the OMP. The SAQP will be further revised as required prior to the next monitoring event scheduled for September/October 2021.

Groundwater Monitoring

Sampling of selected groundwater bores was performed in accordance with the SAQP, applying methods set out in Section 3 of this report. The groundwater bores monitored as part of the OMP are presented in Table 2-1, and are shown in Figure 4, Appendix A.

Table 2-1 Groundwater Monitoring Locations

Monitoring Area	Location ID
On-site	MW243, MW300, MW301, MW302, MW303, MW304, MW305, MW306, MW307, MW308, MW309, MW310, MW311.
Gumly Gumly Wetland	MW200, MW204, MW233, MW312, MW313.
Down-gradient of Gumly Gumly Wetland	MW238, MW239, MW240, MW244, MW245, MW247[2], MW248[2], MW249[2], MW250[2], MW251[2], MW252[2], MW253[2], MW254[2], MW255[2], MW256[2], MW257[2].
Off-site to the north and north-west of site	MW214[1], MW231, MW235, MW246[2].
Drinking water supply bores to the north and north-west of site	MW209, MW210, MW211, MW212, MW213.
Property to the east of the site	MW241, MW242.

Notes:
1. MW214 is the current production bore supplying irrigation water to the base.
2. New bores installed in 2020 (Jacobs, 2020).

Sur ace Water Monitoring

Sampling of selected surface water locations was performed in accordance with the SAQP, applying methods set out in Section 3 of this report. The surface water locations monitored as part of the OMP are presented in Table 2-2, and are shown in Figure 5, Appendix A.

Table 2-2 Surface Water Monitoring Locations

Monitoring Area	Location ID
Surface Water Inflows – drains discharging from the Site	SW104, SW206.
Surface Water Outflows – drain parallel to Forest Hill Rural Fire Service	SW218.
Marshalls Creek downstream of Gumly Gumly Wetland	SW234, SW262, SW294, SW310.
Murrumbidgee River	SW212, SW261, SW286, SW309.
Kyeamba Creek	SW236, SW240.
Forest Hill Sewage Treatment Plant	SW228, SW288, SW289.

Data Management

All the data included in the report have been collected, uploaded to the ESdat database and reviewed according to the data management requirements of the Defence Contamination Management Manual (DCMM) Annex L (Department of Defence, 2019).

Deviations rom the OMP SAQP

Deviations from the SAQP are presented in Table 2-3. On-site and off-site sampling and testing was undertaken at 38 groundwater monitoring wells and 16 surface water locations. Six groundwater monitoring wells could not be sampled as the wells were found to be dry or have insufficient water for sampling.

Table 2-3 Deviations from SAQP

Location	Deviation	Comments	Impact on E isting Dataset
		Groundwater	
MW301, MW303, MW305, MW307, MW311.	Not sampled	Dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW257	Not sampled	Insufficient water within the bore for sampling.	Data gap - sampled once in 2020 by Jacobs, results were below LOR.
MW312, MW313	Not sampled	Unable to sample, as private property access was not granted. MW313 was also dry in the previous two sampling rounds.	No impact with respect to MW313 - no previous data for MW313 due to this location being dry during previous monitoring. Data gap with respect to MW312 - MW312 has been sampled previously in 2020 where it exceeded criteria.
MW200, MW209, MW210, MW211, MW212, MW213, MW214, MW231, MW233, MW235	Alternate sampling method	Existing pumps inside bores; samples collected from tap on outlet pipe.	No impact – sample method has been consistent throughout OMP.
MW309	Alternate sampling method	Insufficient water column (0.245 m) for HydraSleeve® method; bailer used to collect sample.	No impact – no previous data as bore was dry during previous sampling events.
MW243	Alternate sampling method	HydraSleeve® repeatedly splitting during the retrieval process. Multiple sleeves redeployed over multiple days with same outcome. Bailer used to collect sample.	No impact – Results consistent with results from previous sampling events obtained using HydraSleeve® method.
Rinsate blank samples	Alternate sampling frequency	Rinsate collected on 27/04/2021 not analysed, whilst two rinsates were collected on 20/04/2021, 21/04/2021, 22/04/2021 and 23/04/2021 and analysed.	Minimal impact – no PFAS compounds were reported above LOR in any rinsate blank sample, indicating that decontamination was adequate. Total number of rinsate blank samples collected meets the requirement for one per day.

Methodology

1 Groundwater Sampling Methodology

Groundwater monitoring was undertaken using the no purge HydraSleeve® method, as detailed in Table 3-1, except for deviations as specified in Table 2-3.

Table 3-1 Groundwater Sampling Method

Activity	Details
Dates of Field Activity	20 April 2021 to 28 April 2021[1]
Well Gauging	Standing Water Levels (SWLs) were gauged using an interface probe. All wells were measured against a specified mark at the top of the well casing.
Water Quality Parameter Field Measurements	Water quality parameter field measurements were recorded with a water quality meter before sample collection (with the sample in a sterilized jar). The following field parameters were recorded using a water quality meter: ▪ pH. ▪ electrical conductivity (EC). ▪ oxidation reduction potential (ORP). ▪ Dissolved oxygen (DO). ▪ Temperature. Field measurements made by the water quality meter were recorded on field data records. All field instruments (e.g. water quality meter) were calibrated by the equipment supplier to optimise the accuracy of the measurements taken. Calibration certificates are provided in Appendix D.
Deployment of HydraSleeve	The HydraSleeves® were deployed with attached weights in order for sample collection to begin at the lowest point of the well screen. HydraSleeves were deployed during the first biannual sampling event between 25 March – 1 April 2020. Due to wear, HydraSleeves were re-deployed in wells MW302, MW306, MW310 and MW312 during the September-October 2020 sampling event, and in MW243 and MW308 during the April 2021 sampling event. Following the construction of 12 new groundwater wells (MW246, MW247, MW248, MW249, MW250, MW251, MW252, MW253, MW254, MW255, MW256, MW257) by Jacobs between November 2019 and February 2020, HydraSleeves® were deployed by Jacobs.
Retrieval of HydraSleeves (Sample Collection)	At the majority of locations, HydraSleeve® sampling devices were left in wells from the previous sampling event, ensuring the wells were restabilised following the slight disturbance caused by sampler deployment. Where new HydraSleeve® sampling devices were deployed, they were left in wells for a minimum of 4 hours to allow restabilisation of the well following the slight disturbance caused by sampler deployment. Samples were collected via continuous pull method at a rate allowing the water to pass through the check valve into the sample sleeve. Samples were discharged immediately (to minimise changes in chemistry) via a discharge tube. HydraSleeves® were redeployed after sampling in preparation for the next sampling event. Where insufficient water was available for HydraSleeve® sampling, 3 bore volumes were removed by bailer prior to bailer sample collection.
Decontamination procedure	Dedicated HydraSleeves® were used at each groundwater bore, thus removing the need for decontamination. All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection.
Sample identification, preservation transport and holding times	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Samples were collected directly into appropriately preserved, laboratory-supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under Chain of Custody (COC) documentation.

[1] MW255 was resampled by Jacobs on 2 July 2021.

Activity	Details
	Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998 and AS 4482.1 as appropriate).
Laboratory Testing	All groundwater samples were submitted for the following analysis: ▪ Full PFAS analytical suite (refer to the SAQP for list of analytes). The primary laboratory was ALS Global Laboratories (Smithfield, NSW) and the secondary laboratory (quality control) was Eurofins (Lane Cove West, NSW). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and Chain of Custody documentation are included in Appendix C.
Laboratory Testing – Quality Control	Groundwater quality control samples were collected as set out in the SAQP and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples (4samples). ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples (4 samples). ▪ Rinsate blank samples at 1 per day [collected off re-used sampling equipment (e.g. interface probe)] (9 samples total). ▪ Trip blank samples of 1 per shipment included in the chilled sample containers upon transport to the laboratory (8 samples total).

Sur ace water Sampling Methodology

The surface water monitoring methods and activities are summarised in Table 3-2.

Table 3-2 Surface Water Monitoring Event Summary

Activity	Details
Dates of Field Activity	20 April 2021 to 27 April 2021
Water Levels	Water depths were measured where relevant with an interface probe, limiting water disturbance.
Water Quality Parameter Field Measurements	Surface water water quality parameter field measurements (pH, electrical conductivity (EC), oxidation reduction potential (ORP), dissolved oxygen (DO) and temperature) were recorded at the time of sampling using a pre-calibrated water quality meter. Field observations such as turbidity, odours or sheen presence were recorded on field sampling sheets.
Sampling Method	Where possible, the samples were collected directly into sample containers. The sample bottles were positioned at least 10 cm below the surface water level and above the sediment bed and orientated with the opening facing downwards to avoid the collection of surface films. Where access to surface water samples was difficult, the samples were collected using a long-handled sampling device (scoop). Samples were then decanted into the laboratory-supplied sample containers. Samples were collected in accordance with Australian/New Zealand Standards (AS/NZS 5667.1:1998) *Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.*
Decontamination	All re-usable sampling equipment (e.g. water scoop) was thoroughly washed using PFAS & phosphate-free detergent (Liquinox) and then double rinsed with de-ionised water before the sample collection.
Sample identification, preservation, transport and holding times.	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM. Samples were collected in appropriately preserved, laboratory-supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under COC documentation.

Activity	Details
	Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998 and AS 4482.1 as appropriate).
Laboratory Testing	Surface water samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Smithfield, NSW) and the secondary laboratory (quality control) was Eurofins (Lane Cove West, NSW). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and Chain of Custody documentation are included in Appendix C.
Laboratory Testing – Quality Control	Surface water quality control samples were collected as set out in the SAQP and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples (2 samples). ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples (2 samples). ▪ Rinsate blank samples at 1 per day [collected off re-used sampling equipment (e.g. long-handled sampling device)] (9 samples total). ▪ Trip blank samples of 1 per shipment included in the chilled sample containers upon transport to the laboratory (8 samples total).

Quality Control / Quality Assurance

A critical aspect of site assessments is the demonstration of the quality of the data used as the basis for the assessment. This is achieved through a Data Validation process which includes a review of the following data quality indicators, as described in the SAQP:

- QA documentation
- Bias
- Data Representativeness
- Data Precision & Accuracy
- Data Comparability
- Data Set Completeness

A detailed review of these aspects has been undertaken, the results of which are presented in Appendix E. A summary of the data validation from the QA/QC review is included in Section 4.5 below.

Assessment Criteria

1 Groundwater

The adopted assessment criteria for groundwater are detailed in Table 3-3.

Table 3-3 Criteria for Groundwater

E posure Scenario	Adopted Assessment Criteria		Guidance
	PFH S / PFOS	PFOA	
	µg/L		
Human Health - Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Ecological	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2019b).

Sur ace Water

The adopted assessment criteria for surface water are detailed in Table 3-4.

Table 3-4 Criteria for Surface Water

E posure Scenario	Adopted Assessment Criteria		Guidance
	PFH S / PFOS	PFOA	
	µg/L		
Human Health - Surface Water Recreational	2[2]	10	HEPA 2020
Human Health - Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Ecological	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2019b).

Field Observations and Results

1 Conditions Impacting the Sampling Event

In the seven days prior to the sampling event, 0mm of rain was recorded at the nearest weather station (74127), located approximately 10km north west of the site. April 2021 rainfall (2mm) was significantly lower than the April monthly average between 2001 and 2020 (29mm).

No on-site activities with the potential to impact sample collection or the results were noted.

Groundwater

1 Summary o Field Observations

4.2.1.1 Water Quality Parameter Field Measurements

Stabilised water quality parameter field measurements, water colour and turbidity observations recorded during the groundwater sampling program are presented in field sampling record sheets, included in Appendix D. Field measurements for each aquifer unit were generally consistent with the previous monitoring event. Groundwater varied from clear to brown with low to high turbidity and no notable changes were recorded relative to previous monitoring events.

4.2.1.2 Groundwater Elevation and Migration

Groundwater elevation during this sampling event ranged from 161.268 mAHD (MW249) to 172.006 mAHD (MW308) for the Cowra Formation (shallow aquifer), and from 162.026 mAHD (MW250) to 188.138 mAHD (MW306) for the Lachlan Formation (deep aquifer).

Groundwater flow for both aquifers was interpreted to be in a north-westerly direction, which is consistent with the flow of Kyeamba Creek and Marshalls Creek and with the previous monitoring event.

Groundwater elevation contours and flow directions are shown in Figures 2 and 3, Appendix A. Gauging records are presented in Appendix D.

Groundwater Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, and are presented in Table B1, Appendix B, and summarised in Table 4-1 below.

Table 4-1 Summary of Groundwater Results Exceeding Adopted Criteria

Analytes	Locations E ceeding Criteria	Lowest Criteria µg/L)	Ma Conc µg/L)	No Analytical Results LOR[1]	No Results Above Criteria[1]	Signi icant Concentration Changes
PFOS	MW200, MW233	0.13	0.39	7	2	-
PFOA	-	0.56[2]	0.14	4	0	-
Sum of PFHxS & PFOS	MW200, MW233, MW240, MW248, MW254, MW255, MW256	0.07[2]	1.39	12	7	-

1. Non-inclusive of quality control samples
2. Drinking water assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease

Laboratory results have also been compared to available historical data. The following locations have reported a significant change in concentration for this monitoring event:

- All concentrations reported during this event were generally consistent with previous sampling events.

A summary of locations is presented in Table 4-2 and shown on Figure 4, Appendix A. The laboratory reports are included in Appendix C.

Table 4-2 Summary of Groundwater Results with First Time Detections or Exceedances

Deviation Type	Monitoring Well	Sum o PFH S PFOS concentration µg/L		PFOA concentration µg/L		PFOS concentration µg/L	
		April 0 1	Previous Ma imum	April 0 1	Previous Ma imum	April 0 1	Previous Ma imum
First time detection	MW309	0.04	N/A Bore previously dry	0.03	N/A Bore previously dry	0.04	N/A Bore previously dry
	MW255	0.14	0.04	<0.01	0.02	0.04	<0.01
First time exceedance of the NEMP (HEPA, 2020) drinking water guidelines	MW255	**0 1**	0.04	<0.01	0.02	0.04	<0.01

Note
Location with first-time detection of PFOS + PFHxS or PFOA or PFOS in latest monitoring round
Location with a new exceedance of guideline values in latest monitoring round
Bold: Exceedance of guideline values
Exclusive of quality control samples

Findings are summarised as follows:

- Of the 38 samples that were tested, PFOA was reported above the laboratory limit of detection (LOR) in four (4) samples (MW200, MW240, MW254, MW309), and Sum of PFHxS & PFOS in twelve (12) samples (MW200, MW233, MW240, MW245, MW248, MW250, MW253, MW254, MW255, MW256, MW300, MW309).
- Seven (7) sampling locations (MW200, MW233, MW240, MW248, MW254, MW255, MW256) exceeded adopted human health criteria for Sum of PFHxS & PFOS and no sampling locations exceeded adopted criteria for PFOA, consistent with the previous monitoring event.
- No groundwater sampling locations reported a first time exceedance for PFOA.

- One (1) groundwater sampling location reported a first time exceedance of adopted human health criteria for Sum of PFHxS & PFOS (MW255). MW255 was resampled by Jacobs on 2 July 2021, including the collection of a blind replicate and a field split. All three sample results were consistent (no RPD exceedances) and confirmed the initial results for MW255.
- One (1) groundwater sampling location reported a first time detection for PFOA and Sum of PFHxS & PFOS (MW309).

Sur ace water

1 Summary o Field Observations

4.3.1.1 Water Quality Parameter Field Measurements

Stabilised water quality parameter field measurements, water colour and turbidity observations recorded during the surface water sampling program are presented in field sampling record sheets, included in Appendix D. Field measurements were generally consistent with March 2020 to October 2020 observations. Surface water varied from clear to brown or green with generally low to medium turbidity. In general, water was clearer and slightly less turbid than the previous monitoring round in September/October 2020.

Sur ace Water Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, and are presented in Table B1, Appendix B, and summarised in Table 4-3 below.

Table 4-3 Summary of Surface Water Results Exceeding Adopted Criteria

Analytes	Locations E ceeding Criteria	Lowest Criteria µg/L)	Ma Conc µg/L)	No Analytical Results LOR[1]	No Results Above Criteria[1]	Signi icant Concentration Changes
PFOS	SW104, SW206, SW228, SW289, SW310	0.13	1.1	7	5	SW104 (decrease) SW234 (decrease)
PFOA	-	0.56[2]	0.06	6	0	-
Sum of PFHxS & PFOS	SW104, SW206, SW228, SW289, SW310.	0.07[2]	2.19	7	5	-

Note

1. Non-inclusive of quality control samples
2. Drinking water assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease

Results have also been compared to available historical data. Surface water results reported during this event were generally consistent with previous sampling events, with the exception of SW104 and SW234 which reported an order of magnitude decrease in PFOS concentrations.

No surface water sampling locations reported a first time exceedance of adopted assessment criteria or a first time detection during the April 2021 sampling event. Surface water sampling locations are presented on Figure 5, Appendix A, and the laboratory reports are provided in Appendix C.

Findings are summarised as follows:

- Of the 16 samples that were tested, PFOA was reported above the LOR in six (6) samples (SW104, SW206, SW228, SW289, SW294, SW310), and Sum of PFHxS & PFOS in seven (7) samples (SW104, SW206, SW218, SW228, SW234, SW289, SW310).
- One (1) sampling location (SW228) reported an exceedance for Sum of PFHxS & PFOS of the Recreational Water criteria.
- Five (5) surface water samples reported exceedances for Sum of PFHxS & PFOS of the Drinking Water criteria, three less than in the previous monitoring event, and none reported exceedances for PFOA.
- No surface water samples reported first time exceedances for Sum of PFHxS & PFOS or PFOA.
- No surface water samples reported first time detections for Sum of PFHxS & PFOS or PFOA.

Changes to the Monitoring Network Condition

No changes to the monitoring network condition were noted during this sampling event.

Twelve new monitoring wells that were installed by Jacobs in 2020 were gauged and sampled for the first time as part of the OMP during the April 2021 event.

Data alidation

The data validation process has concluded that there are no significant systematic errors in the data collection process. Therefore, the data set used as the basis for the surface water and groundwater assessment is considered valid and complete. A detailed Data Quality Review is included in Appendix E.

Risk Pro ile

The PMAP (Jacobs, 2019a) includes the following summary of elevated risks which were originally identified in the DSI (Jacobs, 2018a) and/or the *Human Health and Ecological Risk Assessment for the RAAF Base Wagga PFAS Investigation* (HHERA; Jacobs, 2018b):

- High consumption of certain fish and yabbies sourced from local waterways around the Base.
- Direct toxicity to aquatic ecology at farm dams in the Gumly Gumly Wetland and in Marshalls Creek.
- Effects on terrestrial or aquatic ecology due to bioaccumulation in higher order consumers at various off-Base locations.
- Potential future risks if residents at certain properties commence home consumption of food produced with PFAS impacted water or soil.
- Potential risks if PFAS impacted groundwater is used for drinking water or home food production in the future.
- Potential risks to groundwater users due to PFAS migration in the future.
- Discharge of PFAS impacted sewage from the Base at concentrations that would present an elevated risk if treated sewage is recycled for irrigation of land close to Kyeamba Creek (potential ecological risk) or irrigation of crops for home consumption (potential human health risk).

No new source of PFAS contamination, transport pathway or potential receptor has been identified during this sampling event. It is noted that a first time detection of Sum of PFHxS & PFOS and PFOA was reported at MW309, and a first time exceedance of drinking water guidelines for Sum of PFHxS & PFOS was reported at MW255. MW255 is located down-gradient of the Gumly Gumly Wetland which infers that the plume is moving downgradient towards the Murrumbidgee River. However, no overall change in the risk profile was identified. MW255 was resampled by Jacobs on 2 July 2021, including the collection of a blind replicate and a field split. All three sample results were consistent (no RPD exceedances) and confirmed the initial results for MW255. Further sampling will help to establish trends, if present.

Summary and Conclusions

Cardno conducted the April 2021 biannual groundwater and surface water monitoring event at RAAF Base Wagga as part of the PFAS OMP. On-site and off-site sampling and testing was undertaken at 38 groundwater monitoring wells and 16 surface water locations.

Groundwater levels were gauged in all wells before sampling. Groundwater was interpreted to flow in a north-westerly direction, consistent with local drainage patterns and consistent with previous monitoring events.

The results of the April 2021 monitoring event confirm that there is no overall change in the risk profile associated with Defence's historical use of AFFF since the previous monitoring event in September/October 2020.

Table 5-1 Summary of Results

Item	Details
Deviations from OMP SAQP	> 5 groundwater wells were not sampled due to the wells being dry. > 1 groundwater well was not sampled due to insufficient water within the bore for sampling. > 2 groundwater wells were not sampled due to access not being granted. > 10 groundwater wells were sampled from pump discharge pipe, bore tap or discharge dam due to there being no direct bore access. > 1 groundwater well was sampled by bailer due to insufficient water column (0.245 m) for HydraSleeve® method. > 1 groundwater well was sampled by bailer due to the HydraSleeve® repeatedly splitting during the retrieval process. Multiple sleeves redeployed over multiple days with same outcome.
Groundwater Analytical Results	> 38 groundwater samples were collected in total. > 4 samples reported PFOA concentrations above the limit of reporting. > 12 samples reported Sum of PFOS & PFHxS concentrations above the limit of reporting. > No samples reported PFOA concentrations above the adopted assessment criteria. > 7 samples reported Sum of PFOS and PFHxS concentrations above the adopted assessment criteria. > 1 sample reported a first time detection of PFOA. > No samples reported a first time exceedance of the Drinking Water assessment criteria for PFOA. > 1 sample reported a first time detection of Sum of PFHxS & PFOS. > 1 sample reported a first time exceedance of the Drinking Water assessment criteria for Sum of PFHxS & PFOS. > Groundwater results were generally consistent with the previous monitoring event.
Surface Water Analytical Results	> 16 surface water samples were collected in total. > 6 samples reported PFOA concentrations above the limit of reporting. > 7 samples reported Sum of PFOS & PFHxS concentrations above the limit of reporting. > No samples reported PFOA concentrations above the Drinking Water assessment criteria. > 1 samples reported Sum of PFOS and PFHxS concentrations above the Drinking Water assessment criteria. > No samples reported a first time detection of PFOA. > No samples reported a first time exceedance of the Drinking Water assessment criteria for PFOA. > No samples reported a first time detection of Sum of PFHxS & PFOS. > No samples reported a first time exceedance of the Recreational Water assessment criteria for Sum of PFOS & PFHxS. > Surface water results reported during this event were generally consistent with previous sampling events, with the exception of SW104 and SW234 which reported an order of magnitude decrease in PFOS concentrations.

Item	Details
Next Scheduled Monitoring Event	> Due to the increase in concentrations at MW255, re-sampling of this location is planned to occur before the next biannual sampling event. > SAQP to be updated to consider all deviations from the current SAQP, prior to the next monitoring event.

References

General Re erences

1. ANZECC and ARMCANZ (2000) *Australian Water Quality Guidelines for Fresh and Marine Water Quality.*
2. Defence (2019) Defence Contamination Management Manual (DCMM).
3. Defence (2020) *Defence OMP Factual Report Preparation Guidance*, Revised March 2020.
4. Environmental Protection Agency (United States EPA; 2002) EPA/240/R-02/004 *Guidance on Environmental Data Verification and Data Validation,* November 2002.
5. The Heads of EPAs Australia and New Zealand (HEPA; 2020) *PFAS National Environmental Management Plan (NEMP) Version 2.0*, January 2020.
6. National Environment Protection Council (NEPC; 1999) *National Environmental Protection (Assessment of Site Contamination) Measure (as amended),* registered May 2013.
7. National Health and Medical Research Council (2011 – updated 2018) *National Water Quality Management Strategy Australian Drinking Water Guidelines*, 6 August 2018.
8. Nation Health and Medical Research Council (NHMR; 2019) *Guidance on Per and Poly-fluoroalkyl Substances (PFAS) in Recreational Water,* August 2019.
9. Standards Australia/Standards New Zealand (1998) AS5667.1:1998 *Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*.
10. Standards Australia (1999) AS4482.2-1999 *Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 – Non-volatile and semi-volatile compounds.*
11. US EPA (2000) *Guidance for the Data Quality Objectives Process* (EPA QA/G-4), United States Environmental Protection Agency.
12. US EPA (2002) *Guidance on Environmental Data Verification and Data Validation,* Reference: EPA/240/R-02/004, United States Environmental Protection Agency, November 2002.

Site Speci ic Re erences

13. Jacobs (2018a) *Comprehensive Investigation of Per- And Poly- Fluoroalkyl Substances (PFAS) at RAAF Base Wagga. Detailed Site Investigation*, June 2018.
14. Jacobs (2018b) *Human Health and Ecological Risk Assessment for the RAAF Base Wagga PFAS Investigation*, 6 November 2018.
15. Jacobs (2019a) *RAAF Base Wagga; PFAS Management Area Plan*, September 2019.
16. Jacobs (2019b) *PFAS Ongoing Monitoring Plan*, September 2019.
17. Jacobs (2020) *RAAF Base Wagga Comprehensive PFAS Investigation - Ongoing Monitoring Program Groundwater Well Installation Report.* Prepared for Department of Defence, December 2020.
18. Cardno (2021) *PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP),* RAAF Base Wagga. Prepared for Department of Defence, April 2021.

APPENDIX A

FIGURES

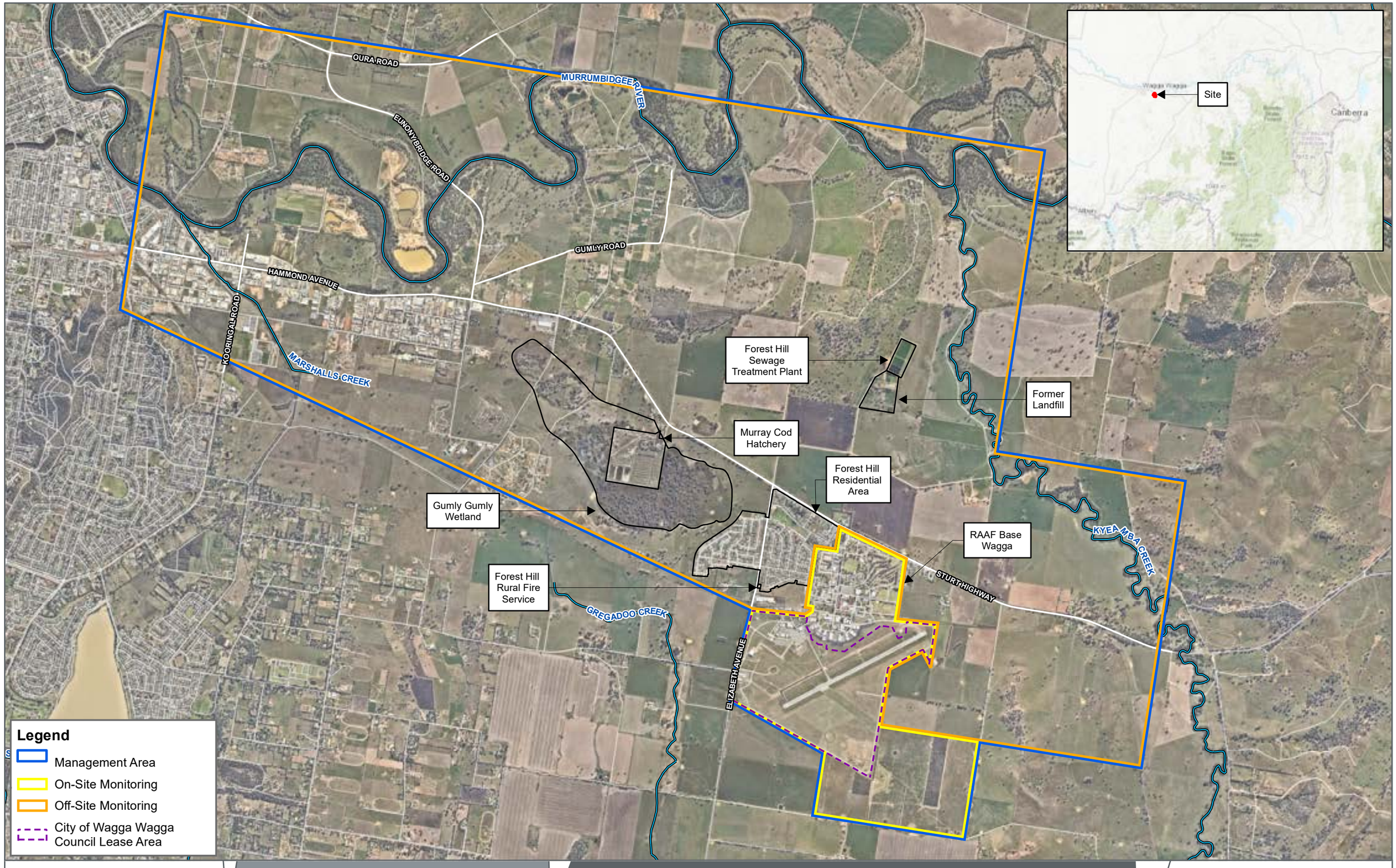


FIGURE 1

1:40,000 Scale at A3

Metres

0 1,000 2,000

Site Locality Plan

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2021-05-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-032-SiteLocalityPlan_WW_.mxd 04
Aerial Imagery Supplied by Nearmap (April, 2021)

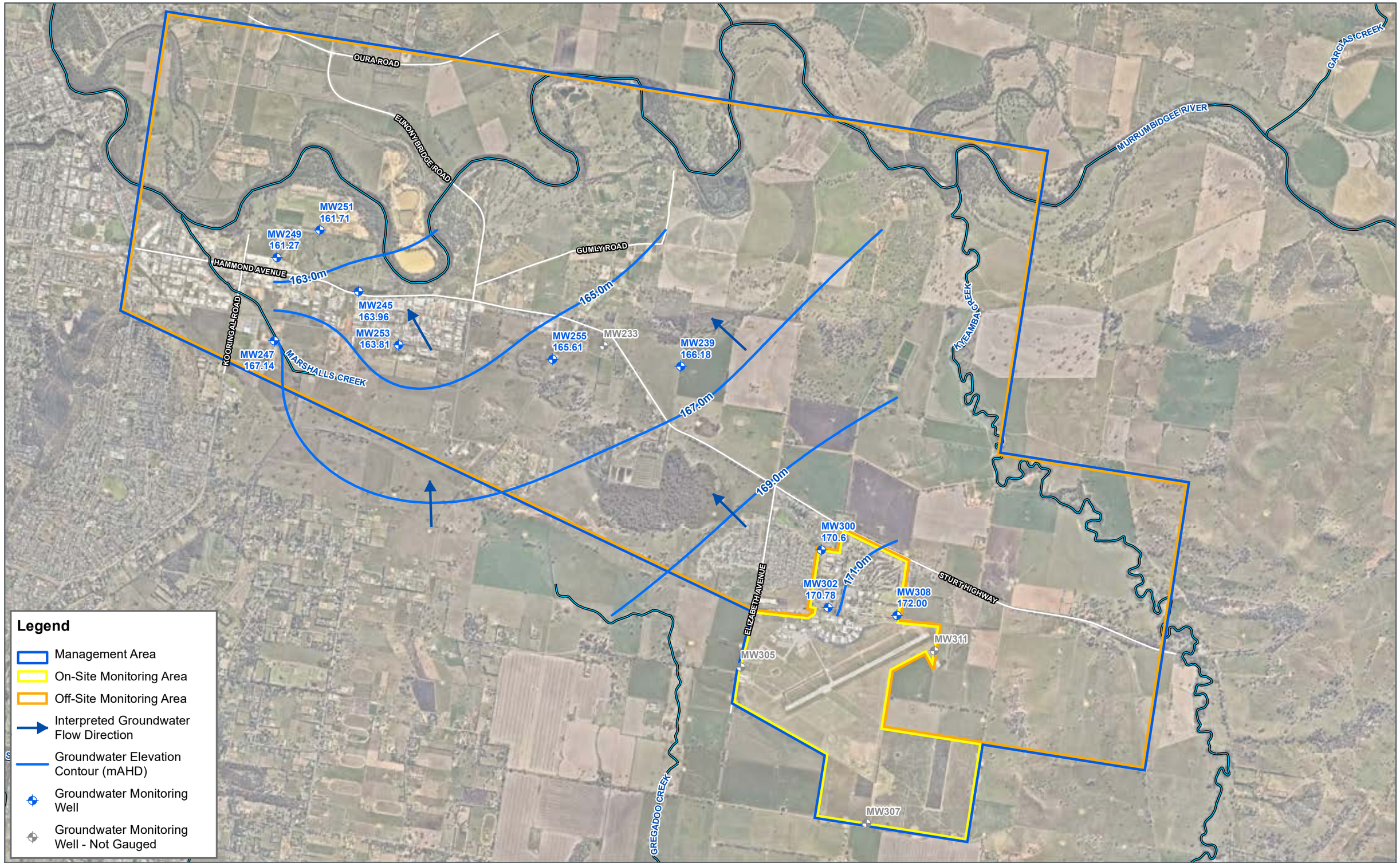


FIGURE 2

1:40,000 Scale at A3

Metres

0 1,000 2,000

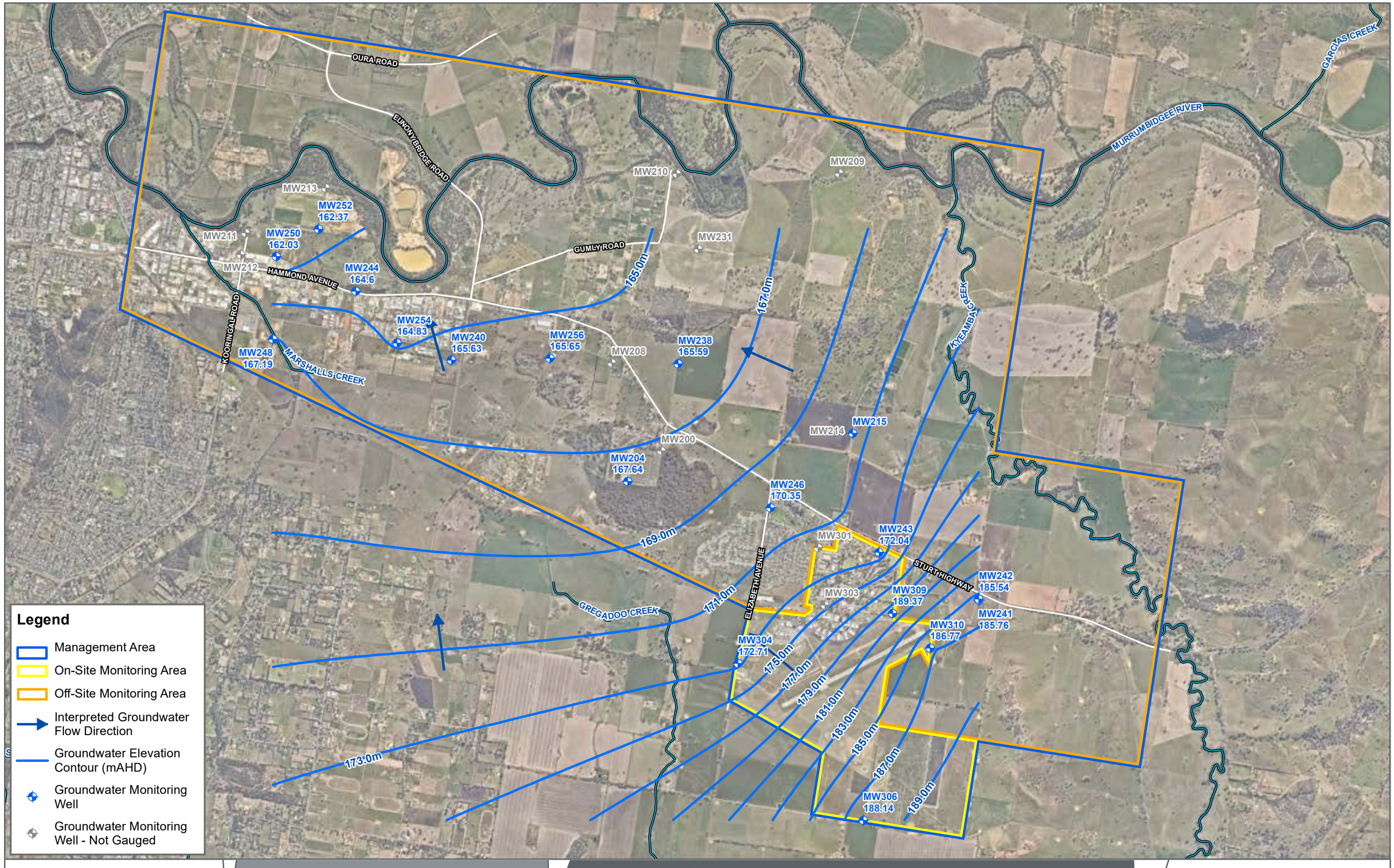
Groundwater Elevation Contours - Shallow Aquifer (April, 2021)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2021-05-26 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0122-GWBoreLocations_Cowra_WW.mxd 01
Aerial Imagery Supplied by Nearmap (April, 2021)



Legend

- Management Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Interpreted Groundwater Flow Direction
- Groundwater Elevation Contour (mAHD)
- Groundwater Monitoring Well
- Groundwater Monitoring Well - Not Gauged

FIGURE 3

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Deep Aquifer (April, 2021)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2021-05-28 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0123-GWBoreLocations_Lachlan_WW.mxd 01
Aerial Imagery Supplied by Nearmap (April, 2021)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GREGADOO CREEK
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK
ELIZABETH AVENUE
STURT HIGHWAY

MW209
MW210
MW213
MW211
MW212
MW252
MW251
MW250
MW249
MW231
MW244
MW245
MW247
MW248
MW254
MW253
MW240
MW233
MW255
MW256
MW238
MW239
MW257
MW214
MW200
MW204
MW246
MW300
MW301
MW243
MW302
MW303
MW308
MW309
MW242
MW241
MW310
MW311
MW304
MW305
MW306
MW307

Legend

- Management Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- First time exceedance of assessment criteria
- First Time Detection
- Dry / insufficient water
- Destroyed/ Inaccessible
- Sampled, 'No New Detection Or Exceedance'

FIGURE 4

1:40,000 Scale at A3

Metres

0 1,000 2,000

PFAS Results Summary - Groundwater (April, 2021)

BIANNUAL SAMPLING EVENT
RAAF BASE - WAGGA
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2021-06-29 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0124-GW_PFAS_Summary_WW.mxd 01
Aerial Imagery Supplied by Metromap (November, 2020)

FIGURE 5

1:40,000 Scale at A3

Metres

0 800 1,600

PFAS Results Summary - Surface Water (April, 2021)

BIANNUAL SAMPLING EVENT
RAAF BASE - WAGGA
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2021-05-26 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0125-SWBoreLocations_WW.mxd 01
Aerial Imagery Supplied by Nearmap (April, 2021)

APPENDIX

B

DATA ASSESSMENT TABLES

				Perfluorocarbons																																		
				Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeF	2-(N-methylperfluoro-1-octane sulfonamido)-	N-Ethyl perfluorooctane sulfonamide (EtFOSA	N-Ethyl perfluorooctane sulfonamidoethanol	N-Methyl perfluorooctane sulfonamidoacetic	N-Ethyl perfluorooctane sulfonamidoacetic ac	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 Fts)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.00001
PFAS NEMP 2020 Table 1 Health Drinking Water					0.56	0.07																																
PFAS NEMP 2020 Table 5 Freshwater 95%				*0.13*	*220*																																	
Property	Location Code	Sampled Date	Field ID	Lab Report No.																																			
Off-base	MW200	7/07/2017	0906_GW200_D_07072017	ES1716876	*1.36*	0.08	3.36	0.34	0.29	2	0.08	<0.02	<0.1	0.1	0.32	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.62	4.25	-
Off-base	MW200	25/03/2020	0906_MW200_20200325	ES2011455	*0.75*	0.05	1.9	0.18	0.19	1.15	0.04	<0.02	<0.1	0.05	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.7	2.47	-
Off-base	MW200	31/03/2020	0906_QC103_20200331	ES2011455	*0.83*	0.05	2	0.19	0.2	1.17	0.05	<0.02	<0.1	0.05	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.83	2.58	-
Off-base	MW200	31/03/2020	0906_QC203_20200331	712444	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	<0.00001
Off-base	MW200	30/09/2020	0906_MW200_20200930	ES2034893	*0.6*	0.04	1.56	0.14	0.18	0.96	0.05	<0.02	<0.1	0.04	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.3	2.07	-
Off-base	MW200	23/04/2021	0906_MW200_20210423	ES2116296	*0.39*	0.04	1.39	0.14	0.15	1	<0.02	<0.02	<0.1	0.05	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.04	1.89	-
Off-base	MW204	7/07/2017	0906_QC201_07072017	553701	0.02	<0.01	-	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-	-
Off-base	MW204	7/07/2017	0906_GW204_D_07072017	ES1716876	0.03	<0.01	0.07	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	0.07	-
Off-base	MW204	7/07/2017	0906_QC101_07072017	ES1716876	0.04	<0.01	0.08	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	0.08	-
Off-base	MW204	18/01/2018	0906_QC201_180118	581448	0.01	<0.01	0.04	<0.01	<0.01	0.03	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	-
Off-base	MW204	18/01/2018	0906_MW204_D_180118	ES1802488	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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	0.01	-
Off-base	MW204	18/01/2018	0906_MW204_D_180118	ES1803668	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW204	18/01/2018	0906_QC101_180118	ES1802488	0.02	<0.01	0.04	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	0.04	-
Off-base	MW204	20/02/2018	0906_MW204_D_180220	ES1805693	0.03	<0.01	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	0.05	-
Off-base	MW204	30/03/2020	0906_MW204_20200330	ES2011455	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW204	1/04/2020	0906_MW240_20200330	ES2011453	0.01	<0.01	0.11	<0.02	<0.02	0.1	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	0.14	-
Off-base	MW204	1/10/2020	0906_MW204_20201001	ES2034893	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW204	23/04/2021	0906_MW204_20210423	ES2116296	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW206	7/09/2017	0906_GW206_I_170907	EM1712264	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW209	7/09/2017	0906_QC201_170907	562566	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	-
Off-base	MW209	7/09/2017	0906_GW209_D_170907	EM1712263	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW209	7/09/2017	0906_QC101_170907	EM1712263	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW209	12/01/2018	0906_MW209_D_180112	ES1801990	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW209	31/03/2020	0906_MW209_20200331	ES2011456	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW209	30/09/2020	0906_MW209_20200930	ES2034898	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW209	22/04/2021	0906_MW209_20210422	ES2116325	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW210	20/06/2017	0906_QC201_170620	551365	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-	-
Off-base	MW210	20/06/2017	0906_0S002_170620	ES1715329	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW210	20/06/2017	0906_QC101_170620	ES1715329	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW210	18/01/2018	0906_MW210_D_180112	ES1802470	0.03	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	0.03	-
Off-base	MW210	21/02/2018	0906_MW210_D_180221	ES1805664	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW210	17/07/2018	0906_QC201_180717	608455	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	<0.00001
Off-base	MW210	17/07/2018	0906_MW210_D_180717	EM1811457	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW210	17/07/2018	0906_QC101_180717	EM1811457	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW210	26/03/2020	0906_MW210_20200326	ES2011461	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW210	1/10/2020	0906_MW210_20201001	ES2034897	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW210	23/04/2021	0906_MW210_20210423	ES2116321	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW211	20/06/2017	0906_EWB1_170620	ES1715334	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW211	4/12/2017	0906_EWB1_171204	ES1731229	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW211	27/03/2020	0906_MW211_20200327	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW211	28/09/2020	0906_MW211_20200928	ES2034885	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW211	20/04/2021	0906_MW211_20210420	ES2116324	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW212	20/06/2017	0906_EWB2_170620	ES1715334	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW212	4/12/2017	0906_EWB2_171204	ES1731229	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW212	27/03/2020	0906_MW212_20200327	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW212	28/09/2020	0906_MW212_20200928	ES2034885	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW212	20/04/2021	0906_MW212_20210420	ES2116324	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW213	20/06/2017	0906_EWB3_170620	ES1715334	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW213	4/12/2017	0906_EWB3_171204	ES1731229	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW213	27/03/2020	0906_MW213_20200327	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW213	27/03/2020	0906_QC101_20200327	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW213	27/03/2020	0906_QC201_20200327	712442	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	<0.00001
Off-base	MW213	28/09/2020	0906_QC201_20200928	749083	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	<0.00001
Off-base	MW213	28/09/2020	0906_MW213_20200928	ES2034885	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW213	28/09/2020	0906_QC101_20200928	ES2034862-AA	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW213	20/04/2021	0906_MW213_20210420	ES2116324	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW214	20/06/2017	0906_GW047279_170620	ES1715334	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW214	18/01/2018	0906_MW214_D_180118	ES1802545	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW214	31/03/2020	0906_MW214_20200331	ES2011568	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW214	1/10/2020	0906_MW214_20201001	ES2034891	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-

						Perfluorocarbons																														
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeF	2-(N-methylperfluoro-1-octane sulfonamido)-	N-Ethyl perfluorooctane sulfonamide (EtFOSA	N-Ethyl perfluorooctane sulfonamidoethanol	N-Methyl perfluorooctane sulfonamidoacetic	N-Ethyl perfluorooctane sulfonamidoacetic ac	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.00001
PFAS NEMP 2020 Table 1 Health Drinking Water							0.56	0.07																												
PFAS NEMP 2020 Table 5 Freshwater 95%						*0.13*	*220*																													
Property	Location Code	Sampled Date	Field ID	Lab Report No.																																
Off-base	MW214	27/04/2021	0906_MW214_20210427	ES2116327		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
Off-base	MW231	12/01/2018	0906_MW231_D_180112	ES1802473		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW231	26/03/2020	0906_MW231_20200326	ES2011459		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW231	26/03/2020	0906_MW231_20200326	ES2011456		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW231	30/09/2020	0906_MW231_20200930	ES2034898		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW231	23/04/2021	0906_MW231_20210423	ES2116325		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW233	20/02/2018	0906_MW233_I_180220	ES1805656		0.08	<0.01	0.18	<0.02	<0.02	0.1	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.2	0.2	-
Off-base	MW233	25/03/2020	0906_MW233_20200325	ES2011451		*0.18*	<0.01	0.37	<0.02	0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	0.41	-
Off-base	MW233	30/09/2020	0906_MW233_20200930	ES2034890		*0.25*	<0.01	0.44	0.02	0.03	0.19	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	0.51	-
Off-base	MW233	22/04/2021	0906_MW233_20210422	ES2116319		*0.17*	<0.01	0.38	0.02	0.02	0.21	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	0.45	-
Off-base	MW235	11/01/2018	0906_MW235_D_180111	ES1802460		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW235	19/12/2019	0906_MW235_D_191219	ES1942606-AC		<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	-	<0.01	-
Off-base	MW235	27/03/2020	0906_MW235_20200327	ES2011450		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW235	30/09/2020	0906_MW235_20200930	ES2034899		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW235	20/04/2021	0906_MW235_20210420	ES2115488		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW238	12/12/2019	0906_MW238_I_191212	ES1941492-AC		<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	-	<0.01	-
Off-base	MW238	30/03/2020	0906_MW238_20200330	ES2011456		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW238	30/09/2020	0906_MW238_20200930	ES2034898		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW238	23/04/2021	0906_MW238_20210423	ES2116325		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW239	12/12/2019	0906_MW239_S_191212	ES1941492-AC		<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	-	<0.01	-
Off-base	MW239	30/03/2020	0906_MW239_20200330	ES2011456		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW239	1/10/2020	0906_MW239_20201001	ES2034898		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW239	23/04/2021	0906_MW239_20210423	ES2116325		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW240	12/12/2019	0906_MW240_D_191212	ES1941492-AD		0.05	<0.01	0.26	0.04	-	0.21	-	-	<0.1	<0.02	0.06	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	-	0.36	-
Off-base	MW240	12/12/2019	0906_QC101_191212	ES1941492-AD		0.04	<0.01	0.33	0.05	-	0.29	-	-	<0.1	<0.02	0.08	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	-	0.46	-
Off-base	MW240	19/12/2019	0906_QC201_191219	695221		0.01	<0.01	0.12	0.02	0.01	0.11	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.19	0.18	0.00012
Off-base	MW240	19/12/2019	0906_MW240_I_191219	ES1942606-AB		0.02	<0.01	0.19	0.03	-	0.17	-	-	<0.1	<0.02	0.04	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	0.26	-
Off-base	MW240	19/12/2019	0906_QC101_191219	ES1942606-AB		0.02	<0.01	0.19	0.03	-	0.17	-	-	<0.1	<0.02	0.05	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	0.27	-
Off-base	MW240	30/09/2020	0906_MW240_20200930	ES2034866		0.06	0.02	0.41	0.04	0.05	0.35	<0.02	<0.02	<0.1	0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	0.59	-
Off-base	MW240	20/04/2021	0906_MW240_20210420	ES2116333		0.04	0.01	0.27	0.04	0.03	0.23	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.42	0.39	-
Off-base	MW241	18/03/2020	0906_MW241_D_200318	ES2009949		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW241	31/03/2020	0906_MW241_20200331	ES2011462		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.15	<0.05	<0.05	0.15	0.15	-
Off-base	MW241	1/10/2020	0906_MW241_20201001	ES2034889		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW241	22/04/2021	0906_MW241_20210422	ES2116320		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.12	<0.05	<0.05	0.12	0.12	-
Off-base	MW242	12/03/2020	0906_MW242_I_200312	ES2008845		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW242	31/03/2020	0906_MW242_20200331	ES2011462		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW242	1/10/2020	0906_MW242_20201001	ES2034889		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW242	22/04/2021	0906_MW242_20210422	ES2116320		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW243	10/03/2020	0906_QC201_200310	707955		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	<0.00001
On-base	MW243	10/03/2020	0906_MW243_I_200310	ES2008845		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW243	30/03/2020	0906_MW243_20200330	ES2011457		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW243	1/10/2020	0906_MW243_20201001	ES2034862-AB		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW243	23/04/2021	0906_QC206_20210423	792771		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.1	<0.05	<0.00001
On-base	MW243	23/04/2021	0906_MW243_20210423	ES2116327		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
On-base	MW243	23/04/2021	0906_QC106_20210423	ES2116327		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
Off-base	MW244	13/03/2020	0906_MW244_I_200313	ES2009442		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW244	1/04/2020	0906_MW244_20200401	ES2011562		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW244	1/10/2020	0906_MW244_20201001	ES2034866		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW244	20/04/2021	0906_MW244_20210420	ES2116333		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW245	13/03/2020	0906_MW245_S_200313	ES2009442		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	0.02	-
Off-base	MW245	1/04/2020	0906_MW245_20200401	ES2011562		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	0.02	-
Off-base	MW245	1/10/2020	0906_MW245_20201001	ES2034866		<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	0.03	-
Off-base	MW245	20/04/2021	0906_MW245_20210420	ES2116333		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	0.02	-
Off-base	MW246	22/06/2020	0906_MW246_I_200622	ES2021594		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW246	30/07/2020	0906_QC202_200730	735782		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	<0.00001
Off-base	MW246	30/07/2020	0906_MW246_I_200730	ES2026752		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW246	20/04/2021	0906_MW246_20210420	ES2116333		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW247	30/07/2020	0906_MW247_I_200730	ES2026752		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW247	27/04/2021	0906_MW247_20210427	ES2116333		<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW248	30/07/2020	0906_MW248_S_200730	ES2026752		0.09	0.01	0.15	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.04	0.04	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	0.26	-

						Perfluorocarbons																																
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeF	2-(N-methylperfluoro-1-octane sulfonamido)-	N-Ethyl perfluorooctane sulfonamide (EtFOSA	N-Ethyl perfluorooctane sulfonamidoethanol	N-Methyl perfluorooctane sulfonamidoacetic	N-Ethyl perfluorooctane sulfonamidoacetic ac	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.00001
PFAS NEMP 2020 Table 1 Health Drinking Water							0.56	0.07																														
PFAS NEMP 2020 Table 5 Freshwater 95%						*0.13*	*220*																															
Property	Location Code	Sampled Date	Field ID	Lab Report No.																																		
Off-base	MW248	27/04/2021	0906_MW248_20210427	ES2116333		0.07	<0.01	0.12	<0.02	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	0.14	-
Off-base	MW249	30/07/2020	0906_MW249_I_200730	ES2026752		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW249	28/04/2021	0906_MW249_20210428	ES2116333		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW250	30/07/2020	0906_MW250_S_200730	ES2026752		<0.01	<0.01	0.03	<0.02	<0.02	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	0.08	-
Off-base	MW250	2/09/2020	0906_QC202_200902	742937		0.06	<0.01	0.1	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.14	0.14	0.0001
Off-base	MW250	3/09/2020	0906_MW250_S_200902	ES2031377		<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	0.07	-
Off-base	MW250	28/04/2021	0906_QC207_20210428	792804		<0.01	<0.01	0.02	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.06	0.00002
Off-base	MW250	28/04/2021	0906_MW250_20210428	ES2116333		<0.01	<0.01	0.03	<0.02	<0.02	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	0.08	-
Off-base	MW250	28/04/2021	0906_QC107_20210428	ES2116333		<0.01	<0.01	0.03	<0.02	<0.02	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	0.08	-
Off-base	MW251	30/07/2020	0906_QC201_200730	735782		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	<0.00001
Off-base	MW251	30/07/2020	0906_MW251_S_200730	ES2026752		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW251	22/04/2021	0906_MW251_20210422	ES2118542		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW252	30/07/2020	0906_MW252_I_200730	ES2026752		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW252	22/04/2021	0906_MW252_20210422	ES2118542		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	MW253	30/07/2020	0906_MW253_I_200730	ES2026752		0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	0.03	-
Off-base	MW253	20/04/2021	0906_MW253_20210420	ES2116333		<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	0.04	-
Off-base	MW254	30/07/2020	0906_MW254_S_200730	ES2026752		<0.01	0.14	0.15	0.02	0.03	0.15	<0.02	<0.02	<0.1	0.04	0.07	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	0.48	-
Off-base	MW254	20/04/2021	0906_MW254_20210420	ES2116333		<0.01	0.14	0.19	0.04	0.03	0.19	<0.02	<0.02	<0.1	0.03	0.06	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	0.51	-
Off-base	MW255	30/07/2020	0906_MW255_I_200730	ES2026752		<0.01	0.02	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	0.06	-
Off-base	MW255	22/04/2021	0906_MW255_20210422	ES2116333		0.04	<0.01	0.14	0.02	<0.02	0.1	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.16	0.16	-
Off-base	MW255	2/07/2021	0906_MW255_02072021	ES2124834		0.04	<0.01	0.12	<0.02	<0.02	0.08	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	0.14	-
Off-base	MW255	2/07/2021	0906_QC101_02072021	ES2124834		0.03	<0.01	0.11	<0.02	-	0.08	-	-	<0.1	<0.02	0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	0.13	-
Off-base	MW255	2/07/2021	0906_QC201_210702	808916		0.04	<0.01	0.13	-	-	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	0.00013
Off-base	MW256	10/09/2020	0906_QC201_200910	744316		<0.01	<0.01	0.21	-	-	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	0.00021
Off-base	MW256	10/09/2020	0906_MW256_S_200910	ES2032277		0.04	<0.01	0.32	0.05	0.05	0.28	<0.02	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	0.46	-
Off-base	MW256	10/09/2020	0906_QC101_200910	ES2032277		0.02	<0.01	0.32	0.06	-	0.3	-	-	<0.1	<0.02	0.1	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	0.48	-
Off-base	MW256	22/04/2021	0906_MW256_20210422	ES2116333		0.07	<0.01	0.3	0.07	0.04	0.23	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.46	0.42	-
Off-base	MW257	10/09/2020	0906_MW257_S_200910	ES2032277		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW300	12/01/2018	0906_MW300_D_180112	ES1802545		<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	0.03	-
On-base	MW300	13/04/2018	0906_MW300_D_180413	EM1806331		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW300	30/03/2020	0906_MW300_20200330	ES2011457		<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	0.03	-
On-base	MW300	29/09/2020	0906_MW300_20200929	ES2034862-AB		<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	0.03	-
On-base	MW300	22/04/2021	0906_QC205_20210422	792803		<0.01	<0.01	0.02	0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	0.00002
On-base	MW300	22/04/2021	0906_MW300_20210422	ES2116327		<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
On-base	MW300	22/04/2021	0906_QC105_20210422	ES2116327		<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
On-base	MW302	12/01/2018	0906_MW302_D_180112	ES1802545		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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	0.01	-
On-base	MW302	11/04/2018	0906_MW302_D_180411	EM1806331		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW302	30/03/2020	0906_MW302_20200330	ES2011457		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW302	29/09/2020	0906_QC202_20200929	749220		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	<0.00001
On-base	MW302	29/09/2020	0906_MW302_20200929	ES2034862-AB		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW302	29/09/2020	0906_QC102_20200929	ES2034862-AB		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW302	21/04/2021	0906_QC203_20210421	792803		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	<0.00001
On-base	MW302	21/04/2021	0906_MW302_20210421	ES2116327		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
On-base	MW302	21/04/2021	0906_QC103_20210421	ES2116327		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
On-base	MW304	16/01/2018	0906_MW304_D_180116	ES1802545		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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	0.15	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.24	0.09	-
On-base	MW304	13/04/2018	0906_MW304_D_180413	EM1806331		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW304	31/03/2020	0906_MW304_20200331	ES2011457		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.06	0.06	-
On-base	MW304	29/09/2020	0906_MW304_20200929	ES2034862-AB		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW304	28/04/2021	0906_MW304_20210428	ES2116327		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
On-base	MW306	16/01/2018	0906_MW306_D_180116	ES1802545		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.08	0.08	-
On-base	MW306	12/04/2018	0906_MW306_D_180412	EM1806331		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW306	30/03/2020	0906_MW306_20200330	ES2011457		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW306	29/09/2020	0906_MW306_20200929	ES2034862-AB		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW306	22/04/2021	0906_MW306_20210422	ES2116327		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
On-base	MW308	15/01/2018	0906_QC203_180115	581313		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	-
On-base	MW308	15/01/2018	0906_MW308_D_180115	ES1802545		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW308	15/01/2018	0906_QC103_180115	ES1802545		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW308	11/04/2018	0906_MW308_D_180411	EM1806331		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW308	30/03/2020	0906_MW308_20200330	ES2011457		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW308	29/09/2020	0906_MW308_20200929	ES2034862-AB		<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-

				Perfluorocarbons																																
				Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeF	2-(N-methylperfluoro-1-octane sulfonamido)-	N-Ethyl perfluorooctane sulfonamide (EtFOSA	N-Ethyl perfluorooctane sulfonamidoethanol	N-Methyl perfluorooctane sulfonamidoacetic	N-Ethyl perfluorooctane sulfonamidoacetic ac	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.00001
PFAS NEMP 2020 Table 1 Health Drinking Water					0.56	0.07																															
PFAS NEMP 2020 Table 5 Freshwater 95%				*0.13*	*220*																																
Property	Location Code	Sampled Date	Field ID	Lab Report No.																																	
On-base	MW308	21/04/2021	0906_MW308_20210421	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
On-base	MW308	22/04/2021	0906_MW308_20210422	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
On-base	MW309	21/04/2021	0906_MW309_20210421	ES2116327	0.04	0.03	0.04	<0.02	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.1	-	-
On-base	MW310	16/01/2018	0906_MW310_D_180116	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW310	12/04/2018	0906_MW310_D_180412	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW310	31/03/2020	0906_MW310_20200331	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW310	30/09/2020	0906_MW310_20200930	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW310	22/04/2021	0906_MW310_20210422	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
On-base	MW311	15/01/2018	0906_QC201_180115	581313	<0.01	<0.01	0.04	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	-
On-base	MW311	15/01/2018	0906_MW311_I_180115	ES1802545	0.01	<0.01	0.04	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	0.04	-
On-base	MW311	15/01/2018	0906_QC101_180115	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
On-base	MW311	31/03/2020	0906_MW311_20200331	ES2011457	<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	0.04	-
Off-base	MW312	16/01/2018	0906_MW312_D_180115	ES1802566	0.02	<0.01	0.1	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.1	0.1	-
Off-base	MW312	13/04/2018	0906_MW312_D_180413	EM1806331	0.02	<0.01	0.08	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	0.08	-
Off-base	MW312	1/04/2020	0906_MW312_200401	ES2011454	0.01	<0.01	0.07	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	0.07	-
Off-base	MW312	1/10/2020	0906_MW312_20201001	ES2034888	0.01	<0.01	0.06	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	0.06	-

Data Comments

Denotes location with first-time detection of PFOS + PFHxS or PFOA or PFOS in latest monitoring round

Denotes location with a new exceedance of guideline values in latest monitoring round

Env Stds Comments

#1:Practical screening guideline of 0.001 µg/L based on typical current laboratory limit of reporting, therefore it should be noted that warning and action levels would not be relevant until the detection limits are reduced or the screening levels increased.

#2:Drinking Water screening guidelines have been adopted for screening purposes for Industrial water use, Stock Water use and Agriculture/Parks/Gardens water use.

#3:Australian Government Department of Health (2017) Health Based Guideline Values for PFAS for use in site investigations in Australia.

					Metals				Inorganics											Organic
					Calcium (Filtered)	Magnesium (Filtered)	Potassium (Filtered)	Sodium (Filtered)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Chloride	Ionic Balance	TDS	TSS	Sulfate as SO4 - Turbidimetric (Filtered)	Dissolved Organic Carbon
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	%	mg/L	mg/L	mg/L	mg/L
LOR					1	1	1	1	1	1	1	1	0.01	0.01	1	0.01	10	5	1	1
PFAS NEMP 2020 Table 1 Health Drinking Water																				
PFAS NEMP 2020 Table 5 Freshwater 95%																				
Property	Location Code	Sampled Date	Field ID	Lab Report No.																
Off-base	MW200	7/07/2017	0906_GW200_D_07072017	ES1716876	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW200	25/03/2020	0906_MW200_20200325	ES2011455	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW200	31/03/2020	0906_QC103_20200331	ES2011455	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW200	31/03/2020	0906_QC203_20200331	712444	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW200	30/09/2020	0906_MW200_20200930	ES2034893	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW200	23/04/2021	0906_MW200_20210423	ES2116296	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW204	7/07/2017	0906_QC201_07072017	553701	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW204	7/07/2017	0906_GW204_D_07072017	ES1716876	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW204	7/07/2017	0906_QC101_07072017	ES1716876	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW204	18/01/2018	0906_QC201_180118	581448	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW204	18/01/2018	0906_MW204_D_180118	ES1802488	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW204	18/01/2018	0906_MW204_D_180118	ES1803668	9	10	2	88	172	-	<1	172	4.96	5.15	43	1.87	296	-	15	-
Off-base	MW204	18/01/2018	0906_QC101_180118	ES1802488	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW204	20/02/2018	0906_MW204_D_180220	ES1805693	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW204	30/03/2020	0906_MW204_20200330	ES2011455	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW204	1/04/2020	0906_MW240_20200330	ES2011453	18	22	3	49	152	-	<1	152	-	-	56	-	-	213	14	2
Off-base	MW204	1/10/2020	0906_MW204_20201001	ES2034893	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW204	23/04/2021	0906_MW204_20210423	ES2116296	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW206	7/09/2017	0906_GW206_I_170907	EM1712264	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW209	7/09/2017	0906_QC201_170907	562566	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW209	7/09/2017	0906_GW209_D_170907	EM1712263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW209	7/09/2017	0906_QC101_170907	EM1712263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW209	12/01/2018	0906_MW209_D_180112	ES1801990	14	12	1	21	102	-	<1	102	2.88	2.62	27	-	254	-	4	-
Off-base	MW209	31/03/2020	0906_MW209_20200331	ES2011456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW209	30/09/2020	0906_MW209_20200930	ES2034898	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW209	22/04/2021	0906_MW209_20210422	ES2116325	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW210	20/06/2017	0906_QC201_170620	551365	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW210	20/06/2017	0906_0S002_170620	ES1715329	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW210	20/06/2017	0906_QC101_170620	ES1715329	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW210	18/01/2018	0906_MW210_D_180112	ES1802470	11	8	1	18	93	-	<1	93	2.23	2.02	11	-	166	-	3	-
Off-base	MW210	21/02/2018	0906_MW210_D_180221	ES1805664	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW210	17/07/2018	0906_QC201_180717	608455	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW210	17/07/2018	0906_MW210_D_180717	EM1811457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW210	17/07/2018	0906_QC101_180717	EM1811457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW210	26/03/2020	0906_MW210_20200326	ES2011461	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW210	1/10/2020	0906_MW210_20201001	ES2034897	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW210	23/04/2021	0906_MW210_20210423	ES2116321	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW211	20/06/2017	0906_EWB1_170620	ES1715334	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW211	4/12/2017	0906_EWB1_171204	ES1731229	15	15	1	21	81	-	<1	81	2.86	2.92	19	-	211	-	34	-
Off-base	MW211	27/03/2020	0906_MW211_20200327	ES2011459	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW211	28/09/2020	0906_MW211_20200928	ES2034885	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW211	20/04/2021	0906_MW211_20210420	ES2116324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW212	20/06/2017	0906_EWB2_170620	ES1715334	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW212	4/12/2017	0906_EWB2_171204	ES1731229	18	19	1	40	106	-	<1	106	4.22	4.23	48	0.07	283	-	36	-
Off-base	MW212	27/03/2020	0906_MW212_20200327	ES2011459	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW212	28/09/2020	0906_MW212_20200928	ES2034885	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW212	20/04/2021	0906_MW212_20210420	ES2116324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW213	20/06/2017	0906_EWB3_170620	ES1715334	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW213	4/12/2017	0906_EWB3_171204	ES1731229	12	9	<1	14	69	-	<1	69	2.1	1.95	16	-	168	-	13	-
Off-base	MW213	27/03/2020	0906_MW213_20200327	ES2011459	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW213	27/03/2020	0906_QC101_20200327	ES2011459	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW213	27/03/2020	0906_QC201_20200327	712442	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW213	28/09/2020	0906_QC201_20200928	749083	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW213	28/09/2020	0906_MW213_20200928	ES2034885	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW213	28/09/2020	0906_QC101_20200928	ES2034862-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW213	20/04/2021	0906_MW213_20210420	ES2116324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW214	20/06/2017	0906_GW047279_170620	ES1715334	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW214	18/01/2018	0906_MW214_D_180118	ES1802545	17	16	1	48	122	-	<1	122	4.32	4.28	58	0.52	317	-	12	-
Off-base	MW214	31/03/2020	0906_MW214_20200331	ES2011568	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW214	1/10/2020	0906_MW214_20201001	ES2034891	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

					Metals				Inorganics											Organic
					Calcium (Filtered)	Magnesium (Filtered)	Potassium (Filtered)	Sodium (Filtered)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Chloride	Ionic Balance	TDS	TSS	Sulfate as SO4 - Turbidimetric (Filtered)	Dissolved Organic Carbon
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	%	mg/L	mg/L	mg/L	mg/L
LOR					1	1	1	1	1	1	1	1	0.01	0.01	1	0.01	10	5	1	1
PFAS NEMP 2020 Table 1 Health Drinking Water																				
PFAS NEMP 2020 Table 5 Freshwater 95%																				
Property	Location Code	Sampled Date	Field ID	Lab Report No.																
Off-base	MW214	27/04/2021	0906_MW214_20210427	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW231	12/01/2018	0906_MW231_D_180112	ES1802473	30	26	2	40	174	-	<1	174	5.12	5.43	31	2.91	356	-	37	-
Off-base	MW231	26/03/2020	0906_MW231_20200326	ES2011459	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW231	26/03/2020	0906_MW231_20200326	ES2011456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW231	30/09/2020	0906_MW231_20200930	ES2034898	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW231	23/04/2021	0906_MW231_20210423	ES2116325	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW233	20/02/2018	0906_MW233_I_180220	ES1805656	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW233	25/03/2020	0906_MW233_20200325	ES2011451	96	90	5	227	235	<1	<1	235	-	-	608	-	-	<5	129	6
Off-base	MW233	30/09/2020	0906_MW233_20200930	ES2034890	80	79	3	211	232	<1	<1	232	21.7	19.7	535	4.81	-	<5	97	<1
Off-base	MW233	22/04/2021	0906_MW233_20210422	ES2116319	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW235	11/01/2018	0906_MW235_D_180111	ES1802460	9	10	1	17	72	-	<1	72	1.92	2.04	14	-	138	-	4	-
Off-base	MW235	19/12/2019	0906_MW235_D_191219	ES1942606-AC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW235	27/03/2020	0906_MW235_20200327	ES2011450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW235	30/09/2020	0906_MW235_20200930	ES2034899	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW235	20/04/2021	0906_MW235_20210420	ES2115488	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW238	12/12/2019	0906_MW238_I_191212	ES1941492-AC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW238	30/03/2020	0906_MW238_20200330	ES2011456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW238	30/09/2020	0906_MW238_20200930	ES2034898	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW238	23/04/2021	0906_MW238_20210423	ES2116325	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW239	12/12/2019	0906_MW239_S_191212	ES1941492-AC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW239	30/03/2020	0906_MW239_20200330	ES2011456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW239	1/10/2020	0906_MW239_20201001	ES2034898	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW239	23/04/2021	0906_MW239_20210423	ES2116325	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW240	12/12/2019	0906_MW240_D_191212	ES1941492-AD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW240	12/12/2019	0906_QC101_191212	ES1941492-AD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW240	19/12/2019	0906_QC201_191219	695221	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW240	19/12/2019	0906_MW240_I_191219	ES1942606-AB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW240	19/12/2019	0906_QC101_191219	ES1942606-AB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW240	30/09/2020	0906_MW240_20200930	ES2034866	21	26	3	72	175	-	<1	175	6.38	6.4	86	0.12	-	100	22	6
Off-base	MW240	20/04/2021	0906_MW240_20210420	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW241	18/03/2020	0906_MW241_D_200318	ES2009949	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW241	31/03/2020	0906_MW241_20200331	ES2011462	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW241	1/10/2020	0906_MW241_20201001	ES2034889	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW241	22/04/2021	0906_MW241_20210422	ES2116320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW242	12/03/2020	0906_MW242_I_200312	ES2008845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW242	31/03/2020	0906_MW242_20200331	ES2011462	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW242	1/10/2020	0906_MW242_20201001	ES2034889	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW242	22/04/2021	0906_MW242_20210422	ES2116320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW243	10/03/2020	0906_QC201_200310	707955	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW243	10/03/2020	0906_MW243_I_200310	ES2008845	39	44	3	159	281	<1	<1	281	14.5	12.6	260	7.2	732	18	75	-
On-base	MW243	30/03/2020	0906_MW243_20200330	ES2011457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW243	1/10/2020	0906_MW243_20201001	ES2034862-AB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW243	23/04/2021	0906_QC206_20210423	792771	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW243	23/04/2021	0906_MW243_20210423	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW243	23/04/2021	0906_QC106_20210423	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW244	13/03/2020	0906_MW244_I_200313	ES2009442	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW244	1/04/2020	0906_MW244_20200401	ES2011562	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW244	1/10/2020	0906_MW244_20201001	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW244	20/04/2021	0906_MW244_20210420	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW245	13/03/2020	0906_MW245_S_200313	ES2009442	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW245	1/04/2020	0906_MW245_20200401	ES2011562	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW245	1/10/2020	0906_MW245_20201001	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW245	20/04/2021	0906_MW245_20210420	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW246	22/06/2020	0906_MW246_I_200622	ES2021594	14	15	2	58	174	<1	<1	174	4.8	4.51	36	3.19	-	-	15	-
Off-base	MW246	30/07/2020	0906_QC202_200730	735782	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW246	30/07/2020	0906_MW246_I_200730	ES2026752	12	13	2	62	147	<1	<1	147	4.36	4.42	40	0.68	-	-	14	-
Off-base	MW246	20/04/2021	0906_MW246_20210420	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW247	30/07/2020	0906_MW247_I_200730	ES2026752	11	8	3	180	183	<1	<1	183	9.73	9.11	183	3.3	-	-	44	-
Off-base	MW247	27/04/2021	0906_MW247_20210427	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW248	30/07/2020	0906_MW248_S_200730	ES2026752	85	84	4	268	351	<1	<1	351	25.1	22.9	563	4.6	-	-	107	-

					Metals				Inorganics											Organic
					Calcium (Filtered)	Magnesium (Filtered)	Potassium (Filtered)	Sodium (Filtered)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Chloride	Ionic Balance	TDS	TSS	Sulfate as SO4 - Turbidimetric (Filtered)	Dissolved Organic Carbon
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	%	mg/L	mg/L	mg/L	mg/L
LOR					1	1	1	1	1	1	1	1	0.01	0.01	1	0.01	10	5	1	1
PFAS NEMP 2020 Table 1 Health Drinking Water																				
PFAS NEMP 2020 Table 5 Freshwater 95%																				
Property	Location Code	Sampled Date	Field ID	Lab Report No.																
Off-base	MW248	27/04/2021	0906_MW248_20210427	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW249	30/07/2020	0906_MW249_I_200730	ES2026752	18	19	2	37	107	<1	<1	107	4.25	4.12	32	1.5	-	-	58	-
Off-base	MW249	28/04/2021	0906_MW249_20210428	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW250	30/07/2020	0906_MW250_S_200730	ES2026752	40	41	3	103	282	<1	<1	282	9.21	9.93	81	3.75	-	-	62	-
Off-base	MW250	2/09/2020	0906_QC202_200902	742937	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW250	3/09/2020	0906_MW250_S_200902	ES2031377	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW250	28/04/2021	0906_QC207_20210428	792804	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW250	28/04/2021	0906_MW250_20210428	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW250	28/04/2021	0906_QC107_20210428	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW251	30/07/2020	0906_QC201_200730	735782	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW251	30/07/2020	0906_MW251_S_200730	ES2026752	58	54	2	27	70	<1	<1	70	9.1	8.56	25	3.03	-	-	336	-
Off-base	MW251	22/04/2021	0906_MW251_20210422	ES2118542	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW252	30/07/2020	0906_MW252_I_200730	ES2026752	17	16	1	17	70	<1	<1	70	2.96	2.93	17	-	-	-	52	-
Off-base	MW252	22/04/2021	0906_MW252_20210422	ES2118542	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW253	30/07/2020	0906_MW253_I_200730	ES2026752	16	16	3	40	128	<1	<1	128	4.07	3.93	47	1.73	-	-	9	-
Off-base	MW253	20/04/2021	0906_MW253_20210420	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW254	30/07/2020	0906_MW254_S_200730	ES2026752	14	16	3	33	149	<1	<1	149	3.77	3.53	12	3.37	-	-	22	-
Off-base	MW254	20/04/2021	0906_MW254_20210420	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW255	30/07/2020	0906_MW255_I_200730	ES2026752	26	27	12	70	152	<1	<1	152	7.33	6.87	128	3.26	-	-	33	-
Off-base	MW255	22/04/2021	0906_MW255_20210422	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW255	2/07/2021	0906_MW255_02072021	ES2124834	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW255	2/07/2021	0906_QC101_02072021	ES2124834	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW255	2/07/2021	0906_QC201_210702	808916	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW256	10/09/2020	0906_QC201_200910	744316	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW256	10/09/2020	0906_MW256_S_200910	ES2032277	48	43	3	148	230	<1	<1	230	14.7	12.4	308	8.36	724	-	69	-
Off-base	MW256	10/09/2020	0906_QC101_200910	ES2032277	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW256	22/04/2021	0906_MW256_20210422	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW257	10/09/2020	0906_MW257_S_200910	ES2032277	139	185	6	394	261	<1	<1	261	44	39.4	1230	5.49	3160	-	198	-
On-base	MW300	12/01/2018	0906_MW300_D_180112	ES1802545	64	64	3	208	278	-	<1	278	19.3	17.6	404	4.6	1060	-	112	-
On-base	MW300	13/04/2018	0906_MW300_D_180413	EM1806331	63	63	5	193	307	-	<1	307	19.9	16.8	390	8.3	-	-	133	-
On-base	MW300	30/03/2020	0906_MW300_20200330	ES2011457	72	74	5	232	339	-	<1	339	-	-	447	-	-	136	162	8
On-base	MW300	29/09/2020	0906_MW300_20200929	ES2034862-AB	54	58	3	214	353	<1	<1	353	19.8	16.8	370	8.09	-	1350	112	2
On-base	MW300	22/04/2021	0906_QC205_20210422	792803	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW300	22/04/2021	0906_MW300_20210422	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW300	22/04/2021	0906_QC105_20210422	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW302	12/01/2018	0906_MW302_D_180112	ES1802545	23	30	2	140	375	-	<1	375	10.1	9.76	61	1.66	572	-	42	-
On-base	MW302	11/04/2018	0906_MW302_D_180411	EM1806331	12	14	2	66	175	-	<1	175	5.24	4.67	45	5.76	-	-	23	-
On-base	MW302	30/03/2020	0906_MW302_20200330	ES2011457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW302	29/09/2020	0906_QC202_20200929	749220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW302	29/09/2020	0906_MW302_20200929	ES2034862-AB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW302	29/09/2020	0906_QC102_20200929	ES2034862-AB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW302	21/04/2021	0906_QC203_20210421	792803	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW302	21/04/2021	0906_MW302_20210421	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW302	21/04/2021	0906_QC103_20210421	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW304	16/01/2018	0906_MW304_D_180116	ES1802545	26	24	3	131	257	-	<1	257	9.48	9.05	126	2.34	685	-	38	-
On-base	MW304	13/04/2018	0906_MW304_D_180413	EM1806331	38	36	4	154	365	-	<1	365	13.2	11.7	168	6.26	-	-	57	-
On-base	MW304	31/03/2020	0906_MW304_20200331	ES2011457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW304	29/09/2020	0906_MW304_20200929	ES2034862-AB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW304	28/04/2021	0906_MW304_20210428	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW306	16/01/2018	0906_MW306_D_180116	ES1802545	25	<1	4	36	6	-	<1	85	2.92	2.92	24	-	164	-	26	-
On-base	MW306	12/04/2018	0906_MW306_D_180412	EM1806331	31	<1	6	74	4	-	<1	29	5.18	4.92	118	2.56	-	-	61	-
On-base	MW306	30/03/2020	0906_MW306_20200330	ES2011457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW306	29/09/2020	0906_MW306_20200929	ES2034862-AB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW306	22/04/2021	0906_MW306_20210422	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW308	15/01/2018	0906_QC203_180115	581313	27	29	2.9	140	310	-	-	-	-	-	72	-	420	-	-	-
On-base	MW308	15/01/2018	0906_MW308_D_180115	ES1802545	23	26	2	119	308	-	<1	308	8.48	8.51	53	0.2	532	-	40	-
On-base	MW308	15/01/2018	0906_QC103_180115	ES1802545	24	24	2	108	314	-	<1	314	8.6	7.92	53	4.11	514	-	40	-
On-base	MW308	11/04/2018	0906_MW308_D_180411	EM1806331	22	26	3	116	317	-	<1	317	9.44	8.36	63	6.08	-	-	64	-
On-base	MW308	30/03/2020	0906_MW308_20200330	ES2011457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW308	29/09/2020	0906_MW308_20200929	ES2034862-AB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

					Metals				Inorganics											Organic
					Calcium (Filtered)	Magnesium (Filtered)	Potassium (Filtered)	Sodium (Filtered)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Chloride	Ionic Balance	TDS	TSS	Sulfate as SO4 - Turbidimetric (Filtered)	Dissolved Organic Carbon
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	%	mg/L	mg/L	mg/L	mg/L
LOR					1	1	1	1	1	1	1	1	0.01	0.01	1	0.01	10	5	1	1
PFAS NEMP 2020 Table 1 Health Drinking Water																				
PFAS NEMP 2020 Table 5 Freshwater 95%																				
Property	Location Code	Sampled Date	Field ID	Lab Report No.																
On-base	MW308	21/04/2021	0906_MW308_20210421	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW308	22/04/2021	0906_MW308_20210422	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW309	21/04/2021	0906_MW309_20210421	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW310	16/01/2018	0906_MW310_D_180116	ES1802545	32	35	4	136	347	-	<1	347	11.2	10.5	113	3.36	631	-	53	-
On-base	MW310	12/04/2018	0906_MW310_D_180412	EM1806331	29	34	4	133	346	-	<1	346	11.7	10.1	121	7.36	-	-	68	-
On-base	MW310	31/03/2020	0906_MW310_20200331	ES2011457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW310	30/09/2020	0906_MW310_20200930	ES2034862-AB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW310	22/04/2021	0906_MW310_20210422	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW311	15/01/2018	0906_QC201_180115	581313	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW311	15/01/2018	0906_MW311_I_180115	ES1802545	58	37	2	360	476	-	<1	476	24.8	21.6	451	6.81	1400	-	124	-
On-base	MW311	15/01/2018	0906_QC101_180115	ES1802545	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	MW311	31/03/2020	0906_MW311_20200331	ES2011457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW312	16/01/2018	0906_MW312_D_180115	ES1802566	51	52	3	271	278	-	<1	278	19.9	18.7	392	3.04	809	-	156	-
Off-base	MW312	13/04/2018	0906_MW312_D_180413	EM1806331	22	25	3	191	269	-	<1	269	13.5	11.5	225	7.87	-	-	86	-
Off-base	MW312	1/04/2020	0906_MW312_200401	ES2011454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	MW312	1/10/2020	0906_MW312_20201001	ES2034888	32	35	2	219	298	<1	<1	298	15.8	14	270	5.84	-	436	107	6

Data Comments

Denotes location with first-time detection of PFOS + PFHxS or PFOA or PFOS in latest monitoring round
Denotes location with a new exceedance of guideline values in latest monitoring round

Env Stds Comments
#1:Practical screening guideline of 0.001 µg/L based on typical current laboratory limit of reporting, therefore it should be noted that warning and action levels would not be relevant until the detection limits are reduced or the screening levels increased.
#2:Drinking Water screening guidelines have been adopted for screening purposes for Industrial water use, Stock Water use and Agriculture/Parks/Gardens water use.
#3:Australian Government Department of Health (2017) Health Based Guideline Values for PFAS for use in site investigations in Australia.

				Perfluorocarbons																																
				Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR				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	0.02	0.05	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01	0.01	0.00001
PFAS NEMP 2020 Table 1 Health Drinking Water					0.56	0.07																														
PFAS NEMP 2020 Table 5 Freshwater 95%				*0.13*	*220*																															
PFAS NEMP 2020 Table 1 Health Recreational Water					10	2																														
Property	Location_Code	Sampled_Date_Time	Field_ID	Lab_Report_Number																																
On-base	SW104	4/12/2017	0906_SW104_171204	ES1731266	*0.27*	0.02	0.34	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.39	0.39	-
On-base	SW104	16/08/2018	0906_SW104_180816	ES1824412	0.05	<0.01	0.17	<0.02	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.17	0.17	-
On-base	SW104	17/10/2018	0906_SW104_181017	ES1831100	*0.38*	0.02	0.67	0.03	<0.02	0.29	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.75	0.75	-
On-base	SW104	25/03/2020	0906_SW104_20200325	ES2011457	0.09	<0.01	0.15	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15	0.15	-
On-base	SW104	2/09/2020	0906_SW104_200904	ES2031377	*2.83*	0.13	4.27	0.17	0.16	1.44	0.09	<0.02	<0.1	0.15	0.44	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.48	5.23	-
On-base	SW104	4/09/2020	0906_QC201_200904	742937	*2.3*	0.1	3.29	0.13	0.13	0.99	0.06	<0.01	0.06	0.1	0.41	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	4.4	4.15	0.00339
On-base	SW104	29/09/2020	0906_SW104_20200929	ES2034862-AB	*2.8*	0.17	4.61	0.21	0.23	1.81	0.12	<0.02	<0.1	0.17	0.59	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	6.18	5.83	-
On-base	SW104	21/04/2021	0906_QC202_20210421	792803	*0.27*	0.02	0.41	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.51	0.49	0.00043
On-base	SW104	21/04/2021	0906_QC102_20210421	ES2116327	*0.26*	0.02	0.46	0.03	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	0.63	-	-
On-base	SW104	21/04/2021	0906_SW104_20210421	ES2116327	*0.28*	0.02	0.48	0.04	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.68	-	-
Off-base	SW206	20/06/2017	0906_SW001_170620	ES1715334	*0.23*	<0.01	0.34	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.36	0.36	-
Off-base	SW206	7/07/2017	0906_SW001_07072017	ES1716880	*0.27*	0.01	0.36	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.37	0.37	-
Off-base	SW206	13/12/2017	0906_SW206_171213	ES1732701	*0.57*	0.02	1.09	0.05	0.04	0.52	<0.02	<0.02	<0.1	0.03	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.32	1.28	-
Off-base	SW206	25/03/2020	0906_SW206_20200325	ES2011453	*0.38*	0.01	0.54	<0.02	<0.02	0.16	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.59	0.59	-
Off-base	SW206	1/10/2020	0906_SW206_20201001	ES2034866	*1.21*	0.06	1.87	0.07	0.08	0.66	0.04	<0.02	<0.1	0.08	0.21	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.44	2.32	-
Off-base	SW206	20/04/2021	0906_SW206_20210420	ES2116333	*0.13*	0.01	0.25	0.03	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.31	0.31	-
Off-base	SW212	11/12/2017	0906_SW212_171211	ES1731989	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW212	18/06/2018	0906_SW212_180619	ES1818232	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW212	15/08/2019	0906_SW212_190815	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW212	27/03/2020	0906_SW212_20200327	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW212	30/09/2020	0906_SW212_20200930	ES2034866	0.09	<0.01	0.09	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09	0.09	-
Off-base	SW212	30/09/2020	0906_SW212_20200930 Dup	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW212	23/04/2021	0906_SW212_20210423	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW218	17/01/2018	0906_SW218_180117	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW218	25/03/2020	0906_SW218_20200325	ES2011453	0.03	<0.01	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	0.05	-
Off-base	SW218	1/10/2020	0906_QC204_20201001	749074	0.04	<0.01	0.23	0.04	0.03	0.19	0.01	<0.01	<0.05	0.04	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.47	0.4	0.00023
Off-base	SW218	1/10/2020	0906_QC104_20201001	ES2034866	0.06	0.01	0.36	0.08	0.05	0.3	<0.02	<0.02	<0.1	0.05	0.13	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.71	0.66	-
Off-base	SW218	1/10/2020	0906_SW218_20201001	ES2034866	0.1	0.02	0.39	0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72	0.68	-
Off-base	SW218	20/04/2021	0906_SW218_20210420	ES2116333	0.01	<0.01	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	0.05	-
Off-base	SW228	7/12/2017	0906_SW228_171207	ES1731266	*2.9*	0.17	4.33	0.21	0.19	1.43	0.1	<0.02	<0.1	0.14	0.51	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	0.06	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.77	5.42	-
Off-base	SW228	12/04/2018	0906_SW228_180412	EM1806331	*0.3*	0.04	0.53	0.02	0.02	0.23	<0.02	<0.02	<0.1	0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.73	0.71	-
Off-base	SW228	7/08/2018	0906_SW228_A_180807	EM1812664	*0.49*	0.03	0.96	<0.02	0.02	0.47	0.02	<0.02	<0.1	<0.02	0.09	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	1.1	-
Off-base	SW228	7/08/2018	0906_SW228_B_180807	EM1812664	*0.49*	0.03	0.98	<0.02	0.02	0.49	0.02	<0.02	<0.1	<0.02	0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.17	1.13	-
Off-base	SW228	4/04/2019	0906_QC201_190408	650878	*0.6*	0.05	1.16	0.05	0.06	0.56	0.03	<0.01	<0.05	0.07	0.24	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.7	1.59	0.00121
Off-base	SW228	4/04/2019	0906_QC101_190408	ES1911335	*0.81*	0.06	1.41	0.1	0.09	0.6	0.04	<0.02	<0.1	0.11	0.43	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.28	2.15	-
Off-base	SW228	4/04/2019	0906_SW228_190408	ES1911335	*0.77*	0.06	1.39	0.1	0.08	0.62	0.04	<0.02	<0.1	0.12	0.43	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	2.31	2.19	-
Off-base	SW228	27/03/2020	0906_SW228_20200327	ES2011453	*0.73*	0.05	1.25	0.05	0.06	0.52	0.03	<0.02	<0.1	0.07	0.25	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.79	1.7	-
Off-base	SW228	27/03/2020	0906_QC102_20200327	ES2011453	*0.77*	0.05	1.31	0.04	0.06	0.54	0.03	<0.02	<0.1	0.08	0.26	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.85	1.76	-
Off-base	SW228	27/03/2020	0906_QC202_20200327	712445	*0.63*	0.03	1.04	0.04	0.05	0.41	0.02	<0.01	<0.05	0.05	0.16	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.43	1.34	0.00107
Off-base	SW228	1/10/2020	0906_SW228_20201001	ES2034866	*2.15*	0.09	3.32	0.11	0.14	1.17	0.08	<0.02	<0.1	0.1	0.4	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.28	4.06	-
Off-base	SW228	27/04/2021	0906_SW228_20210427	ES2116333	*1.1*	0.06	2.19	0.19	0.1	1.09	0.06	<0.02	<0.1	0.1	0.48	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.22	3.06	-
Off-base	SW234	11/12/2017	0906_SW234_171211	ES1731989	*0.22*	0.03	0.3	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.41	0.41	-
Off-base	SW234	18/06/2018	0906_SW234_180618	ES1818232	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.08	0.08	-
Off-base	SW234	27/03/2020	0906_SW234_20200327	ES2011453	<0.01	0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	<0.05	<0.05	0.25	0.25	-
Off-base	SW234	29/09/2020	0906_SW234_20200929	ES2034866	*0.28*	0.02	0.39	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.11	<0.05	<0.05	0.6	0.6	-
Off-base	SW234	20/04/2021	0906_SW234_20210420	ES2116333	0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.34	<0.05	<0.05	0.42	0.42	-
Off-base	SW236	15/12/2017	0906_SW236_171215	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW236	2/10/2020	0906_SW236_20201002	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW236	22/04/2021	0906_SW236_20210422	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW240	20/12/2017	0906_QC201_171220	580967	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	-
Off-base	SW240	20/12/2017	0906_QC101_171220	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW240	20/12/2017	0906_QC201_171220	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW240	20/12/2017	0906_SW240_171220	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW240	2/10/2020	0906_SW240_20201002	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW240	22/04/2021	0906_SW240_20210422	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW261	16/01/2018	0906_SW261_180116	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW261	3/04/2018	0906_SW261_180403	ES1810698	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW261	18/06/2018	0906_SW261_180618	ES1818232	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW261	15/08/2019	0906_SW261_190815	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW261	27/03/2020	0906_SW261_20200327	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW261	28/09/2020	0906_SW261_20200928	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-

				Perfluorocarbons																																		
				Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR				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	0.02	0.05	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01	0.01	0.00001
PFAS NEMP 2020 Table 1 Health Drinking Water					0.56	0.07																																
PFAS NEMP 2020 Table 5 Freshwater 95%				*0.13*	*220*																																	
PFAS NEMP 2020 Table 1 Health Recreational Water					10	2																																
Property	Location_Code	Sampled_Date_Time	Field_ID	Lab_Report_Number																																		
Off-base	SW261	20/04/2021	0906_SW261_20210420	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW262	16/01/2018	0906_SW262_180116	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW262	18/06/2018	0906_SW262_180618	ES1818232	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.08	0.08	-
Off-base	SW262	27/03/2020	0906_SW262_20200327	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW262	28/09/2020	0906_SW262_20200928	ES2034866	0.05	<0.01	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	0.05	-
Off-base	SW262	20/04/2021	0906_SW262_20210420	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW286	8/04/2018	0906_SW286_180408	ES1810698	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW286	15/08/2019	0906_SW286_190815	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW286	27/03/2020	0906_SW286_20200327	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW286	2/10/2020	0906_SW286_20201002	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW286	22/04/2021	0906_SW286_20210422	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW288	12/04/2018	0906_SW288_180412	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW288	15/08/2018	0906_SW288_180815	ES1824412	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW288	16/08/2018	0906_QC201_180816	613110	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.05	<0.00001
Off-base	SW288	16/08/2018	0906_QC101_180816	ES1824412	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW288	16/08/2018	0906_SW288_180816	ES1824412	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW288	4/04/2019	0906_SW288_190408	ES1911335	<0.01	<0.01	<0.01	<0.02	<0.02	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	0.04	-
Off-base	SW288	27/03/2020	0906_SW288_20200327	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW288	1/10/2020	0906_SW288_20201001	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW288	27/04/2021	0906_SW288_20210427	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW289	12/04/2018	0906_QC201_180412	594506	*0.18*	0.03	0.37	0.02	0.02	0.19	0.01	<0.01	<0.05	0.02	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.54	0.51	-
Off-base	SW289	12/04/2018	0906_QC101_180412	EM1806331	*0.21*	0.03	0.43	<0.02	0.02	0.22	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.55	0.53	-
Off-base	SW289	12/04/2018	0906_SW289_180412	EM1806331	*0.2*	0.03	0.4	<0.02	<0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	0.51	-
Off-base	SW289	4/04/2019	0906_SW289_190408	ES1911335	*0.42*	0.03	0.74	0.05	0.04	0.32	0.02	<0.02	<0.1	0.06	0.18	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	1.08	-
Off-base	SW289	27/03/2020	0906_SW289_20200327	ES2011453	*0.79*	0.03	1.24	0.03	0.04	0.45	0.02	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.48	1.42	-
Off-base	SW289	1/10/2020	0906_SW289_20201001	ES2034866	0.05	0.01	0.34	0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66	0.62	-
Off-base	SW289	27/04/2021	0906_SW289_20210427	ES2116333	*0.24*	0.02	0.58	<0.02	<0.02	0.34	<0.02	<0.02	<0.1	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.7	0.7	-
Off-base	SW294	18/06/2018	0906_SW294_180618	ES1818232	0.01	0.07	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	0.08	-
Off-base	SW294	15/08/2019	0906_SW294_190815	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW294	27/03/2020	0906_SW294_20200327	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW294	28/09/2020	0906_SW294_20200928	ES2034866	0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	0.02	-
Off-base	SW294	20/04/2021	0906_SW294_20210420	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	0.03	-
Off-base	SW309	15/08/2019	0906_SW309_190815	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW309	27/03/2020	0906_SW309_20200327	ES2011459	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW309	28/09/2020	0906_SW309_20200928	ES2034885	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW309	20/04/2021	0906_SW309_20210420	ES2116324	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	-
Off-base	SW310	27/03/2020	0906_SW310_20200327	ES2011453	*0.58*	0.02	0.82	0.02	0.02	0.24	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.92	0.9	-
Off-base	SW310	29/09/2020	0906_SW310_20200929	ES2034866	*1.6*	0.05	2.11	0.07	0.05	0.51	0.03	<0.02	<0.1	0.06	0.16	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.56	2.48	-
Off-base	SW310	21/04/2021	0906_QC204_20210421	792774	*1*	0.03	1.36	0.05	0.02	0.36	0.02	<0.01	<0.05	0.04	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.63	1.57	0.00139
Off-base	SW310	21/04/2021	0906_QC104_20210421	ES2116333	*0.92*	0.03	1.35	0.06	0.03	0.43	<0.02	<0.02	<0.1	0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.57	1.54	-
Off-base	SW310	21/04/2021	0906_SW310_20210421	ES2116333	*0.85*	0.02	1.23	0.1	0.03	0.38	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.46	1.43	-

Data Comments

Denotes location with first-time detection of PFOS + PFHxS or PFOA or PFOS in latest monitoring round

Denotes location with a new exceedance of guideline values in latest monitoring round

Env Stds Comments

#1:Practical screening guideline of 0.001 µg/L based on typical current laboratory limit of reporting, therefore it should be noted that warning and action levels would not be relevant until the detection limits are reduced or the screening levels increased.
#2:Drinking Water screening guidelines have been adopted for screening purposes for Industrial water use, Stock Water use and Agriculture/Parks/Gardens water use.
#3:Australian Government Department of Health (2017) Health Based Guideline Values for PFAS for use in site investigations in Australia.

					Metals				Inorganics												Organic
					Calcium (Filtered)	Magnesium (Filtered)	Potassium (Filtered)	Sodium (Filtered)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Chloride	Ionic Balance	TDS	TSS	Sulfate as SO4 - Turbidimetric (Filtered)	Dissolved Organic Carbon
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	%	mg/L	mg/L	mg/L	mg/L
LOR					1	1	1	1	1	1	1	1	0.01	0.01	1	0.01	10	5	1	1
PFAS NEMP 2020 Table 1 Health Drinking Water																				
PFAS NEMP 2020 Table 5 Freshwater 95%																				
PFAS NEMP 2020 Table 1 Health Recreational Water																				
Property	Location_Code	Sampled_Date_Time	Field_ID	Lab_Report_Number																
On-base	SW104	4/12/2017	0906_SW104_171204	ES1731266	10	4	8	18	44	-	<1	44	1.7	1.82	29	-	329	-	<10	-
On-base	SW104	16/08/2018	0906_SW104_180816	ES1824412	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	SW104	17/10/2018	0906_SW104_181017	ES1831100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	SW104	25/03/2020	0906_SW104_20200325	ES2011457	58	16	4	41	115	-	<1	115	-	-	107	-	-	350	45	11
On-base	SW104	2/09/2020	0906_SW104_200904	ES2031377	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	SW104	4/09/2020	0906_QC201_200904	742937	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	SW104	29/09/2020	0906_SW104_20200929	ES2034862-AB	39	19	5	88	225	<1	<1	225	7.84	7.46	81	2.46	-	<5	51	14
On-base	SW104	21/04/2021	0906_QC202_20210421	792803	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	SW104	21/04/2021	0906_QC102_20210421	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-base	SW104	21/04/2021	0906_SW104_20210421	ES2116327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW206	20/06/2017	0906_SW001_170620	ES1715334	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW206	7/07/2017	0906_SW001_07072017	ES1716880	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW206	13/12/2017	0906_SW206_171213	ES1732701	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW206	25/03/2020	0906_SW206_20200325	ES2011453	42	16	4	48	140	-	<1	140	-	-	67	-	-	<5	32	6
Off-base	SW206	1/10/2020	0906_SW206_20201001	ES2034866	16	8	9	29	99	-	<1	99	3.2	2.95	30	4.08	-	14	18	20
Off-base	SW206	20/04/2021	0906_SW206_20210420	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW212	11/12/2017	0906_SW212_171211	ES1731989	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW212	18/06/2018	0906_SW212_180619	ES1818232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW212	15/08/2019	0906_SW212_190815	ES1926282	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW212	27/03/2020	0906_SW212_20200327	ES2011453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW212	30/09/2020	0906_SW212_20200930	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW212	30/09/2020	0906_SW212_20200930 Dup	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW212	23/04/2021	0906_SW212_20210423	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW218	17/01/2018	0906_SW218_180117	ES1802545	8	3	2	29	46	-	<1	46	1.77	1.96	20	-	138	-	14	-
Off-base	SW218	25/03/2020	0906_SW218_20200325	ES2011453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW218	1/10/2020	0906_QC204_20201001	749074	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW218	1/10/2020	0906_QC104_20201001	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW218	1/10/2020	0906_SW218_20201001	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW218	20/04/2021	0906_SW218_20210420	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW228	7/12/2017	0906_SW228_171207	ES1731266	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW228	12/04/2018	0906_SW228_180412	EM1806331	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW228	7/08/2018	0906_SW228_A_180807	EM1812664	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW228	7/08/2018	0906_SW228_B_180807	EM1812664	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW228	4/04/2019	0906_QC201_190408	650878	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW228	4/04/2019	0906_QC101_190408	ES1911335	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW228	4/04/2019	0906_SW228_190408	ES1911335	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW228	27/03/2020	0906_SW228_20200327	ES2011453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW228	27/03/2020	0906_QC102_20200327	ES2011453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW228	27/03/2020	0906_QC202_20200327	712445	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW228	1/10/2020	0906_SW228_20201001	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW228	27/04/2021	0906_SW228_20210427	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW234	11/12/2017	0906_SW234_171211	ES1731989	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW234	18/06/2018	0906_SW234_180618	ES1818232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW234	27/03/2020	0906_SW234_20200327	ES2011453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW234	29/09/2020	0906_SW234_20200929	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW234	20/04/2021	0906_SW234_20210420	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW236	15/12/2017	0906_SW236_171215	ES1732819	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW236	2/10/2020	0906_SW236_20201002	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW236	22/04/2021	0906_SW236_20210422	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW240	20/12/2017	0906_QC201_171220	580967	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW240	20/12/2017	0906_QC101_171220	ES1732819	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW240	20/12/2017	0906_QC201_171220	ES1732819	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW240	20/12/2017	0906_SW240_171220	ES1732819	23	29	8	100	172	-	<1	172	8.24	8.09	152	0.95	440	-	25	-
Off-base	SW240	2/10/2020	0906_SW240_20201002	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW240	22/04/2021	0906_SW240_20210422	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW261	16/01/2018	0906_SW261_180116	ES1802545	6	3	<1	9	30	-	<1	30	0.7	0.94	3	-	57	-	1	-
Off-base	SW261	3/04/2018	0906_SW261_180403	ES1810698	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW261	18/06/2018	0906_SW261_180618	ES1818232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW261	15/08/2019	0906_SW261_190815	ES1926282	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW261	27/03/2020	0906_SW261_20200327	ES2011453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW261	28/09/2020	0906_SW261_20200928	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

					Metals				Inorganics												Organic
					Calcium (Filtered)	Magnesium (Filtered)	Potassium (Filtered)	Sodium (Filtered)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Chloride	Ionic Balance	TDS	TSS	Sulfate as SO4 - Turbidimetric (Filtered)	Dissolved Organic Carbon
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	%	mg/L	mg/L	mg/L	mg/L
LOR					1	1	1	1	1	1	1	1	0.01	0.01	1	0.01	10	5	1	1
PFAS NEMP 2020 Table 1 Health Drinking Water																				
PFAS NEMP 2020 Table 5 Freshwater 95%																				
PFAS NEMP 2020 Table 1 Health Recreational Water																				
Property	Location_Code	Sampled_Date_Time	Field_ID	Lab_Report_Number																
Off-base	SW261	20/04/2021	0906_SW261_20210420	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW262	16/01/2018	0906_SW262_180116	ES1802545	6	3	1	8	30	-	<1	30	0.75	0.92	4	-	63	-	2	-
Off-base	SW262	18/06/2018	0906_SW262_180618	ES1818232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW262	27/03/2020	0906_SW262_20200327	ES2011453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW262	28/09/2020	0906_SW262_20200928	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW262	20/04/2021	0906_SW262_20210420	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW286	8/04/2018	0906_SW286_180408	ES1810698	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW286	15/08/2019	0906_SW286_190815	ES1926282	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW286	27/03/2020	0906_SW286_20200327	ES2011453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW286	2/10/2020	0906_SW286_20201002	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW286	22/04/2021	0906_SW286_20210422	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW288	12/04/2018	0906_SW288_180412	EM1806331	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW288	15/08/2018	0906_SW288_180815	ES1824412	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW288	16/08/2018	0906_QC201_180816	613110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW288	16/08/2018	0906_QC101_180816	ES1824412	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW288	16/08/2018	0906_SW288_180816	ES1824412	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW288	4/04/2019	0906_SW288_190408	ES1911335	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW288	27/03/2020	0906_SW288_20200327	ES2011453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW288	1/10/2020	0906_SW288_20201001	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW288	27/04/2021	0906_SW288_20210427	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW289	12/04/2018	0906_QC201_180412	594506	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW289	12/04/2018	0906_QC101_180412	EM1806331	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW289	12/04/2018	0906_SW289_180412	EM1806331	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW289	4/04/2019	0906_SW289_190408	ES1911335	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW289	27/03/2020	0906_SW289_20200327	ES2011453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW289	1/10/2020	0906_SW289_20201001	ES2034866	20	16	18	85	379	-	<1	379	10.5	6.47	64	23.6	-	163	53	33
Off-base	SW289	27/04/2021	0906_SW289_20210427	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW294	18/06/2018	0906_SW294_180618	ES1818232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW294	15/08/2019	0906_SW294_190815	ES1926282	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW294	27/03/2020	0906_SW294_20200327	ES2011453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW294	28/09/2020	0906_SW294_20200928	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW294	20/04/2021	0906_SW294_20210420	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW309	15/08/2019	0906_SW309_190815	ES1926282	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW309	27/03/2020	0906_SW309_20200327	ES2011459	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW309	28/09/2020	0906_SW309_20200928	ES2034885	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW309	20/04/2021	0906_SW309_20210420	ES2116324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW310	27/03/2020	0906_SW310_20200327	ES2011453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW310	29/09/2020	0906_SW310_20200929	ES2034866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW310	21/04/2021	0906_QC204_20210421	792774	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW310	21/04/2021	0906_QC104_20210421	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-base	SW310	21/04/2021	0906_SW310_20210421	ES2116333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Data Comments

Denotes location with first-time detection of PFOS + PFHxS or PFOA or PFOS in latest monitoring round
Denotes location with a new exceedance of guideline values in latest monitoring round

Env Stds Comments

#1:Practical screening guideline of 0.001 µg/L based on typical current laboratory limit of reporting, therefore it should be noted that warning and action levels would not be relevant until the detection limits are reduced or the screening levels increased.
#2:Drinking Water screening guidelines have been adopted for screening purposes for Industrial water use, Stock Water use and Agriculture/Parks/Gardens water use.
#3:Australian Government Department of Health (2017) Health Based Guideline Values for PFAS for use in site investigations in Australia.

Field Duplicates (water)
Filter: Lab_Report_Number in('ES2124834','ES2116327','ES2116333','ES2116296','ES2116321'

Chem_Group	ChemName	Units	EQL	Lab Report Number	ES2116327	ES2116327		ES2116327	ES2116327		ES2116327	ES2116327		ES2116327	ES2116327	
				Field ID	0906_SW104_20210421	0906_QC102_20210421	RPD	0906_MW302_20210421	0906_QC103_20210421	RPD	0906_MW243_20210423	0906_QC106_20210423	RPD	0906_MW300_20210422	0906_QC105_20210422	RPD
				Sampled Date/Time	21/04/2021 15:00	21/04/2021 15:00		21/04/2021 15:00	21/04/2021 15:00		23/04/2021 15:00	23/04/2021 15:00		22/04/2021 15:00	22/04/2021 15:00	
Perfluorocarbons	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01		0.28	0.26	7	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
	Perfluorooctanoate (PFOA)	µg/L	0.01		0.02	0.02	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
	Sum of PFHxS and PFOS	µg/L	0.01		0.48	0.46	4	<0.01	<0.01	0	<0.01	<0.01	0	0.03	0.03	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)		0.04	0.03	29	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)		0.02	0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)		0.2	0.2	0	<0.02	<0.02	0	<0.02	<0.02	0	0.03	0.03	0
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)		<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)		<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)		<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02 : 0.01 (Interlab)		<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)		0.06	0.05	18	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)		<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)		<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)		<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)		<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)		<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.01 (Interlab)		<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.01 (Interlab)		<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.05 (Interlab)		<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05		<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	5e-005		<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05		<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05		<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02 : 0.05 (Interlab)		<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.05 (Interlab)		<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)		<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05		0.06	0.05	18	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05 : 0.01 (Interlab)		<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)		<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	Sum of PFAS	µg/L	0.01 : 0.1 (Interlab)		0.68	0.63	8	<0.01	<0.01	0	<0.01	<0.01	0	0.03	0.03	0
	Sum of PFAS (WA DER List)	µg/L	0.01 : 0.05 (Interlab)													

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

Field Duplicates (water)
Filter: Lab_Report_Number in('ES2124834','ES2116327','ES2116333','ES2116296','ES2116321'

	Lab Report Number	ES2116333	ES2116333		ES2116333	ES2116333		ES2124834	ES2124834		ES2116333	792804	
	Field ID	0906_SW310_20210421	0906_QC104_20210421	**RPD**	0906_MW250_20210428	0906_QC107_20210428	**RPD**	0906_MW255_02072021	0906_QC101_02072021	**RPD**	0906_MW250_20210428	0906_QC207_20210428	**RPD**
	Sampled Date/Time	21/04/2021 15:00	21/04/2021 15:00		28/04/2021 15:00	28/04/2021 15:00		2/07/2021	2/07/2021		28/04/2021 15:00	28/04/2021 15:00	
Chem_Group	**ChemName**	**Units**	**EQL**										
Perfluorocarbons	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.85	0.92	8	<0.01	<0.01	0	0.04	0.03	29	<0.01	<0.01	0
	Perfluorooctanoate (PFOA)	µg/L	0.01	**0.02**	**0.03**	**40**	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
	Sum of PFHxS and PFOS	µg/L	0.01	1.23	1.35	9	0.03	0.03	0	0.12	0.11	9	**0.03**	**0.02**	**40**
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	**0.1**	**0.06**	**50**	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.03	0.03	0	<0.02	<0.02	0				<0.02	<0.01	0
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	0.38	0.43	12	0.03	0.03	0	0.08	0.08	0	**0.03**	**0.02**	**40**
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0				<0.02	<0.01	0
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0				<0.02	<0.01	0
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.05	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02 : 0.01 (Interlab)	0.02	0.02	0	0.03	0.03	0	<0.02	<0.02	0	**0.03**	**0.02**	**40**
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.06	0.08	29	0.02	0.02	0	0.02	0.02	0	0.02	0.02	0
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0				<0.02	<0.01	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0				<0.02	<0.01	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0				<0.02	<0.01	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0				<0.02	<0.01	0
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0				<0.02	<0.01	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0				<0.05	<0.01	0
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0				<0.02	<0.05	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0				<0.05	<0.05	0
	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	5e-005	<0.00005	<0.00005	0	<0.00005	<0.00005	0				<0.00005	<0.00005	0
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0				<0.05	<0.05	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0				<0.05	<0.05	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0				<0.02	<0.05	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0				<0.02	<0.05	0
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0
	Sum of PFAS	µg/L	0.01 : 0.1 (Interlab)	1.46	1.57	7	0.08	0.08	0				0.08	<0.1	0
	Sum of PFAS (WA DER List)	µg/L	0.01 : 0.05 (Interlab)	1.43	1.54	7	0.08	0.08	0	0.14	0.13	7	0.08	0.06	29

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

Field Duplicates (water)
Filter: Lab_Report_Number in('ES2124834','ES2116327','ES2116333','ES2116296','ES2116321'

	Lab Report Number	ES2116327	792803		ES2116327	792803		ES2116327	792803		ES2124834	808916	
	Field ID	0906_SW104_20210421	0906_QC202_20210421	**RPD**	0906_MW302_20210421	0906_QC203_20210421	**RPD**	0906_MW300_20210422	0906_QC205_20210422	**RPD**	0906_MW255_02072021	0906_QC201_210702	**RPD**
	Sampled Date/Time	21/04/2021 15:00	21/04/2021 15:00		21/04/2021 15:00	21/04/2021 15:00		22/04/2021 15:00	22/04/2021 15:00		2/07/2021	2/07/2021	
Chem_Group	**ChemName**	**Units**	**EQL**										
Perfluorocarbons	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.28	0.27	4	<0.01	<0.01	0	<0.01	<0.01	0	0.04	0.04	0
	Perfluorooctanoate (PFOA)	µg/L	0.01	0.02	0.02	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
	Sum of PFHxS and PFOS	µg/L	0.01	0.48	0.41	16	<0.01	<0.01	0	**0.03**	**0.02**	**40**	0.12	0.13	8
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	**0.04**	**0.02**	**67**	<0.02	<0.01	0	<0.02	0.01	0	<0.02		
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.02	0.02	0	<0.02	<0.01	0	<0.02	<0.01	0			
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	**0.2**	**0.14**	**35**	<0.02	<0.01	0	**0.03**	**0.02**	**40**	0.08	0.09	12
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0			
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0			
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0	<0.1		
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02		
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	**0.06**	**0.03**	**67**	<0.02	<0.01	0	<0.02	0.01	0	0.02		
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02		
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0			
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0			
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0			
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0			
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0			
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0			
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0			
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0			
	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	5e-005	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0			
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0			
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0			
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0			
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0			
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05		
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	0.06	<0.05	18	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05		
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05		
	Sum of PFAS	µg/L	0.01 : 0.1 (Interlab)	0.68	0.51	29	<0.01	<0.1	0	0.03	<0.1	0			
	Sum of PFAS (WA DER List)	µg/L	0.01 : 0.05 (Interlab)										0.14		

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

Field Duplicates (water)
Filter: Lab_Report_Number in('ES2124834','ES2116327','ES2116333','ES2116296','ES2116321

Lab Report Number	ES2116327	792771		ES2116333	792774	
Field ID	0906_MW243_20210423	0906_QC206_20210423	**RPD**	0906_SW310_20210421	0906_QC204_20210421	**RPD**
Sampled Date/Time	23/04/2021 15:00	23/04/2021 15:00		21/04/2021 15:00	21/04/2021 15:00	

Chem_Group	ChemName	Units	EQL						
Perfluorocarbons	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	0	0.85	1	16
	Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	0	**0.02**	**0.03**	**40**
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	0	1.23	1.36	10
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	**0.1**	**0.05**	**67**
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	**0.03**	**0.02**	**40**
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.38	0.36	5
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	0.02	0
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.05	0	<0.1	<0.05	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	**0.02**	**0.04**	**67**
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.06	0.07	15
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	0.02	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	0	<0.02	<0.05	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	5e-005	<0.00005	<0.00005	0	<0.00005	<0.00005	0
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	0	<0.02	<0.05	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	0	<0.02	<0.05	0
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0
	Sum of PFAS	µg/L	0.01 : 0.1 (Interlab)	<0.01	<0.1	0	1.46	1.63	11
	Sum of PFAS (WA DER List)	µg/L	0.01 : 0.05 (Interlab)				1.43	1.57	9

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

			Lab Report No	ES2116332	ES2116332	ES2116332	ES2116332	ES2116332	ES2116332	ES2116332	ES2116332	ES2116332
			Field ID	0906_QC301_20210420	0906_QC302_20210420	0906_QC303_20210421	0906_QC304_20210421	0906_QC305_20210422	0906_QC306_20210422	0906_QC307_20210423	0906_QC308_20210423	0906_QC310_20210428
			Sampled Date	20/04/2021 15:00	20/04/2021 15:00	21/04/2021 15:00	21/04/2021 15:00	22/04/2021 15:00	22/04/2021 15:00	23/04/2021 15:00	23/04/2021 15:00	28/04/2021 15:00
			Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate
Chem Group	**ChemName**	**Units**	**LOR**									
Perfluorocarbons	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<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	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorononanesulfonic acid (PFNS)	mg/kg	100									
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Perfluoropentanoic acid (PFPeA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropropanesulfonic acid (PFPrS)	mg/kg	100									
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	0.00005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	mg/l	0.00001									

Lab Report No			ES2116332	ES2116332	ES2116332	ES2116332	ES2116332	ES2116332	ES2116332	ES2116332
Field ID			0906_QC501_20210420	0906_QC502_20210420	0906_QC503_20210421	0906_QC504_20210421	0906_QC505_20210422	0906_QC507_20210423	0906_QC508_20210423	0906_QC509_20210427
Sampled Date			20/04/2021 15:00	20/04/2021 15:00	21/04/2021 15:00	20/04/2021 15:00	22/04/2021 15:00	23/04/2021 15:00	20/04/2021 15:00	20/04/2021 15:00
Sample Type			Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
Chem Group	**ChemName**	**Units**	**LOR**							
Perfluorocarbons	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<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	<0.01	<0.01	<0.01	<0.01
	Perfluorononanesulfonic acid (PFNS)	mg/kg	100								
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Perfluoropentanoic acid (PFPeA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropropanesulfonic acid (PFPrS)	mg/kg	100								
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	0.00005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	mg/l	0.00001								

APPENDIX C

LABORATORY CERTIFICATES

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2115488**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: +6138549 9609
Facsimile	: [redacted]	Facsimile	: +61-2-8784 8500
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EM2020LANECON0005 (SY/139/19_Wagga)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO6		
Sampler	: [redacted]		

Dates

Date Samples Received	: 27-Apr-2021 10:20	Issue Date	: 01-May-2021
Client Requested Due Date	: 10-May-2021	Scheduled Reporting Date	: **10-May-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 9.8 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The 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)
ES2115488-001	20-Apr-2021 00:00	0906_MW235_20210420	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2116296**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: +61 03 8415 7777	Telephone	: [redacted]
Facsimile	: +61 03 8415 7788	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EM2020LANECON0005 (SY/139/19_Wagga)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO1		
Sampler	: [redacted]		

Dates

Date Samples Received	: 30-Apr-2021 19:00	Issue Date	: 01-May-2021
Client Requested Due Date	: 10-May-2021	Scheduled Reporting Date	: **10-May-2021**

Delivery Details

Mode of Delivery	: Pickup	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 6.9 - Ice Bricks 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 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)
ES2116296-001	23-Apr-2021 00:00	0906_MW200_20210423	✓
ES2116296-002	23-Apr-2021 00:00	0906_MW204_20210423	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES
- A4 - AU Tax Invoice (INV) Email

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

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

[redacted]
- EDI Format - ESDAT (ESDAT) Email

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

[redacted]

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2116319**

Client	: [redacted]	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EM2020LANECON0005 (SY/139/19_Wagga)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO5		
Sampler	: [redacted]		

Dates

Date Samples Received	: 27-Apr-2021 10:20	Issue Date	: 01-May-2021
Client Requested Due Date	: 10-May-2021	Scheduled Reporting Date	: **10-May-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 9.8 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The 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)
ES2116319-001	22-Apr-2021 00:00	0906_MW233_20210422	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES
- A4 - AU Tax Invoice (INV) Email

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

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

[redacted]
- EDI Format - ESDAT (ESDAT) Email

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

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2116320**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EM2020LANECON0005 (SY/139/19_Wagga)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO8		
Sampler	: [redacted]		

Dates

Date Samples Received	: 27-Apr-2021 10:20	Issue Date	: 01-May-2021
Client Requested Due Date	: 10-May-2021	Scheduled Reporting Date	: **10-May-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 9.8 - 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 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)
ES2116320-001	22-Apr-2021 00:00	0906_MW241_20210422	✓
ES2116320-002	22-Apr-2021 00:00	0906_MW242_20210422	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) — Email — [redacted]

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

[redacted]

- EDI Format - ESDAT (ESDAT) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email

[redacted]

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2116321**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EM2020LANECON0005 (SY/139/19_Wagga)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO3		
Sampler	: [redacted]		

Dates

Date Samples Received	: 27-Apr-2021 10:20	Issue Date	: 01-May-2021
Client Requested Due Date	: 10-May-2021	Scheduled Reporting Date	: **10-May-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 9.8 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The 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)
ES2116321-001	23-Apr-2021 00:00	0906_MW210_20210423	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2116324**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted] NSW Australia 2164
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EM2020LANECON0005 (SY/139/19_Wagga)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO4		
Sampler	: [redacted]		

Dates

Date Samples Received	: 27-Apr-2021 10:20	Issue Date	: 04-May-2021
Client Requested Due Date	: 10-May-2021	Scheduled Reporting Date	: **10-May-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 9.8 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 6 / 6

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- This is an updated SRN which indicates the addition of sample 0906_MW213_20210420.
- **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 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)
ES2116324-001	20-Apr-2021 00:00	0906_MW211_20210420	✓
ES2116324-002	20-Apr-2021 00:00	0906_MW212_20210420	✓
ES2116324-003	22-Apr-2021 00:00	0906_MW251_20210422	✓
ES2116324-004	22-Apr-2021 00:00	0906_MW252_20210422	✓
ES2116324-005	20-Apr-2021 00:00	0906_SW309_20210420	✓
ES2116324-006	20-Apr-2021 00:00	0906_MW213_20210420	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) Email [redacted]

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2116325**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EM2020LANECON0005 (SY/139/19_Wagga)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO2		
Sampler	: [redacted]		

Dates

Date Samples Received	: 27-Apr-2021 10:20	Issue Date	: 01-May-2021
Client Requested Due Date	: 10-May-2021	Scheduled Reporting Date	: **10-May-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 9.8 - 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
- **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 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)
ES2116325-001	22-Apr-2021 00:00	0906_MW209_20210422	✓
ES2116325-002	23-Apr-2021 00:00	0906_MW231_20210423	✓
ES2116325-003	23-Apr-2021 00:00	0906_MW238_20210423	✓
ES2116325-004	23-Apr-2021 00:00	0906_MW239_20210423	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES
- A4 - AU Tax Invoice (INV) Email

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

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

[redacted]
- EDI Format - ESDAT (ESDAT) Email

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

[redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2116327**

Client	[redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	[redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 3
Order number	: ----	Quote number	: EM2020LANECON0005 (SY/139/19_Wagga)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 27-Apr-2021 10:20	Issue Date	: 04-May-2021
Client Requested Due Date	: 10-May-2021	Scheduled Reporting Date	: **10-May-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 9.8 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 16 / 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
- This is an updated SRN which indicates the addition of samples 0906_MW308_20210421 and 0906_MW309_20210421.
- 04/05/2021: This is an updated SRN which indicates the addition of sample 0906_MW310_20210422.
- 04/05/2021: This is an updated SRN which indicates the addition of PFAS analysis for sample 0906_QC106_20210423 and that sample 0906_QC206_20210423 has been forwarded to Eurofins.
- **Samples 0906_QC202_20210421, 0906_QC203_20210421, and 0906_QC205_20210422 have been forwarded to Eurofins for testing.**
- **Please note that sample 0906_MW310_202104 has previously been logged under ES2116318 on a separate COC.**
- **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 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	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2116327-001	21-Apr-2021 00:00	0906_SW104_20210421		✓
ES2116327-002	23-Apr-2021 00:00	0906_MW243_20210423		✓
ES2116327-003	27-Apr-2021 00:00	0906_MW214_20210427		✓
ES2116327-004	21-Apr-2021 00:00	0906_MW300_20210421	✓	
ES2116327-005	22-Apr-2021 00:00	0906_MW300_20210422		✓
ES2116327-006	21-Apr-2021 00:00	0906_MW302_20210421		✓
ES2116327-007	28-Apr-2021 00:00	0906_MW304_20210428		✓
ES2116327-008	22-Apr-2021 00:00	0906_MW306_20210422		✓
ES2116327-009	22-Apr-2021 00:00	0906_MW308_20210422		✓
ES2116327-010	21-Apr-2021 00:00	0906_QC102_20210421		✓
ES2116327-011	21-Apr-2021 00:00	0906_QC103_20210421		✓
ES2116327-012	23-Apr-2021 00:00	0906_QC106_20210423		✓
ES2116327-014	22-Apr-2021 00:00	0906_QC105_20210422		✓
ES2116327-015	21-Apr-2021 00:00	0906_MW308_20210421		✓
ES2116327-016	21-Apr-2021 00:00	0906_MW309_20210421		✓
ES2116327-017	22-Apr-2021 00:00	0906_MW310_20210422		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

[redacted]

- EDI Format - ESDAT (ESDAT) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email

[redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2116332**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 3
Order number	: ----	Quote number	: EM2020LANECON0005 (SY/139/19_Wagga)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 27-Apr-2021 10:20	Issue Date	: 01-May-2021
Client Requested Due Date	: 10-May-2021	Scheduled Reporting Date	: **10-May-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 9.8 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 19 / 17

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 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	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2116332-001	20-Apr-2021 00:00	0906_QC301_20210420		✓
ES2116332-002	20-Apr-2021 00:00	0906_QC302_20210420		✓
ES2116332-003	20-Apr-2021 00:00	0906_QC501_20210420		✓
ES2116332-004	20-Apr-2021 00:00	0906_QC502_20210420		✓
ES2116332-005	21-Apr-2021 00:00	0906_QC303_20210421		✓
ES2116332-006	21-Apr-2021 00:00	0906_QC304_20210421		✓
ES2116332-007	21-Apr-2021 00:00	0906_QC503_20210421		✓
ES2116332-008	20-Apr-2021 00:00	0906_QC504_20210421		✓
ES2116332-009	22-Apr-2021 00:00	0906_QC305_20210422		✓
ES2116332-010	22-Apr-2021 00:00	0906_QC306_20210422		✓
ES2116332-011	22-Apr-2021 00:00	0906_QC505_20210422		✓
ES2116332-012	20-Apr-2021 00:00	0906_QC506_20210422	✓	
ES2116332-013	23-Apr-2021 00:00	0906_QC307_20210423		✓
ES2116332-014	23-Apr-2021 00:00	0906_QC308_20210423		✓
ES2116332-015	23-Apr-2021 00:00	0906_QC507_20210423		✓
ES2116332-016	20-Apr-2021 00:00	0906_QC508_20210423		✓
ES2116332-017	27-Apr-2021 00:00	0906_QC309_20210427	✓	
ES2116332-018	20-Apr-2021 00:00	0906_QC509_20210427		✓
ES2116332-019	28-Apr-2021 00:00	0906_QC310_20210428		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

[redacted]

- EDI Format - ESDAT (ESDAT) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email

[redacted]

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2116333**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 3
Order number	: ----	Quote number	: EM2020LANECON0005 (SY/139/19_Wagga)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO7		
Sampler	: [redacted]		

Dates

Date Samples Received	: 27-Apr-2021 10:20	Issue Date	: 04-May-2021
Client Requested Due Date	: 10-May-2021	Scheduled Reporting Date	: **10-May-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 9.8 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 35 / 27

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
- 04/05/2021: This is an updated SRN which indicates the corrections to the workorder.
- **Sample ID 0906_QC104_20210421 is duplicated on the COC. Sample 0906_QC208_20210428 was not received. These two samples were not able to be sent to Eurofins. Sample 0906_QC207_20210428 has been forwarded to Eurofins for testing.**
- **Samples 0906_MW213_20210420, 0906_MW249_20210420, 0906_MW255_20210421, 0906_MW308_20210421, 0906_MW309_20210421, 0906_QC101_20210421, 0906_QC201_20210421 and 0906_QC204_20210421 were received extra. Sample 0906_SW261_20210420 has ID 0906_SW216_20210420 on the PFAS bottles.**
- **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 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	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2116333-001	20-Apr-2021 00:00	0906_MW244_20210420		✓
ES2116333-002	20-Apr-2021 00:00	0906_MW245_20210420		✓
ES2116333-003	20-Apr-2021 00:00	0906_MW240_20210420		✓
ES2116333-004	20-Apr-2021 00:00	0906_MW254_20210420		✓
ES2116333-005	20-Apr-2021 00:00	0906_MW253_20210420		✓
ES2116333-006	20-Apr-2021 00:00	0906_MW246_20210420		✓
ES2116333-007	20-Apr-2021 00:00	0906_SW294_20210420		✓
ES2116333-008	20-Apr-2021 00:00	0906_SW218_20210420		✓
ES2116333-009	20-Apr-2021 00:00	0906_SW206_20210420		✓
ES2116333-010	20-Apr-2021 00:00	0906_SW234_20210420		✓
ES2116333-011	20-Apr-2021 00:00	0906_SW261_20210420		✓
ES2116333-012	20-Apr-2021 00:00	0906_SW262_20210420		✓
ES2116333-013	21-Apr-2021 00:00	0906_SW310_20210421		✓
ES2116333-014	22-Apr-2021 00:00	0906_SW236_20210422		✓
ES2116333-015	22-Apr-2021 00:00	0906_SW240_20210422		✓
ES2116333-016	22-Apr-2021 00:00	0906_SW286_20210422		✓
ES2116333-017	22-Apr-2021 00:00	0906_MW255_20210422		✓
ES2116333-018	22-Apr-2021 00:00	0906_MW256_20210422		✓
ES2116333-019	23-Apr-2021 00:00	0906_SW212_20210423		✓
ES2116333-020	27-Apr-2021 00:00	0906_MW248_20210427		✓
ES2116333-021	27-Apr-2021 00:00	0906_MW247_20210427		✓
ES2116333-022	27-Apr-2021 00:00	0906_SW228_20210427		✓
ES2116333-023	27-Apr-2021 00:00	0906_SW288_20210427		✓
ES2116333-024	27-Apr-2021 00:00	0906_SW289_20210427		✓
ES2116333-025	28-Apr-2021 00:00	0906_MW250_20210428		✓
ES2116333-026	28-Apr-2021 00:00	0906_MW249_20210428		✓
ES2116333-027	21-Apr-2021 00:00	0906_QC104_20210421	✓	
ES2116333-028	28-Apr-2021 00:00	0906_QC107_20210428		✓
ES2116333-029	28-Apr-2021 00:00	0906_QC108_20210428	✓	
ES2116333-030	21-Apr-2021 00:00	0906_MW250_20210421	✓	
ES2116333-031	21-Apr-2021 00:00	0906_MW249_20210421	✓	
ES2116333-033	20-Apr-2021 00:00	0906_MW249_20210420	✓	
ES2116333-034	21-Apr-2021 00:00	0906_MW255_20210421	✓	
ES2116333-037	21-Apr-2021 00:00	0906_QC101_20210421	✓	
ES2116333-038	21-Apr-2021 00:00	0906_QC201_20210421	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2118542**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EM2020LANECON0005 (SY/139/19_Wagga)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO4		
Sampler	: [redacted]		

Dates

Date Samples Received	: 27-Apr-2021 10:20	Issue Date	: 18-May-2021
Client Requested Due Date	: 18-May-2021	Scheduled Reporting Date	: **18-May-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 9.8 - Ice present
Receipt Detail	: split from ES2116324	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 which indicates the addition of sample 0906_MW213_20210420.
- **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 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)
ES2118542-001	22-Apr-2021 00:00	0906_MW251_20210422	✓
ES2118542-002	22-Apr-2021 00:00	0906_MW252_20210422	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection and proficiency testing scheme providers reports.

Attention: [redacted]

Report **792771-W**
Project name DEF19008
Project ID DEF19008
Received Date May 05, 2021

Client Sample ID			**0906_QC206_20210423**
Sample Matrix			**Water**
Eurofins Sample No.			**S21-My07843**
Date Sampled			**Apr 23, 2021**
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01
13C4-PFBA (surr.)	1	%	100
13C5-PFPeA (surr.)	1	%	97
13C5-PFHxA (surr.)	1	%	100
13C4-PFHpA (surr.)	1	%	100
13C8-PFOA (surr.)	1	%	124
13C5-PFNA (surr.)	1	%	122
13C6-PFDA (surr.)	1	%	122
13C2-PFUnDA (surr.)	1	%	115
13C2-PFDoDA (surr.)	1	%	107
13C2-PFTeDA (surr.)	1	%	68
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.05	ug/L	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.05	ug/L	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05
13C8-FOSA (surr.)	1	%	131
D3-N-MeFOSA (surr.)	1	%	97

Client Sample ID			0906_QC206_20210423
Sample Matrix			**Water**
Eurofins Sample No.			**S21-My07843**
Date Sampled			**Apr 23, 2021**
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
D5-N-EtFOSA (surr.)	1	%	88
D7-N-MeFOSE (surr.)	1	%	131
D9-N-EtFOSE (surr.)	1	%	127
D5-N-EtFOSAA (surr.)	1	%	12
D3-N-MeFOSAA (surr.)	1	%	11
Perfluoroalkyl sulfonic acids (PFSAs)			
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01
13C3-PFBS (surr.)	1	%	123
18O2-PFHxS (surr.)	1	%	114
13C8-PFOS (surr.)	1	%	99
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.05	ug/L	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01
13C2-4:2 FTS (surr.)	1	%	95
13C2-6:2 FTSA (surr.)	1	%	110
13C2-8:2 FTSA (surr.)	1	%	77
13C2-10:2 FTSA (surr.)	1	%	68
PFASs Summations			
Sum (PFHxS + PFOS)*	0.01	ug/L	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	May 07, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	May 07, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	May 07, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	May 07, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

eurofins | Environment Testing

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Australia

Melbourne
[redacted]
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
[redacted]
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
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Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle
[redacted]
Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

New Zealand

Auckland
[redacted]
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
[redacted]
Phone : 0800 856 450
IANZ # 1290

Company Name: Cardno Victoria Pty Ltd
Address: [redacted]

Project Name: DEF19008
Project ID: DEF19008

Order No.:
Report #: 792771
Phone: 8415 7777
Fax: 8415 7788

Received: May 5, 2021 3:45 PM
Due: May 10, 2021
Priority: 3 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory - NATA Site # 25079						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC206_20210423	Apr 23, 2021		Water	S21-My07843	X
Test Counts						1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

****NOTE** pH duplicates are reported as a range NOT as RPD

Units

mg/kg milligrams per kilogram

mg/L milligrams per litre

ug/L micrograms per litre

ppm Parts per million

ppb Parts per billion

% Percentage

org/100mL Organisms per 100 millilitres

NTU Nephelometric Turbidity Units

MPN/100mL Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6 2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	132			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	108			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	106			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	123			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	115			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	116			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	106			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	108			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	129			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	85			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	66			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	107			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	122			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	129			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	123			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	123			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	111			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	117			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	84			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	122			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	110			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	94			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	114			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	114			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	115			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	87			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	107			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	97			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	122			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	119			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	S21-My07845	NCP	%	118			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S21-My07845	NCP	%	104			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S21-My07845	NCP	%	98			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S21-My07845	NCP	%	128			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S21-My07845	NCP	%	104			50-150	Pass	
Perfluorononanoic acid (PFNA)	S21-My07845	NCP	%	100			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S21-My07845	NCP	%	81			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S21-My07845	NCP	%	93			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S21-My07845	NCP	%	98			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S21-My07845	NCP	%	82			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S21-My07845	NCP	%	53			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S21-My07845	NCP	%	96			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S21-My07845	NCP	%	82			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S21-My07845	NCP	%	70			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S21-My07845	NCP	%	62			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S21-My07845	NCP	%	62			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S21-My07845	NCP	%	73			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S21-My07845	NCP	%	75			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S21-My07845	NCP	%	102			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S21-My07845	NCP	%	108			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S21-My07845	NCP	%	138			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S21-My07845	NCP	%	77			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S21-My07845	NCP	%	64			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S21-My07845	NCP	%	103			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S21-My07845	NCP	%	77			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S21-My07845	NCP	%	73			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S21-My07845	NCP	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S21-My07845	NCP	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S21-My07845	NCP	%	82			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S21-My07845	NCP	%	77			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	S21-My07843	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	S21-My07843	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S21-My07843	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S21-My07843	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S21-My07843	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S21-My07843	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S21-My07843	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S21-My07843	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S21-My07843	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S21-My07843	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

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

Authorised by:

[redacted] Analytical Services Manager
[redacted] Senior Analyst-PFAS (QLD)

[redacted]
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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

eurofins | Environment Testing

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Melbourne
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Site # 1254 & 14271

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NATA # 1261 Site # 18217

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Christchurch
[redacted]
Phone : 0800 856 450
IANZ # 1290

Company Name: [redacted]
Address: [redacted]

Project Name: DEF19008
Project ID: DEF19008

Order No.:
Report #: 792771
Phone: [redacted]
Fax: [redacted]

Received: May 5, 2021 3:45 PM
Due: May 10, 2021
Priority: 3 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory - NATA Site # 25079						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC206_20210423	Apr 23, 2021		Water	S21-My07843	X
Test Counts						1

eurofins | Environment Testing

ABN: 50 005 085 521 www.eurofins.com.au EnviroSales@eurofins.com

Australia

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NATA # 1261
Site # 23736

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New Zealand

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IANZ # 1327

Christchurch
[redacted]
Phone : 0800 856 450
IANZ # 1290

Sample Receipt Advice

Company name:	[redacted]
Contact name:	[redacted]
Project name:	DEF19008
Project ID:	DEF19008
Turnaround time:	3 Day
Date/Time received	May 5, 2021 3:45 PM
Eurofins reference	792771

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted] **on phone : or by email:** [redacted]

Results will be delivered electronically via email to [redacted] -[redacted]

Note: A copy of these results will also be delivered to the general Cardno Victoria Pty Ltd email address.

Global Leader - Results you can trust

[redacted]

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.

[redacted]

Can we please request the following amendments to the SRN?

- 0906_QC106_20210423 analysed for EP231X
- 0906_QC206_20210423 forwarded to Eurofins for PFAS analysis

Cheers,

[redacted]
SENIOR ENVIRONMENTAL [redacted]

Cardno

[redacted]

CONNECT WITH CARDNO

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more

Cardno's management systems are certified to ISO9001 (quality) and AS4801/OHSAS18001 (occupational health and safety)

Environmental Division
Sydney
Work Order Reference
ES2116327

Telephone : +61-2-8784 8555

[redacted]

ALS

Report N# 792771
T: 15.4 3:45 pm
5,05,21
M. H

Deliverables for ALS Workorder ES2116327

Project: NSW_0906_PFASOMP

[redacted]

Please find enclosed the following deliverables for **ES2116327**:

- ES2116327_0_SRN_210501134805.pdf

Report Recipients

- [redacted]

Cardno Victoria Pty Ltd
[redacted]
Melbourne
VIC 3000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection and proficiency testing scheme providers reports.

Attention: [redacted]

Report **792774-W**
Project name
Project ID DEF19008
Received Date May 05, 2021

Client Sample ID			**0906_QC204_20210421**
Sample Matrix			**Water**
Eurofins Sample No.			**S21-My07845**
Date Sampled			**Apr 21, 2021**
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	0.04
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.07
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	0.02
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	0.03
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01
13C4-PFBA (surr.)	1	%	64
13C5-PFPeA (surr.)	1	%	53
13C5-PFHxA (surr.)	1	%	47
13C4-PFHpA (surr.)	1	%	55
13C8-PFOA (surr.)	1	%	83
13C5-PFNA (surr.)	1	%	95
13C6-PFDA (surr.)	1	%	101
13C2-PFUnDA (surr.)	1	%	122
13C2-PFDoDA (surr.)	1	%	103
13C2-PFTeDA (surr.)	1	%	68
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.05	ug/L	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.05	ug/L	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05
13C8-FOSA (surr.)	1	%	109
D3-N-MeFOSA (surr.)	1	%	78

Client Sample ID			0906_QC204_20210421
Sample Matrix			**Water**
Eurofins Sample No.			**S21-My07845**
Date Sampled			**Apr 21, 2021**
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
D5-N-EtFOSA (surr.)	1	%	87
D7-N-MeFOSE (surr.)	1	%	123
D9-N-EtFOSE (surr.)	1	%	106
D5-N-EtFOSAA (surr.)	1	%	17
D3-N-MeFOSAA (surr.)	1	%	18
Perfluoroalkyl sulfonic acids (PFSAs)			
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	0.05
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	0.02
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	0.02
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	0.36
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	0.02
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	1.0
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01
13C3-PFBS (surr.)	1	%	103
18O2-PFHxS (surr.)	1	%	90
13C8-PFOS (surr.)	1	%	72
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.05	ug/L	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01
13C2-4:2 FTS (surr.)	1	%	86
13C2-6:2 FTSA (surr.)	1	%	81
13C2-8:2 FTSA (surr.)	1	%	95
13C2-10:2 FTSA (surr.)	1	%	94
PFASs Summations			
Sum (PFHxS + PFOS)*	0.01	ug/L	1.36
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	1.03
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	1.39
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	1.57
Sum of PFASs (n=30)*	0.1	ug/L	1.63

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	May 07, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	May 07, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	May 07, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	May 07, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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NATA # 1261 Site # 18217

Brisbane
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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
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Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle
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NATA # 1261 Site # 25079

New Zealand

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Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
[redacted]
Phone : 0800 856 450
IANZ # 1290

Company Name: Cardno Victoria Pty Ltd
Address: [redacted]
Melbourne
VIC 3000

Project Name:
Project ID: DEF19008

Order No.:
Report #: 792774
Phone: 8415 7777
Fax: 8415 7788

Received: May 5, 2021 3:45 PM
Due: May 10, 2021
Priority: 3 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory - NATA Site # 25079						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC204_20210421	Apr 21, 2021		Water	S21-My07845	X
Test Counts						1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

****NOTE** pH duplicates are reported as a range NOT as RPD

Units

mg/kg milligrams per kilogram

mg/L milligrams per litre

ug/L micrograms per litre

ppm Parts per million

ppb Parts per billion

% Percentage

org/100mL Organisms per 100 millilitres

NTU Nephelometric Turbidity Units

MPN/100mL Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6 2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	132			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	108			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	106			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	123			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	115			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	116			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	106			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	108			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	129			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	85			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	66			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	107			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	122			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	129			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	123			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	123			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	111			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	117			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	84			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	122			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	110			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	94			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	114			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	114			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	115			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	87			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	107			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	97			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	122			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	119			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	S21-My07845	CP	%	118			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S21-My07845	CP	%	104			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S21-My07845	CP	%	98			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S21-My07845	CP	%	128			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S21-My07845	CP	%	104			50-150	Pass	
Perfluorononanoic acid (PFNA)	S21-My07845	CP	%	100			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S21-My07845	CP	%	81			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S21-My07845	CP	%	93			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S21-My07845	CP	%	98			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S21-My07845	CP	%	82			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S21-My07845	CP	%	53			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S21-My07845	CP	%	96			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S21-My07845	CP	%	82			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S21-My07845	CP	%	70			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S21-My07845	CP	%	62			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S21-My07845	CP	%	62			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S21-My07845	CP	%	73			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S21-My07845	CP	%	75			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S21-My07845	CP	%	102			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S21-My07845	CP	%	108			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S21-My07845	CP	%	138			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S21-My07845	CP	%	77			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S21-My07845	CP	%	64			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S21-My07845	CP	%	103			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S21-My07845	CP	%	77			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S21-My07845	CP	%	73			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S21-My07845	CP	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S21-My07845	CP	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S21-My07845	CP	%	82			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S21-My07845	CP	%	77			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	S21-My07843	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	S21-My07843	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S21-My07843	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S21-My07843	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S21-My07843	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S21-My07843	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S21-My07843	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S21-My07843	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S21-My07843	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S21-My07843	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

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

Authorised by:

[redacted] Analytical Services Manager

[redacted] Senior Analyst-PFAS (QLD)

[redacted]

General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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Australia

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Phone : +61 3 8564 5000
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Site # 1254 & 14271

Sydney [redacted]
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane [redacted]
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth [redacted]
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle [redacted]
Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

New Zealand

Auckland [redacted]
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch [redacted]
Phone : 0800 856 450
IANZ # 1290

Company Name: [redacted]
Address: [redacted]

Project Name:
Project ID: DEF19008

Order No.:
Report #: 792774
Phone: [redacted]
Fax: [redacted]

Received: May 5, 2021 3:45 PM
Due: May 10, 2021
Priority: 3 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory - NATA Site # 25079						
External Laboratory						
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
1	0906_QC204_20210421	Apr 21, 2021		Water	S21-My07845	X
Test Counts						1

eurofins | Environment Testing

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NATA # 1261 Site # 20794

Perth
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NATA # 1261
Site # 23736

Newcastle
[redacted]
Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

New Zealand

Auckland
[redacted]
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
[redacted]
Phone : 0800 856 450
IANZ # 1290

Sample Receipt Advice

Company name:	[redacted]
Contact name:	[redacted]
Project name:	Not provided
Project ID:	DEF19008
Turnaround time:	3 Day
Date/Time received	May 5, 2021 3:45 PM
Eurofins reference	792774

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Sample is sent to Brisbane|

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted] **on phone : or by email:** [redacted]

Results will be delivered electronically via email to [redacted] - [redacted].

Note: A copy of these results will also be delivered to the general Cardno Victoria Pty Ltd email address.

Global Leader - Results you can trust

[redacted]

Sent: Tuesday, 4 May 2021 10:03 AM

[redacted]

Subject: [EXTERNAL] - RE: ALS Workorder ES2116333, Project NSW_0906_PFASOMP

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.

[redacted]

Further to my email below, [redacted] advised that sample 0906_QC208_20210428 does not exist and was mistakenly included in the COC.
Can we please request that sample 0906_QC108_20210428 be put on HOLD (instead of analysis)?

Cheers,

Environmental Division
Sydney
Work Order Reference
ES2116333

Telephone : - 61-2-8784 8555

[redacted]

SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno

[redacted]

CONNECT WITH CARDNO

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more.

Cardno's management systems are certified to ISO9001 (quality) and AS4801/OHSAS18001 (occupational health and safety)

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[redacted]

Sent: Monday, 3 May 2021 7:36 PM

[redacted]

Subject: RE: ALS Workorder ES2116333, Project NSW_0906_PFASOMP

[redacted]

- The duplicated "0906_QC104_20210421" on the COC should actually be 0906_QC204_20210421 (which is one of the extra samples you've received). Please forward 0906_QC204_20210421 to Eurofins for PFAS analysis.
- [redacted] – can you please advise the whereabouts of sample 0906_QC208_20210428?
- 0906_SW216_20210420 should be SW261

M.H T:15.4 5.05.21 Report N#792774 3:45pm

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Certificate of Analysis

[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection and proficiency testing scheme providers reports.

Attention: [redacted]

Report 792803-W
Project name
Project ID NSW_0906_PFAS
Received Date May 07, 2021

Client Sample ID			0906_QC202_20210421	0906_QC203_20210421	0906_QC205_20210422
Sample Matrix			Water	Water	Water
Eurofins Sample No.			M21-My08003	M21-My08004	M21-My08005
Date Sampled			Apr 21, 2021	Apr 21, 2021	Apr 22, 2021
Test/Reference	LOR	Unit			
Perfluoroalkyl carboxylic acids (PFCAs)					
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	0.01	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.03	< 0.01	0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	[NDA]0.02	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	81	80	85
13C5-PFPeA (surr.)	1	%	78	69	77
13C5-PFHxA (surr.)	1	%	84	80	89
13C4-PFHpA (surr.)	1	%	82	78	89
13C8-PFOA (surr.)	1	%	77	72	85
13C5-PFNA (surr.)	1	%	75	65	80
13C6-PFDA (surr.)	1	%	68	57	74
13C2-PFUnDA (surr.)	1	%	62	58	61
13C2-PFDoDA (surr.)	1	%	62	56	61
13C2-PFTeDA (surr.)	1	%	59	52	61
Perfluoroalkyl sulfonamido substances					
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	74	71	85
D3-N-MeFOSA (surr.)	1	%	62	62	83

Client Sample ID			0906_QC202_20210421	0906_QC203_20210421	0906_QC205_20210422
Sample Matrix			**Water**	**Water**	**Water**
Eurofins Sample No.			**M21-My08003**	**M21-My08004**	**M21-My08005**
Date Sampled			**Apr 21, 2021**	**Apr 21, 2021**	**Apr 22, 2021**
Test/Reference	LOR	Unit			
Perfluoroalkyl sulfonamido substances					
D5-N-EtFOSA (surr.)	1	%	63	60	80
D7-N-MeFOSE (surr.)	1	%	62	65	77
D9-N-EtFOSE (surr.)	1	%	58	60	73
D5-N-EtFOSAA (surr.)	1	%	56	78	70
D3-N-MeFOSAA (surr.)	1	%	51	74	82
Perfluoroalkyl sulfonic acids (PFSAs)					
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	0.02	< 0.01	0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	[N09]0.02	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	[N09]0.14	< 0.01	[N09]0.02
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	[N09]0.27	< 0.01	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	95	83	89
18O2-PFHxS (surr.)	1	%	92	95	97
13C8-PFOS (surr.)	1	%	74	68	75
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C2-4:2 FTS (surr.)	1	%	74	71	78
13C2-6:2 FTSA (surr.)	1	%	84	65	83
13C2-8:2 FTSA (surr.)	1	%	81	58	70
13C2-10:2 FTSA (surr.)	1	%	68	50	82
PFASs Summations					
Sum (PFHxS + PFOS)*	0.01	ug/L	0.41	< 0.01	0.02
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	0.29	< 0.01	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	0.43	< 0.01	0.02
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	0.49	< 0.05	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	0.51	< 0.1	< 0.1

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	May 10, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	May 10, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	May 10, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	May 10, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	May 10, 2021	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Australia

Melbourne [redacted]
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney [redacted]
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane [redacted]
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth [redacted]
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NATA # 1261
Site # 23736

Newcastle [redacted]
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NATA # 1261 Site # 25079

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Auckland [redacted]
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch [redacted]
Phone : 0800 856 450
IANZ # 1290

Company Name: [redacted]
Address: [redacted]

Project Name:
Project ID: NSW_0906_PFAS

Order No.:
Report #: 792803
Phone: 8415 7777
Fax: 8415 7788

Received: May 7, 2021 1:27 PM
Due: May 11, 2021
Priority: 2 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271						X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory - NATA Site # 25079						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC202_20210421	Apr 21, 2021		Water	M21-My08003	X
2	0906_QC203_20210421	Apr 21, 2021		Water	M21-My08004	X
3	0906_QC205_20210422	Apr 22, 2021		Water	M21-My08005	X
Test Counts						3

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

****NOTE** pH duplicates are reported as a range NOT as RPD

Units

mg/kg milligrams per kilogram

mg/L milligrams per litre

ug/L micrograms per litre

ppm Parts per million

ppb Parts per billion

% Percentage

org/100mL Organisms per 100 millilitres

NTU Nephelometric Turbidity Units

MPN/100mL Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6 2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	112			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	84			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	91			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	91			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	88			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	89			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	91			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	87			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	93			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	113			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	79			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	93			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	100			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	97			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	83			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	91			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	90			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	78			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	76			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	77			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	83			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	75			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	78			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	89			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	80			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	62			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	86			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	102			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	80			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	97			50-150	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

[redacted] Analytical Services Manager
[redacted] Senior Analyst-PFAS (VIC)

[redacted]
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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

eurofins | Environment Testing

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Australia

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

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

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

Perth
46-48 Banksia Road
Welshpool WA 6106
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

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

New Zealand

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

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

Company Name: [redacted]
Address: [redacted]

Order No.:
Report #: 792803
Phone: [redacted]
Fax: [redacted]

Received: May 7, 2021 1:27 PM
Due: May 11, 2021
Priority: 2 Day
Contact Name: [redacted]

Project Name:
Project ID: NSW_0906_PFAS

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271						X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory - NATA Site # 25079						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC202_20210421	Apr 21, 2021		Water	M21-My08003	X
2	0906_QC203_20210421	Apr 21, 2021		Water	M21-My08004	X
3	0906_QC205_20210422	Apr 22, 2021		Water	M21-My08005	X
Test Counts						3

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NATA # 1261
Site # 23736

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Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

New Zealand

Auckland
[redacted]
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
[redacted]
Phone : 0800 856 450
IANZ # 1290

Sample Receipt Advice

Company name:	[redacted]
Contact name:	[redacted]
Project name:	Not provided
Project ID:	NSW_0906_PFAS
Turnaround time:	2 Day
Date/Time received	May 7, 2021 1:27 PM
Eurofins reference	792803

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted] **on phone : or by email:** [redacted]

Results will be delivered electronically via email to [redacted] - [redacted].

Note: A copy of these results will also be delivered to the general Cardno Victoria Pty Ltd email address.

Global Leader - Results you can trust

Updated COC

Eurofins

18

Chain of Custody

PM Name: Bobby Wang	
Phone: +61 3 8415 7500 Fax: 03 8415 7788 Mobile: 0448910424	
Address: Level 6, 501 Swanston Street, Melbourne, Vic, 3000	
PM Email: bobby.wang@cardno.com.au	
Project Number: NSW_0906_PFASI Site:	
Laboratory (name, phone, & contact person): ALS	

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks	EP231X - PFAS Standard	HOLD	Forward to Eurofins	Please amend Sample IDs as follows	Please send to Eurofins
1	0906_SW104_20210421		2 x 50ml plastic	21/04/2021				1			1				
2	0906_MW243_20210423		2 x 50ml plastic	23/04/2021			1				1				
3	0906_MW214_20210427		2 x 50ml plastic	27/04/2021			1				1				
4	0906_MW300_20210421		2 x 50ml plastic	21/04/2021			1					1			
5	0906_MW300_20210422		2 x 50ml plastic	22/04/2021			1				1				
6	0906_MW302_20210421		2 x 50ml plastic	21/04/2021			1				1				
7	0906_MW304_20210428		2 x 50ml plastic	28/04/2021			1				1				
8	0906_MW306_20210422		2 x 50ml plastic	22/04/2021			1				1				
9	0906_MW308_20210422		2 x 50ml plastic	22/04/2021			1				1				
*	0906_MW310_20210422		2 x 50ml plastic	22/04/2021			1				1				
10	0906_QC102_20210421		2 x 50ml plastic	21/04/2021				1			1				
-	0906_QC202_20210421		2 x 50ml plastic	21/04/2021				1					1		
11	0906_QC103_20210421		2 x 50ml plastic	21/04/2021			1				1				
-	0906_QC203_20210421		2 x 50ml plastic	21/04/2021			1						1		
12	0906_QC106_20210423		2 x 50ml plastic	23/04/2021			1					1			
13	0906_QC206_20210423		2 x 50ml plastic	23/04/2021			1					1			
14	0906_QC105_20210422		2 x 50ml plastic	22/04/2021			1				1				
-	0906_QC205_20210422		2 x 50ml plastic	22/04/2021			1						1		

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. Sampler name: Jake Ludlow / Callum Lekic Date: 20/20/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
[redacted]					
			Received by: (print and signature)	Date	Time
	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Revision 1
Approved 23 May 2013

Page of

DEF19008_E3_GWM-SWM_RAAF_DoD.xls

Subcon / Forward Lab / Split WO

Lab / Analysis: Eurofins /

Organised By / Date: 0906_QC202_20210421,

Relinquished By / Date: 0906_QC203_20210421,

Connote / Courier: 0906-QC205_20210422

WO No:

Attached By PO / Internal Sheet:

* 0906_MW310_20210422 has been logged under ES2116318 on a separate COC provided

[redacted]

Eurofins
792803

Environmental Division
Sydney
Work Order Reference
ES2116327

Telephone - 61-2-8784 8555

Printed 30/04/2021

RE: DEF19008 - SRAs (NSW_0906_PFASC)

[redacted] [redacted]

Fri 7/05/2021 1:27 PM

To: [redacted]
Cc: [redacted]

Thanks [redacted]

Please add analysis to both 792803 and 792804.
For 792804, also amend the sample ID to *0906_QC207_20210428*.

Cheers,

[redacted]
SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno

[redacted]

[redacted]

CONNECT WITH CARDNO

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more.

Cardno's management systems are certified to ISO9001 (quality) and AS4801/OHSAS18001 (occupational health and safety)

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From: [redacted]
Sent: Friday, 7 May 2021 1:18 PM
To: [redacted]
Cc: [redacted]
Subject: RE: DEF19008 - SRAs (NSW_0906_PFASC)

Not a problem [redacted] – I will need to chase up with Sample Receipt as to what has happened here.

Can you confirm which report needs the analysis added to it?

[redacted]

[redacted]

[redacted]

From: [redacted]
Sent: Friday, 7 May 2021 10:40 AM
To: [redacted]
Cc [redacted]
Subject: DEF19008 - SRAs (NSW_0906_PFASC)

EXTERNAL EMAIL*

Hi Harry,

The attached SRA indicate that the samples were received on 3 May – why were the SRAs sent out after COB on 5 May?

Can you please schedule all the samples for analysis of Per- and Polyfluoroalkyl Substances (PFASs)?
2 day TAT please.
Also, can the sample ID for *0906_QC207* be amended to *0906_QC207_20210428*?

Cheers,

[redacted]
SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno

Phone +61 3 8415 7777 [redacted]
Address [redacted]

Email [redacted] Web www.cardno.com
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[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection and proficiency testing scheme providers reports.

Attention: [redacted]

Report 792804-W
Project name PO7
Project ID NSW_0906_PFASC
Received Date May 07, 2021

Client Sample ID			0906_QC207_20210428
Sample Matrix			Water
Eurofins Sample No.			M21-My08002
Date Sampled			Apr 28, 2021
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	0.02
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.02
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01
13C4-PFBA (surr.)	1	%	79
13C5-PFPeA (surr.)	1	%	74
13C5-PFHxA (surr.)	1	%	82
13C4-PFHpA (surr.)	1	%	80
13C8-PFOA (surr.)	1	%	78
13C5-PFNA (surr.)	1	%	70
13C6-PFDA (surr.)	1	%	60
13C2-PFUnDA (surr.)	1	%	56
13C2-PFDoDA (surr.)	1	%	54
13C2-PFTeDA (surr.)	1	%	53
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.05	ug/L	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.05	ug/L	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05
13C8-FOSA (surr.)	1	%	75
D3-N-MeFOSA (surr.)	1	%	55

Client Sample ID			0906_QC207_20210428
Sample Matrix			**Water**
Eurofins Sample No.			**M21-My08002**
Date Sampled			**Apr 28, 2021**
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
D5-N-EtFOSA (surr.)	1	%	53
D7-N-MeFOSE (surr.)	1	%	75
D9-N-EtFOSE (surr.)	1	%	71
D5-N-EtFOSAA (surr.)	1	%	58
D3-N-MeFOSAA (surr.)	1	%	82
Perfluoroalkyl sulfonic acids (PFSAs)			
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	[N09]0.02
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01
13C3-PFBS (surr.)	1	%	85
18O2-PFHxS (surr.)	1	%	94
13C8-PFOS (surr.)	1	%	73
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.05	ug/L	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01
13C2-4:2 FTS (surr.)	1	%	70
13C2-6:2 FTSA (surr.)	1	%	73
13C2-8:2 FTSA (surr.)	1	%	54
13C2-10:2 FTSA (surr.)	1	%	74
PFASs Summations			
Sum (PFHxS + PFOS)*	0.01	ug/L	0.02
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	0.02
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	0.06
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	May 10, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	May 10, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	May 10, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	May 10, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	May 10, 2021	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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NATA # 1261 Site # 18217

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NATA # 1261 Site # 25079

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IANZ # 1327

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

Company Name: [redacted]
Address: [redacted]

Project Name: PO7
Project ID: NSW_0906_PFASC

Order No.:
Report #: 792804
Phone: [redacted]
Fax: [redacted]

Received: May 7, 2021 1:27 PM
Due: May 11, 2021
Priority: 2 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271						X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory - NATA Site # 25079						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC207_20210428	Apr 28, 2021		Water	M21-My08002	X
Test Counts						1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

****NOTE** pH duplicates are reported as a range NOT as RPD

Units

mg/kg milligrams per kilogram

mg/L milligrams per litre

ug/L micrograms per litre

ppm Parts per million

ppb Parts per billion

% Percentage

org/100mL Organisms per 100 millilitres

NTU Nephelometric Turbidity Units

MPN/100mL Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6 2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	112			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	84			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	91			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	91			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	88			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	89			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	91			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	87			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	93			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	113			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	79			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	93			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	100			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	97			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	83			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	91			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	90			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	78			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	76			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	77			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	83			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	75			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	78			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	89			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	80			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	62			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	86			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	102			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	80			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	97			50-150	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

[redacted] Analytical Services Manager
[redacted] Senior Analyst-PFAS (VIC)

[redacted]
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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eurofins | Environment Testing

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Australia

Melbourne [redacted]
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney [redacted]
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane [redacted]
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth [redacted]
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle [redacted]
Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

New Zealand

Auckland [redacted]
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch [redacted]
Phone : 0800 856 450
IANZ # 1290

Company Name: [redacted]
Address: [redacted]

Project Name: PO7
Project ID: NSW_0906_PFASC

Order No.:
Report #: 792804
Phone: [redacted]
Fax: [redacted]

Received: May 7, 2021 1:27 PM
Due: May 11, 2021
Priority: 2 Day
Contact Name: -[redacted])

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271						X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
Mayfield Laboratory - NATA Site # 25079						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC207_20210428	Apr 28, 2021		Water	M21-My08002	X
Test Counts						1

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Australia

Melbourne
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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

Perth
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Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle
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Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

New Zealand

Auckland
[redacted]
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
[redacted]
Phone : 0800 856 450
IANZ # 1290

Sample Receipt Advice

Company name:	[redacted]
Contact name:	[redacted]
Project name:	PO7
Project ID:	NSW_0906_PFASC
Turnaround time:	2 Day
Date/Time received	May 7, 2021 1:27 PM
Eurofins reference	792804

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Sample QC208 not received by ALS. Sample QC104 is duplicated on COC and remains at ALS.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted] on phone : or by [redacted]

Results will be delivered electronically via email to - INVOICES (GEOTECH) - [redacted]

Note: A copy of these results will also be delivered to the general Cardno (NSW/ACT) Pty Ltd email address.

Global Leader - Results you can trust

Cardno

Updated CoC

Eurofins

Chain of Custody

PM Name: [redacted]

[redacted]

Address: [redacted]

PM Email: [redacted]

Project Number: NSW_0908_PFASC Site: PO7

Laboratory (name, phone, & contact person):
ALS

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/Ice Bricks	EP231X - PFAS Standard	HOLD	Forward to Eurofins	Please amend Sample IDs as follows	Please send to Eurofins
1	0906_MW244_20210420		2 x 50ml plastic	20/04/2021			1				1				
2	0906_MW245_20210420		2 x 50ml plastic	20/04/2021			1				1				
3	0906_MW240_20210420		2 x 50ml plastic	20/04/2021			1				1				
4	0906_MW254_20210420		2 x 50ml plastic	20/04/2021			1				1				
5	0906_MW253_20210420		2 x 50ml plastic	20/04/2021			1				1				
6	0906_MW246_20210420		2 x 50ml plastic	20/04/2021			1				1				
7	0906_SW294_20210420		2 x 50ml plastic	20/04/2021				1			1				
8	0906_SW218_20210420		2 x 50ml plastic	20/04/2021				1			1				
9	0906_SW206_20210420		2 x 50ml plastic	20/04/2021				1			1				
10	0906_SW234_20210420		2 x 50ml plastic	20/04/2021				1			1				
x 11	0906_SW281_20210420		2 x 50ml plastic	20/04/2021				1			1			* 0906_SW216_20210420 on bottles	
12	0906_SW282_20210420		2 x 50ml plastic	20/04/2021				1			1				
13	0906_SW310_20210421		2 x 50ml plastic	21/04/2021				1			1				
14	0906_SW236_20210422		2 x 50ml plastic	22/04/2021				1			1				
15	0906_SW240_20210422		2 x 50ml plastic	22/04/2021				1			1				
16	0906_SW288_20210422		2 x 50ml plastic	22/04/2021				1			1				
17	0906_MW255_20210422		2 x 50ml plastic	22/04/2021			1				1				
18	0906_MW256_20210422		2 x 50ml plastic	22/04/2021			1				1				
19	0906_SW212_20210423		2 x 50ml plastic	23/04/2021				1			1				
20	0906_MW247_20210427		2 x 50ml plastic	27/04/2021			1				1				
21	0906_MW248_20210427		2 x 50ml plastic	27/04/2021			1				1				
22	0906_SW228_20210427		2 x 50ml plastic	27/04/2021				1			1				
23	0906_SW288_20210427		2 x 50ml plastic	27/04/2021				1			1				
24	0906_SW289_20210427		2 x 50ml plastic	27/04/2021				1			1				
25	0906_MW250_20210428		2 x 50ml plastic	28/04/2021			1				1				
26	0906_MW249_20210428		2 x 50ml plastic	28/04/2021			1				1				
27	0906_QC104_20210421		2 x 50ml plastic	21/04/2021				1			1				
*	0906_QC104_20210421		2 x 50ml plastic	21/04/2021				1					1	* Duplicate ID	
28	0906_QC107_20210428		2 x 50ml plastic	28/04/2021			1				1				
—	0906_QC207_20210428		2 x 50ml plastic	28/04/2021			1						1		
29	0906_QC108_20210428		2 x 50ml plastic	28/04/2021			1				1				
*	0906_QC208_20210428		2 x 50ml plastic	28/04/2021			1						1	* Sample not received	
30	0906_MW250_20210421		2 x 50ml plastic	21/04/2021								1			
31	0906_MW249_20210421		2 x 50ml plastic	21/04/2021								1			

	Comments	
32	0906_MW213_20210420	
33	0906-MW249-20210420	Extra Samples
34	0906-MW255-20210421	
35	0906-MW308-20210421	
36	0906-MW304-20210421	
37	0906-QC101-20210421	
38	0906-QC201-20210421	
39	0906-QC204-20210421	

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. Sampler name: Jake Ludlow / Callan Lake Date: 26/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
[redacted]					
[redacted]	03/05/21	4:40pm			

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 day: Please circle

Revision 1
Approved 23 May 2013

Page of

DEF19008_E3_GWM-SWM_PO7_Wagga_Council.xls

Printed 30/04/2021

Environmental Division
Sydney
Work Order Reference
ES2116333

Telephone - 61-2-8784 8555

R

7928041
Nik M

Subcon / Forward Lab / Split WO:
Lab / Analysis: Eurofins
Organised By / Date: 0906-QC207-20210428
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

RE: DEF19008 - SRAs (NSW_0906_PFASC)

[redacted]

Fri 7/05/2021 1:27 PM

[redacted]

Please add analysis to both 792803 and 792804.
For 792804, also amend the sample ID to *0906_QC207_20210428.*

Cheers,

[redacted]

SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno

[redacted]

CONNECT WITH CARDNO

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Cardno's management systems are certified to ISO9001 (quality) and AS4801/OHSAS18001 (occupational health and safety)

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[redacted]

Not a problem [redacted] I will need to chase up with Sample Receipt as to what has happened here.

Can you confirm which report needs the analysis added to it?

Kind regards,

[redacted]

[redacted]

EXTERNAL EMAIL*

[redacted]

The attached SRA indicate that the samples were received on 3 May – why were the SRAs sent out after COB on 5 May?

Can you please schedule all the samples for analysis of Per- and Polyfluoroalkyl Substances (PFASs)?
2 day TAT please.
Also, can the sample ID for *0906_QC207* be amended to *0906_QC207_20210428*?

Cheers,

[redacted]
SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno

[redacted]

[redacted]

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Cardno Updated COC

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]

Phone [redacted] Fax: [redacted] Mobile: [redacted]

Address: L[redacted], 3000

PM Email: [redacted]

Project Number: NSW_0906_PFASOMP Site: PO6

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD			Please amend Sample IDs as follows	Please send to Eurofins
					Sample Matrix				Sample preservation				Analysis				Comments	
0906_MW235_20210420		2 x 50ml plastic	20/04/2021			1							1					

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. Sampler name: Jake Ludlow / Callum Laker Date: 26/29/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Revision 1
Approved 23 May 2013

Page of

DEF19008_E3_GWM-SWM_PO6_Smellie.xls

Printed 30/04/2021

Environmental Division
Sydney
Work Order Reference
ES2115488

Telephone : +61-2-8784 8555

Cardno

74

Chain of Custody

Sheet ____ of

PM Name: [redacted]
Phone: [redacted] Mobile: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_0008_PFAS Site:
Laboratory (name, phone, & contact person): ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface water	QC	Sample preservation: Ice/Ice bricks	EP231X - PFAS Standard	HOLD	Comments: Please amend Samples IDs as follows	Please send to Eurofins
0008_MW244_20210428		2 x 50ml plastic	28/04/2021			1					1		
0008_MW246_20210429		2 x 50ml plastic	29/04/2021			1					1		
0008_MW249_20210428		2 x 50ml plastic	28/04/2021			1					1		
0008_MW310_20210428		2 x 50ml plastic	28/04/2021			1					1		
0008_MW236_20210429		2 x 50ml plastic	29/04/2021			1					1		
0008_MW249_20210429		2 x 50ml plastic	29/04/2021			1					1		
0008_MW254_20210429		2 x 50ml plastic	29/04/2021			1					1		
0008_MW253_20210429		2 x 50ml plastic	29/04/2021			1					1		
0008_MW245_20210429		2 x 50ml plastic	29/04/2021			1					1		
0008_SW304_20210429		2 x 60ml plastic	29/04/2021				1				1		
0008_SW309_20210429		2 x 60ml plastic	29/04/2021				1				1		
0008_SW218_20210429		2 x 60ml plastic	29/04/2021				1				1		
0008_SW206_20210429		2 x 60ml plastic	29/04/2021				1				1		
0008_SW234_20210429		2 x 60ml plastic	29/04/2021				1				1		
0008_MW213_20210429		2 x 50ml plastic	29/04/2021			1					1		
0008_MW211_20210429		2 x 50ml plastic	29/04/2021			1					1		
0008_SW216_20210429		2 x 60ml plastic	29/04/2021				1				1		
0008_SW262_20210429		2 x 60ml plastic	29/04/2021				1				1		
0008_QC301_20210429		2 x 50ml plastic	29/04/2021					1			1		
0008_QC302_20210429		2 x 50ml plastic	29/04/2021					1			1		
0008_QC201_20210429		2 x 50ml plastic	29/04/2021					1			1		
0008_QC202_20210429		2 x 50ml plastic	29/04/2021					1			1		
0008_MW213_20210421		2 x 50ml plastic	21/04/2021			1					1		
0008_SW310_20210421		2 x 60ml plastic	21/04/2021				1				1		
0008_MW258_20210421		2 x 50ml plastic	21/04/2021			1					1		
0008_MW248_20210421		2 x 50ml plastic	21/04/2021			1					1		
0008_MW302_20210421		2 x 50ml plastic	21/04/2021			1					1		
0008_MW309_20210421		2 x 50ml plastic	21/04/2021			1					1		
0008_MW300_20210421		2 x 50ml plastic	21/04/2021			1					1		
0008_SW124_20210421		2 x 60ml plastic	21/04/2021				1				1		
0008_MW308_20210421		2 x 50ml plastic	21/04/2021			1					1		
0008_QC101_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC201_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC102_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC202_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC104_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC204_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC303_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC304_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC103_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC104_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_SW238_20210422		2 x 60ml plastic	22/04/2021				1				1		
0008_SW240_20210422		2 x 60ml plastic	22/04/2021				1				1		
0008_SW256_20210422		2 x 60ml plastic	22/04/2021				1				1		
0008_MW209_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW233_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW244_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW242_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW251_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW252_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW295_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW296_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW300_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW306_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW308_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW310_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_QC105_20210422		2 x 50ml plastic	22/04/2021					1			1		
0008_QC205_20210422		2 x 50ml plastic	22/04/2021					1			1		
0008_QC306_20210422		2 x 50ml plastic	22/04/2021					1			1		
0008_QC206_20210422		2 x 50ml plastic	22/04/2021					1			1		
0008_QC505_20210422		2 x 50ml plastic	22/04/2021					1			1		
0008_QC506_20210422		2 x 50ml plastic	22/04/2021					1			1		
0008_MW233_20210423		2 x 50ml plastic	23/04/2021			1					1		
0008_MW243_20210423		2 x 50ml plastic	23/04/2021			1					1		
0008_MW238_20210423		2 x 50ml plastic	23/04/2021			1					1		
0008_MW214_20210423		2 x 50ml plastic	23/04/2021			1					1		
0008_MW218_20210423		2 x 50ml plastic	23/04/2021			1					1		
0008_SW212_20210423		2 x 60ml plastic	23/04/2021				1				1		
0008_QC108_20210423		2 x 50ml plastic	23/04/2021					1			1		
0008_QC208_20210423		2 x 50ml plastic	23/04/2021					1			1		
0008_QC308_20210423		2 x 50ml plastic	23/04/2021					1			1		
0008_QC308_20210423		2 x 50ml plastic	23/04/2021					1			1		
0008_QC508_20210423		2 x 50ml plastic	23/04/2021					1			1		
0008_QC508_20210423		2 x 50ml plastic	23/04/2021					1			1		

Samples: Please check the proper field sampling procedures were used during the collection of these samples.

Sampler name: Taken, chilled — Date: 28/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days)

Please circle

rec: Fri 27/4/21 10:20

Page ____ of ____

Revision 1
Approved 23 May 2013

DEF16008_E3_GWM-SWM_HOLDCOC_v1.xls

Printed 27/04/2021

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2115488**	Page	: 1 of 5
Client	: **CARDNO VICTORIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: +61 03 8415 7777	Telephone	: + [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021 10:20
Order number	: ----	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ----	Issue Date	: 10-May-2021 09:22
Sampler	: [redacted]		
Site	: PO6		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

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

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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 ini ial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW235_20210420	----	----	----	----
				Sampling date / time	20-Apr-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2115488-001	--------	--------	--------	--------
					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	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW235_20210420	----	----	----	----
				Sampling date / time	20-Apr-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2115488-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
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	%		**87.4**	----	----	----	----
13C8-PFOA	----	0.02	%		**95.2**	----	----	----	----

Surrogate Control Limits

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

Cardno   Updated COC

Chain of Custody

PM Name: [redacted]
Phone [redacted] Fax: [redacted] Mobile: [redacted]
Address [redacted]
PM Emai [redacted]
Project Number: NSW_0906_PFASC Site: PO1
Laboratory (name, phone, & contact person):
ALS

Environmental Division
Sydney
Work Order Reference
ES2116296

Telephone : + 61-2-8784 8555

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	QC	Sample preservation: Ice/ Ice Bricks				Analysis: EP231X - PFAS Standard	HOLD			Comments: Please amend Sample IDs as follows	Please send to Eurofins
1	0906_MW200_20210423		2 x 50ml plastic	23/04/2021			1							1					
2	0906_MW204_20210423		2 x 50ml plastic	23/04/2021			1							1					

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples.			Sampler name: Jake Ludlow / Callum Laker		Date: 29/04/2021		
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date			Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date			Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date			Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 day Please circle

Page of

Cardno

Chain of Custody

PM Name: [redacted]
Phone [redacted]
Address [redacted]
PM Ema [redacted]
Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling		Sample Matrix					Sample preservation				Analysis				Comments	
			Date	Time	Sediment	Groundwater	Surface Water	QC		Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD			Please amend Sample IDs as follows	Please send to Eurofins
0906_MW200_20210423		2 x 50ml plastic	23/04/2021			1									1				
0906_MW204_20210423		2 x 50ml plastic	23/04/2021			1									1				
0906_MW214_20210427		2 x 50ml plastic	27/04/2021			1									1				
0906_MW247_20210427		2 x 50ml plastic	27/04/2021			1									1				
0906_MW248_20210427		2 x 50ml plastic	27/04/2021			1									1				
0906_SW228_20210427		2 x 50ml plastic	27/04/2021				1								1				
0906_SW288_20210427		2 x 50ml plastic	27/04/2021				1								1				
0906_SW289_20210427		2 x 50ml plastic	27/04/2021				1								1				
0906_QC309_20210427		2 x 50ml plastic	27/04/2021					1							1				
0906_QC509_20210427		2 x 50ml plastic	27/04/2021					1							1				
0906_MW304_20210428		2 x 50ml plastic	28/04/2021			1									1				
0906_MW250_20210428		2 x 50ml plastic	28/04/2021			1									1				
0906_MW249_20210428		2 x 50ml plastic	28/04/2021			1									1				
0906_QC107_20210428		2 x 50ml plastic	28/04/2021					1							1				
0906_QC207_20210428		2 x 50ml plastic	28/04/2021					1							1				
0906_QC108_20210428		2 x 50ml plastic	28/04/2021					1							1				
0906_QC310_20210428		2 x 50ml plastic	28/04/2021					1							1				

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** Callum Laker Date: 30/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
[redacted]			[redacted]	30/4/21	7pm

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

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Revision 1
Approved 23 May 2013

DEF19008_E3_GWM-SWM_HOLDCOC_v2.xls

Printed 30/04/2021

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2116296**	Page	: 1 of 5
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 30-Apr-2021 19:00
Order number	: ----	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ----	Issue Date	: 10-May-2021 13:53
Sampler	[redacted]		
Site	: PO1		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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- Analytical Results
- Surrogate Control Limits

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Signatories

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

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

General Comments

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

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^ = 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.

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- 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 ini ial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW200_20210423	0906_MW204_20210423	----	----	----
				Sampling date / time	23-Apr-2021 00:00	23-Apr-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2116296-001	ES2116296-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.14**	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.15**	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**1.00**	<0.02	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.39**	<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		**0.05**	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307 24 4	0.02	µg/L		**0.24**	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.03**	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335 67 1	0.01	µg/L		**0.04**	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335 76 2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW200_20210423	0906_MW204_20210423	----	----	----
				Sampling date / time	23-Apr-2021 00:00	23-Apr-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2116296-001	ES2116296-002	--------	--------	--------
					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		**2.04**	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**1.39**	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.89**	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**84.5**	**83.2**	----	----	----
13C8-PFOA	----	0.02	%		**97.1**	**97.3**	----	----	----

Surrogate Control Limits

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

Cardno

Updated COC

Chain of Custody

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_0906_PFASC Site: PO5
Laboratory (name, phone, & contact person):
ALS

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks	EP231X - PFAS Standard	HOLD	Please amend Sample IDs as follows	Please send to Eurofins
1	0906_MW233_20210422		2 x 50ml plastic	22/04/2021			1				1			

Sample Matrix | Sample preservation | Analysis | Comments

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** Jake Ludlow / Callum Laker Date: 28/29/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 day Please circle

Environmental Division
Sydney
Work Order Reference
ES2116319

Telephone : +61-2-8784 8555

Cardno

Chain of Custody

Sheet of

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_0906_PFAS Site:
Laboratory (Name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Soil/Sand	Groundwater	Surface Water	QC	Sample preservation: Ice/ Ice Bricks				Analysis: EP231X - PFAS Standard	HOLD			Comments: Please amend Sample IDs as follows	Please send to Eurofins
0906_MW244_20210429		2 x 60ml plastic	29/04/2021			1								1				
0906_MW245_20210429		2 x 60ml plastic	29/04/2021			1								1				
0906_MW248_20210429		2 x 60ml plastic	29/04/2021			1								1				
0906_MW312_20210429		2 x 60ml plastic	29/04/2021			1								1				
0906_MW235_20210429		2 x 60ml plastic	29/04/2021			1								1				
0906_MW349_20210429		2 x 60ml plastic	29/04/2021			1								1				
0906_MW354_20210429		2 x 60ml plastic	29/04/2021			1								1				
0906_MW253_20210429		2 x 60ml plastic	29/04/2021			1								1				
0906_MW246_20210429		2 x 60ml plastic	29/04/2021			1								1				
0906_SW206_20210429		2 x 60ml plastic	29/04/2021				1							1				
0906_SW309_20210429		2 x 60ml plastic	29/04/2021				1							1				
0906_SW218_20210429		2 x 60ml plastic	29/04/2021				1							1				
0906_SW306_20210429		2 x 60ml plastic	29/04/2021				1							1				
0906_SW234_20210429		2 x 60ml plastic	29/04/2021				1							1				
0906_MW313_20210429		2 x 60ml plastic	29/04/2021		1									1				
0906_MW311_20210429		2 x 60ml plastic	29/04/2021		1									1				
0906_SW216_20210429		2 x 60ml plastic	29/04/2021				1							1				
0906_SW207_20210429		2 x 60ml plastic	29/04/2021				1							1				
0906_QC581_20210429		2 x 60ml plastic	29/04/2021					1						1				
0906_QC582_20210429		2 x 60ml plastic	29/04/2021					1						1				
0906_QC583_20210429		2 x 60ml plastic	29/04/2021					1						1				
0906_QC584_20210429		2 x 60ml plastic	29/04/2021					1						1				
0906_MW213_20210421		2 x 60ml plastic	21/04/2021		1									1				
0906_SW316_20210421		2 x 60ml plastic	21/04/2021				1							1				
0906_MW253_20210421		2 x 60ml plastic	21/04/2021		1									1				
0906_MW249_20210421		2 x 60ml plastic	21/04/2021		1									1				
0906_MW302_20210421		2 x 60ml plastic	21/04/2021		1									1				
0906_MW309_20210421		2 x 60ml plastic	21/04/2021		1									1				
0906_MW300_20210421		2 x 60ml plastic	21/04/2021		1									1				
0906_SW104_20210421		2 x 60ml plastic	21/04/2021			1								1				
0906_MW308_20210421		2 x 60ml plastic	21/04/2021		1									1				
0906_QC101_20210421		2 x 60ml plastic	21/04/2021					1						1				
0906_QC201_20210421		2 x 60ml plastic	21/04/2021					1						1				
0906_QC102_20210421		2 x 60ml plastic	21/04/2021					1						1				
0906_QC202_20210421		2 x 60ml plastic	21/04/2021					1						1				
0906_QC104_20210421		2 x 60ml plastic	21/04/2021					1						1				
0906_QC204_20210421		2 x 60ml plastic	21/04/2021					1						1				
0906_QC103_20210421		2 x 60ml plastic	21/04/2021					1						1				
0906_QC104_20210421		2 x 60ml plastic	21/04/2021					1						1				
0906_QC503_20210421		2 x 60ml plastic	21/04/2021					1						1				
0906_QC504_20210421		2 x 60ml plastic	21/04/2021					1						1				
0906_SW230_20210422		2 x 60ml plastic	22/04/2021				1							1				
0906_SW240_20210422		2 x 60ml plastic	22/04/2021				1							1				
0906_SW280_20210422		2 x 60ml plastic	22/04/2021				1							1				
0906_MW206_20210422		2 x 60ml plastic	22/04/2021		1									1				
0906_MW233_20210422		2 x 60ml plastic	22/04/2021		1									1				
0906_MW244_20210422		2 x 60ml plastic	22/04/2021		1									1				
0906_MW242_20210422		2 x 60ml plastic	22/04/2021		1									1				
0906_MW251_20210422		2 x 60ml plastic	22/04/2021		1									1				
0906_MW252_20210422		2 x 60ml plastic	22/04/2021		1									1				
0906_MW295_20210422		2 x 60ml plastic	22/04/2021		1									1				
0906_MW296_20210422		2 x 60ml plastic	22/04/2021		1									1				
0906_MW300_20210422		2 x 60ml plastic	22/04/2021		1									1				
0906_MW306_20210422		2 x 60ml plastic	22/04/2021		1									1				
0906_MW305_20210422		2 x 60ml plastic	22/04/2021		1									1				
0906_MW310_20210422		2 x 60ml plastic	22/04/2021		1									1				
0906_QC105_20210422		2 x 60ml plastic	22/04/2021					1						1				
0906_QC106_20210422		2 x 60ml plastic	22/04/2021					1						1				
0906_QC305_20210422		2 x 60ml plastic	22/04/2021					1						1				
0906_QC306_20210422		2 x 60ml plastic	22/04/2021					1						1				
0906_MW231_20210423		2 x 60ml plastic	23/04/2021		1									1				
0906_MW243_20210423		2 x 60ml plastic	23/04/2021		1									1				
0906_MW238_20210423		2 x 60ml plastic	23/04/2021		1									1				
0906_MW234_20210423		2 x 60ml plastic	23/04/2021		1									1				
0906_MW310_20210423		2 x 60ml plastic	23/04/2021		1									1				
0906_SW212_20210423		2 x 60ml plastic	23/04/2021			1								1				
0906_QC105_20210423		2 x 60ml plastic	23/04/2021					1						1				
0906_QC206_20210423		2 x 60ml plastic	23/04/2021					1						1				
0906_QC307_20210423		2 x 60ml plastic	23/04/2021					1						1				
0906_QC308_20210423		2 x 60ml plastic	23/04/2021					1						1				
0906_QC507_20210423		2 x 60ml plastic	23/04/2021					1						1				
0906_QC508_20210423		2 x 60ml plastic	23/04/2021					1						1				

Samples: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: Jake Lidbe Date: 29/4/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

rec. Fri 27/4/21 10:20

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2116319**	Page	: 1 of 5
Client	: **CARDNO VICTORIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: +61 03 8415 7777	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021 10:20
Order number	: ----	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ----	Issue Date	: 10-May-2021 13:53
Sampler	: [redacted]		
Site	: PO5		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

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

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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 ini ial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW233_20210422	----	----	----	----
				Sampling date / time	22-Apr-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2116319-001	--------	--------	--------	--------
					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	0.02	µg/L		**0.21**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.17**	----	----	----	----
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		**0.05**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW233_20210422	----	----	----	----
				Sampling date / time	22-Apr-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2116319-001	--------	--------	--------	--------
					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		**0.47**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.38**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.45**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**83.2**	----	----	----	----
13C8-PFOA	----	0.02	%		**95.4**	----	----	----	----

Surrogate Control Limits

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: ES2116320	Page	: 1 of 5
Client	: CARDNO VICTORIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: +61 03 8415 7777	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021 10:20
Order number	: ---	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ---	Issue Date	: 10-May-2021 13:24
Sampler	: [redacted]		
Site	: PO8		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	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 Contact for details.

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: PFAS results for sample #1 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 ini ial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW241_20210422	0906_MW242_20210422	----	----	----
				Sampling date / time	22-Apr-2021 00:00	22-Apr-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2116320-001	ES2116320-002	--------	--------	--------
					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	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW241_20210422	0906_MW242_20210422	----	----	----
				Sampling date / time	22-Apr-2021 00:00	22-Apr-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2116320-001	ES2116320-002	--------	--------	--------
					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		**0.12**	<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		**0.12**	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.12**	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**82.1**	**87.4**	----	----	----
13C8-PFOA	----	0.02	%		**99.9**	**92.7**	----	----	----

Surrogate Control Limits

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

Cardno

Updated COC

Chain of Custody

PM Name: [redacted]

Phone: [redacted]

Address: [redacted]ne, Vic, 3000

PM Email: [redacted]

Project Number: NSW_0906_PFASC Site: PO8

Laboratory (name, phone, & contact person): ALS

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Sample Matrix: Groundwater	Sample Matrix: Surface Water	Sample Matrix: QC	Sample preservation: Ice/ Ice Bricks	Analysis: EP231X - PFAS Standard	Analysis: HOLD	Comments: Please amend Sample IDs as follows	Comments: Please send to Eurofins
1	0906_MW241_20210422		2 x 50ml plastic	22/04/2021			1				1			
2	0906_MW242_20210422		2 x 50ml plastic	22/04/2021			1				1			

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples. Sampler name: Jane Ludlow / Callum Laker Date: 30/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 day Please circle

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Revision 1

Approved 23 May 2013

DEF19008_E3_GWM-SWM_PO8_Enevers.xls

Environmental Division
Sydney
Work Order Reference
ES2116320

Telephone : + 61-2-8784 8555

Printed 30/04/2021

Cardno

Chain of Custody

Sheet of

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_8905_PFAS-Site:

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Sample Preservation	LP231X - PFAS Standard	PFOLD	Comments: Please amend Sample IDs as follows	Comments: Please send to Cardno
8905_MW044_20210429		2 x 50ml plastic	29/04/2021			1					1		
8905_MW245_20210429		2 x 50ml plastic	29/04/2021			1					1		
8905_MW246_20210429		2 x 50ml plastic	29/04/2021			1					1		
8905_MW247_20210429		2 x 50ml plastic	29/04/2021			1					1		
8905_MW235_20210429		2 x 50ml plastic	29/04/2021			1					1		
8905_MW249_20210429		2 x 50ml plastic	29/04/2021			1					1		
8905_MW254_20210429		2 x 50ml plastic	29/04/2021			1					1		
8905_MW253_20210429		2 x 50ml plastic	29/04/2021			1					1		
8905_MW248_20210429		2 x 50ml plastic	29/04/2021			1					1		
8905_SW204_20210429		2 x 50ml plastic	29/04/2021				1				1		
8905_SW209_20210429		2 x 50ml plastic	29/04/2021				1				1		
8905_SW218_20210429		2 x 50ml plastic	29/04/2021				1				1		
8905_SW205_20210429		2 x 50ml plastic	29/04/2021				1				1		
8905_SW234_20210429		2 x 50ml plastic	29/04/2021				1				1		
8905_MW213_20210429		2 x 50ml plastic	29/04/2021			1					1		
8905_MW211_20210429		2 x 50ml plastic	29/04/2021			1					1		
8905_SW236_20210429		2 x 50ml plastic	29/04/2021				1				1		
8905_SW262_20210429		2 x 50ml plastic	29/04/2021				1				1		
8905_QC581_20210429		2 x 50ml plastic	29/04/2021					1			1		
8905_QC582_20210429		2 x 50ml plastic	29/04/2021					1			1		
8905_QC583_20210429		2 x 50ml plastic	29/04/2021					1			1		
8905_MW313_20210421		2 x 50ml plastic	21/04/2021		1						1		
8905_SW316_20210421		2 x 50ml plastic	21/04/2021				1				1		
8905_MW253_20210421		2 x 50ml plastic	21/04/2021		1						1		
8905_MW249_20210421		2 x 50ml plastic	21/04/2021		1						1		
8905_MW307_20210421		2 x 50ml plastic	21/04/2021		1						1		
8905_MW309_20210421		2 x 50ml plastic	21/04/2021		1						1		
8905_MW308_20210421		2 x 50ml plastic	21/04/2021		1						1		
8905_SW304_20210421		2 x 50ml plastic	21/04/2021			1					1		
8905_MW308_20210421		2 x 50ml plastic	21/04/2021		1						1		
8905_QC101_20210421		2 x 50ml plastic	21/04/2021					1			1		
8905_QC101_20210421		2 x 50ml plastic	21/04/2021					1			1		
8905_QC102_20210421		2 x 50ml plastic	21/04/2021					1			1		
8905_QC102_20210421		2 x 50ml plastic	21/04/2021					1			1		
8905_QC104_20210421		2 x 50ml plastic	21/04/2021					1			1		
8905_QC204_20210421		2 x 50ml plastic	21/04/2021					1			1		
8905_QC203_20210421		2 x 50ml plastic	21/04/2021					1			1		
8905_QC304_20210421		2 x 50ml plastic	21/04/2021					1			1		
8905_QC303_20210421		2 x 50ml plastic	21/04/2021					1			1		
8905_QC504_20210421		2 x 50ml plastic	21/04/2021					1			1		
8905_SW226_20210422		2 x 50ml plastic	22/04/2021				1				1		
8905_SW240_20210422		2 x 50ml plastic	22/04/2021				1				1		
8905_SW206_20210422		2 x 50ml plastic	22/04/2021				1				1		
8905_MW099_20210422		2 x 50ml plastic	22/04/2021		1						1		
8905_MW233_20210422		2 x 50ml plastic	22/04/2021		1						1		
8905_MW244_20210422		2 x 50ml plastic	22/04/2021		1						1		
8905_MW242_20210422		2 x 50ml plastic	22/04/2021		1						1		
8905_MW251_20210422		2 x 50ml plastic	22/04/2021		1						1		
8905_MW252_20210422		2 x 50ml plastic	22/04/2021		1						1		
8905_MW255_20210422		2 x 50ml plastic	22/04/2021		1						1		
8905_MW256_20210422		2 x 50ml plastic	22/04/2021		1						1		
8905_MW306_20210422		2 x 50ml plastic	22/04/2021		1						1		
8905_MW305_20210422		2 x 50ml plastic	22/04/2021		1						1		
8905_MW310_20210422		2 x 50ml plastic	22/04/2021		1						1		
8905_QC105_20210422		2 x 50ml plastic	22/04/2021					1			1		
8905_QC105_20210422		2 x 50ml plastic	22/04/2021					1			1		
8905_QC305_20210422		2 x 50ml plastic	22/04/2021					1			1		
8905_QC305_20210422		2 x 50ml plastic	22/04/2021					1			1		
8905_QC505_20210422		2 x 50ml plastic	22/04/2021					1			1		
8905_QC505_20210422		2 x 50ml plastic	22/04/2021					1			1		
8905_MW231_20210423		2 x 50ml plastic	23/04/2021		1						1		
8905_MW243_20210423		2 x 50ml plastic	23/04/2021		1						1		
8905_MW238_20210423		2 x 50ml plastic	23/04/2021		1						1		
8905_MW234_20210423		2 x 50ml plastic	23/04/2021		1						1		
8905_MW210_20210423		2 x 50ml plastic	23/04/2021		1						1		
8905_SW212_20210423		2 x 50ml plastic	23/04/2021				1				1		
8905_QC106_20210423		2 x 50ml plastic	23/04/2021					1			1		
8905_QC206_20210423		2 x 50ml plastic	23/04/2021					1			1		
8905_QC306_20210423		2 x 50ml plastic	23/04/2021					1			1		
8905_QC506_20210423		2 x 50ml plastic	23/04/2021					1			1		
8905_QC507_20210423		2 x 50ml plastic	23/04/2021					1			1		
8905_QC508_20210423		2 x 50ml plastic	23/04/2021					1			1		

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples

Sample sent: Ice/Coller Date: 27/04/21

	Date	Time		Date	Time
Relinquished by: (print and signature)			Received by: (print and signature)		
Relinquished by: (print and signature)			Received by: (print and signature)		
Relinquished by: (print and signature)			Received by: (print and signature)		

Please supply results electronically in spreadsheet and ESDAT file.

Turn around time: (24 hour/48 hour/3 days/5 days)

Revision 1

Approved 23 May 2013

DEF19008_ES_GWM-SWM_HOLDCOC_v1.xls

rec: FM. 27/4/21

10:20

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Printed 27/04/2021

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2116321**	Page	: 1 of 5
Client	: **CARDNO VICTORIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	[redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021 10:20
Order number	: ----	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ----	Issue Date	: 10-May-2021 13:53
Sampler	: [redacted]		
Site	: PO3		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

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

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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 ini ial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW210_20210423	----	----	----	----
				Sampling date / time	23-Apr-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2116321-001	--------	--------	--------	--------
					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	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW210_20210423	----	----	----	----
				Sampling date / time	23-Apr-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2116321-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
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	%		**82.5**	----	----	----	----
13C8-PFOA	----	0.02	%		**96.1**	----	----	----	----

Surrogate Control Limits

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

Cardno Updated COC

Chain of Custody

Environmental Division Sydney
Work Order Reference
ES2116321

Telephone : + 61-2-8784 8555

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_0906_PFASC Site: PO3
Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	IOC	Icat Ice Bricks	EP231X - PFAS Standard	HOLD	Please amend Sample IDs as follows	Please send to Eurofins
0906_MW210_20210423		2 x 50ml plastic	23/04/2021			1				1			

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples. Sampler name: John Ludlow / Callum Lister Date: 26/29/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 day Please circle

Cardno

Chain of Custody

Sheet of

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_0606_PFAD Site:
Laboratory (name, phone, & contact person): ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Soil Ice Blocks	EP231X: PFAS Standard	HOLD	Comments: Please amend Sample IDs as follows	Please send to Eurofins
0606_MW241_20210420		2 x 50ml plastic	20/04/2021			1					1		
0606_MW245_20210420		2 x 50ml plastic	20/04/2021			1					1		
0606_MW240_20210420		2 x 50ml plastic	20/04/2021			1					1		
0606_MW212_20210420		2 x 50ml plastic	20/04/2021			1					1		
0606_MW235_20210420		2 x 50ml plastic	20/04/2021			1					1		
0606_MW249_20210420		2 x 50ml plastic	20/04/2021			1					1		
0606_MW254_20210420		2 x 50ml plastic	20/04/2021			1					1		
0606_MW253_20210420		2 x 50ml plastic	20/04/2021			1					1		
0606_MW246_20210420		2 x 50ml plastic	20/04/2021			1					1		
0606_SW294_20210420		2 x 50ml plastic	20/04/2021				1				1		
0606_SW306_20210420		2 x 50ml plastic	20/04/2021				1				1		
0606_SW318_20210420		2 x 50ml plastic	20/04/2021				1				1		
0606_SW290_20210420		2 x 50ml plastic	20/04/2021				1				1		
0606_SW234_20210420		2 x 50ml plastic	20/04/2021				1				1		
0606_SW213_20210420		2 x 50ml plastic	20/04/2021		1						1		
0606_MW211_20210420		2 x 50ml plastic	20/04/2021		1						1		
0606_SW216_20210420		2 x 50ml plastic	20/04/2021				1				1		
0606_SW252_20210420		2 x 50ml plastic	20/04/2021				1				1		
0606_QC301_20210420		2 x 50ml plastic	20/04/2021					1			1		
0606_QC302_20210420		2 x 50ml plastic	20/04/2021					1			1		
0606_QC501_20210420		2 x 50ml plastic	20/04/2021					1			1		
0606_QC502_20210420		2 x 50ml plastic	20/04/2021					1			1		
0606_MW213_20210421		2 x 50ml plastic	21/04/2021		1						1		
0606_SW318_20210421		2 x 50ml plastic	21/04/2021				1				1		
0606_MW250_20210421		2 x 50ml plastic	21/04/2021		1						1		
0606_MW249_20210421		2 x 50ml plastic	21/04/2021		1						1		
0606_MW302_20210421		2 x 50ml plastic	21/04/2021		1						1		
0606_MW305_20210421		2 x 50ml plastic	21/04/2021		1						1		
0606_MW300_20210421		2 x 50ml plastic	21/04/2021		1						1		
0606_SW168_20210421		2 x 50ml plastic	21/04/2021			1					1		
0606_MW306_20210421		2 x 50ml plastic	21/04/2021		1						1		
0606_QC101_20210421		2 x 50ml plastic	21/04/2021					1			1		
0606_QC201_20210421		2 x 50ml plastic	21/04/2021					1			1		
0606_QC102_20210421		2 x 50ml plastic	21/04/2021					1			1		
0606_QC202_20210421		2 x 50ml plastic	21/04/2021					1			1		
0606_QC104_20210421		2 x 50ml plastic	21/04/2021					1			1		
0606_QC204_20210421		2 x 50ml plastic	21/04/2021					1			1		
0606_QC303_20210421		2 x 50ml plastic	21/04/2021					1			1		
0606_QC304_20210421		2 x 50ml plastic	21/04/2021					1			1		
0606_QC503_20210421		2 x 50ml plastic	21/04/2021					1			1		
0606_QC504_20210421		2 x 50ml plastic	21/04/2021					1			1		
0606_SW236_20210422		2 x 50ml plastic	22/04/2021			1					1		
0606_SW293_20210422		2 x 50ml plastic	22/04/2021			1					1		
0606_SW288_20210422		2 x 50ml plastic	22/04/2021			1					1		
0606_MW209_20210422		2 x 50ml plastic	22/04/2021		1						1		
0606_MW233_20210422		2 x 50ml plastic	22/04/2021		1						1		
0606_MW244_20210422		2 x 50ml plastic	22/04/2021		1						1		
0606_MW242_20210422		2 x 50ml plastic	22/04/2021		1						1		
0606_MW251_20210422		2 x 50ml plastic	22/04/2021		1						1		
0606_MW252_20210422		2 x 50ml plastic	27/04/2021		1						1		
0606_MW255_20210422		2 x 50ml plastic	22/04/2021		1						1		
0606_MW256_20210422		2 x 50ml plastic	22/04/2021		1						1		
0606_MW222_20210422		2 x 50ml plastic	22/04/2021		1						1		
0606_MW308_20210422		2 x 50ml plastic	22/04/2021		1						1		
0606_MW308_20210422		2 x 50ml plastic	22/04/2021		1						1		
0606_MW316_20210422		2 x 50ml plastic	22/04/2021		1						1		
0606_QC106_20210422		2 x 50ml plastic	22/04/2021					1			1		
0606_QC105_20210422		2 x 50ml plastic	22/04/2021					1			1		
0606_QC305_20210422		2 x 50ml plastic	22/04/2021					1			1		
0606_QC306_20210422		2 x 50ml plastic	27/04/2021					1			1		
0606_QC505_20210422		2 x 50ml plastic	27/04/2021					1			1		
0606_QC506_20210422		2 x 50ml plastic	22/04/2021					1			1		
0606_MW221_20210423		2 x 50ml plastic	23/04/2021		1						1		
0606_MW243_20210423		2 x 50ml plastic	23/04/2021		1						1		
0606_MW238_20210423		2 x 50ml plastic	23/04/2021		1						1		
0606_MW234_20210423		2 x 50ml plastic	23/04/2021		1						1		
0606_MW209_20210423		2 x 50ml plastic	23/04/2021		1						1		
0606_SW212_20210423		2 x 50ml plastic	23/04/2021			1					1		
0606_QC108_20210423		2 x 50ml plastic	23/04/2021					1			1		
0606_QC206_20210423		2 x 50ml plastic	23/04/2021					1			1		
0606_QC307_20210423		2 x 50ml plastic	23/04/2021					1			1		
0606_QC308_20210423		2 x 50ml plastic	23/04/2021					1			1		
0606_QC507_20210423		2 x 50ml plastic	23/04/2021					1			1		
0606_QC508_20210423		2 x 50ml plastic	23/04/2021					1			1		

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples

Sampler Name: Jana Gordon Date: 26/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and LIDAT files

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

rec: Fyns 27/4/21

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Approved 23 May 2013

DEF19008_E3_GWM-SWM_HOLDCOC_v1.xls

10:2

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ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2116324**	Page	: 1 of 5
Amendment	: **1**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021 10:20
Order number	: ----	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ----	Issue Date	: 18-May-2021 14:36
Sampler	: [redacted]		
Site	: PO4		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 6		
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*
Franco Lentini	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 Contact for details.

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (18/05/2021):This report has been amended following client error on COC
- 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 ini ial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW211_20210420	0906_MW212_20210420	0906_SW309_20210420	0906_MW213_20210420	----
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	----
Compound	CAS Number	LOR	Unit		ES2116324-001	ES2116324-002	ES2116324-005	ES2116324-006	--------
					Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
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: WATER (Matrix: WATER)				Sample ID	0906_MW211_20210420	0906_MW212_20210420	0906_SW309_20210420	0906_MW213_20210420	----
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	----
Compound	CAS Number	LOR	Unit		ES2116324-001	ES2116324-002	ES2116324-005	ES2116324-006	--------
					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	%		**80.3**	**85.5**	**80.5**	**82.2**	----
13C8-PFOA	----	0.02	%		**93.8**	**98.5**	**98.0**	**96.7**	----

Surrogate Control Limits

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

- Please see below actions for the extra samples
  - 0906_MW213_20210420 **Please transfer to ES2116324**; EP231X - PFAS Standard
  - 0906_MW249_20210420 HOLD
  - 0906_MW255_20210421 HOLD
  - 0906_MW308_20210421 **Please transfer to ES2116327**; EP231X - PFAS Standard
  - 0906_MW309_20210421 **Please transfer to ES2116327**; EP231X - PFAS Standard
  - 0906_QC101_20210421 HOLD
  - 0906_QC201_20210421 HOLD
  - 0906_QC204_20210421 Send to Eurofins for PFAS analysis as per above

Cheers,

[redacted]

Cardno

[redacted]

CONNECT WITH CARDNO

Environmental Division
Sydney
Work Order Reference
ES2116324

Telephone : + 61-2-8784 8555

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more

Cardno's management systems are certified to ISO9001 (quality) and AS4801/OHSAS18001 (occupational health and safety)

[redacted]

Regarding workorder ES2116333, please note the following:

- 0906_QC104_20210421 is duplicated on the COC. We have only received one sample for this ID which has not been forwarded to Eurofins. Can you please confirm if you would like us to test this sample or forward to Eurofins?
- 0906_QC208_20210428 was not received so it could not be forwarded to Eurofins
- Sample 0906_SW261_20210420 has been labelled as 0906_SW216_20210420
- We have received the below extra samples. Can you please confirm if you would like us to tests these and if so, which tests do you require?
  - 0906_MW213_20210420
  - 0906_MW249_20210420
  - 0906_MW255_20210421
  - 0906_MW308_20210421
  - 0906_MW309_20210421

Cardno

Updated COC

Chain of Custody

PM Name: [redacted]

Address: [redacted]

PM Email: [redacted]

Project Number: NSW_0906_PFASC Site: PO4

Laboratory (name, phone, & contact person):
ALS

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Sample Matrix: Groundwater	Sample Matrix: Surface Water	Sample Matrix: QC	Sample preservation: Ice/ Ice Bricks	Analysis: EP231X - PFAS Standard	Analysis: HOLD	Comments: Please amend Sample IDs as follows	Comments: Please send to Eurofins
1	0906_MW211_20210420		2 x 50ml plastic	20/04/2021			1				1			
2	0906_MW212_20210420		2 x 50ml plastic	20/04/2021			1				1			
3	0906_MW251_20210422		2 x 50ml plastic	22/04/2021			1				1			
4	0906_MW252_20210422		2 x 50ml plastic	22/04/2021			1				1			
5	0906_SW309_20210420		2 x 50ml plastic	20/04/2021				1			1			

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples. Sampler name: Jake Ludlow / Callum Laker Date: 26/29/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days Please circle

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Revision 1
Approved 23 May 2013

[redacted]

Environmental Division
Sydney
Work Order Reference
ES2116324

Telephone : +61-2-8784 8555

Printed 30/04/2021

Cardno

Chain of Custody

Sheet of

SHE Name:	[redacted]
Project:	[redacted]
Address:	[redacted]
PM Email:	[redacted]
Project Number: NSW_0006_PFAS Site1	
Laboratory (Name, phone, & contact person): ALS	

Sample ID	Laboratory ID	Container	Sampled Date	Sampled Time	Sample Matrix: Soil/Solids	Groundwater	Surface Water	QC	Sample preservation: Ice/Ice Bricks	Analysis: EP231X - PFAS Standard	HOLD	Comments: Please amend Sample IDs as follows	Please send to Cardno
0006_MW224_20210420		2 x 50ml plastic	20/04/2021			1					1		
0006_MW245_20210420		2 x 50ml plastic	20/04/2021			1					1		
0006_MW246_20210420		2 x 50ml plastic	20/04/2021			1					1		
0006_MW212_20210420		2 x 50ml plastic	20/04/2021			1					1		
0006_MW235_20210420		2 x 50ml plastic	20/04/2021			1					1		
0006_MW249_20210420		2 x 50ml plastic	20/04/2021			1					1		
0006_MW264_20210420		2 x 50ml plastic	20/04/2021			1					1		
0006_MW253_20210420		2 x 50ml plastic	20/04/2021			1					1		
0006_MW248_20210420		2 x 50ml plastic	20/04/2021			1					1		
0006_SW264_20210420		2 x 50ml plastic	20/04/2021				1				1		
0006_SW303_20210420		2 x 50ml plastic	20/04/2021				1				1		
0006_SW218_20210420		2 x 50ml plastic	20/04/2021				1				1		
0006_SW206_20210420		2 x 50ml plastic	20/04/2021				1				1		
0006_SW234_20210420		2 x 50ml plastic	20/04/2021				1				1		
0006_SW213_20210420		2 x 50ml plastic	20/04/2021			1					1		
0006_MW211_20210420		2 x 50ml plastic	20/04/2021			1					1		
0006_SW216_20210420		2 x 50ml plastic	20/04/2021				1				1		
0006_SW260_20210420		2 x 50ml plastic	20/04/2021				1				1		
0006_QC301_20210420		2 x 50ml plastic	20/04/2021					1			1		
0006_QC302_20210420		2 x 50ml plastic	20/04/2021					1			1		
0006_QC501_20210420		2 x 50ml plastic	20/04/2021					1			1		
0006_QC502_20210420		2 x 50ml plastic	20/04/2021					1			1		
0006_MW215_20210421		2 x 50ml plastic	21/04/2021			1					1		
0006_SW218_20210421		2 x 50ml plastic	21/04/2021				1				1		
0006_MW256_20210421		2 x 50ml plastic	21/04/2021			1					1		
0006_MW249_20210421		2 x 50ml plastic	21/04/2021			1					1		
0006_MW302_20210421		2 x 50ml plastic	21/04/2021			1					1		
0006_SW306_20210421		2 x 50ml plastic	21/04/2021			1					1		
0006_SW305_20210421		2 x 50ml plastic	21/04/2021			1					1		
0006_SW104_20210421		2 x 50ml plastic	21/04/2021				1				1		
0006_MW208_20210421		2 x 50ml plastic	21/04/2021			1					1		
0006_QC301_20210421		2 x 50ml plastic	21/04/2021					1			1		
0006_QC201_20210421		2 x 50ml plastic	21/04/2021					1			1		
0006_QC102_20210421		2 x 50ml plastic	21/04/2021					1			1		
0006_QC202_20210421		2 x 50ml plastic	21/04/2021					1			1		
0006_QC104_20210421		2 x 50ml plastic	21/04/2021					1			1		
0006_QC204_20210421		2 x 50ml plastic	21/04/2021					1			1		
0006_QC203_20210421		2 x 50ml plastic	21/04/2021					1			1		
0006_QC304_20210421		2 x 50ml plastic	21/04/2021					1			1		
0006_QC503_20210421		2 x 50ml plastic	21/04/2021					1			1		
0006_QC504_20210421		2 x 50ml plastic	21/04/2021					1			1		
0006_SW236_20210422		2 x 50ml plastic	22/04/2021				1				1		
0006_SW240_20210422		2 x 50ml plastic	22/04/2021				1				1		
0006_SW250_20210422		2 x 50ml plastic	22/04/2021				1				1		
0006_MW209_20210422		2 x 50ml plastic	22/04/2021			1					1		
0006_MW223_20210422		2 x 50ml plastic	22/04/2021			1					1		
0006_MW244_20210422		2 x 50ml plastic	22/04/2021			1					1		
0006_MW242_20210422		2 x 50ml plastic	22/04/2021			1					1		
0006_SW254_20210422		2 x 50ml plastic	22/04/2021			1					1		
0006_SW252_20210422		2 x 50ml plastic	22/04/2021			1					1		
0006_SW255_20210422		2 x 50ml plastic	22/04/2021			1					1		
0006_MW258_20210422		2 x 50ml plastic	22/04/2021			1					1		
0006_MW306_20210422		2 x 50ml plastic	22/04/2021			1					1		
0006_MW304_20210422		2 x 50ml plastic	22/04/2021			1					1		
0006_MW308_20210422		2 x 50ml plastic	22/04/2021			1					1		
0006_MW309_20210422		2 x 50ml plastic	22/04/2021			1					1		
0006_QC105_20210422		2 x 50ml plastic	22/04/2021					1			1		
0006_QC205_20210422		2 x 50ml plastic	22/04/2021					1			1		
0006_QC306_20210422		2 x 50ml plastic	22/04/2021					1			1		
0006_QC505_20210422		2 x 50ml plastic	22/04/2021					1			1		
0006_QC506_20210422		2 x 50ml plastic	22/04/2021					1			1		
0006_MW231_20210423		2 x 50ml plastic	23/04/2021			1					1		
0006_MW240_20210423		2 x 50ml plastic	23/04/2021			1					1		
0006_MW228_20210423		2 x 50ml plastic	23/04/2021			1					1		
0006_SW234_20210423		2 x 50ml plastic	23/04/2021			1					1		
0006_MW216_20210423		2 x 50ml plastic	23/04/2021			1					1		
0006_SW232_20210423		2 x 50ml plastic	23/04/2021				1				1		
0006_QC306_20210423		2 x 50ml plastic	23/04/2021					1			1		
0006_QC206_20210423		2 x 50ml plastic	23/04/2021					1			1		
0006_QC307_20210423		2 x 50ml plastic	23/04/2021					1			1		
0006_QC308_20210423		2 x 50ml plastic	23/04/2021					1			1		
0006_QC207_20210423		2 x 50ml plastic	23/04/2021					1			1		
0006_QC208_20210423		2 x 50ml plastic	23/04/2021					1			1		

I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: Alex Lothian — Date: 20/04/2021

Relinquished by (print and signature)	Date	Time	Received by (print and signature)	Date	Time	
Relinquished by (print and signature)	Date	Time	Received by (print and signature)	Date	Time	
Relinquished by (print and signature)	Date	Time	Received by (print and signature)	Date	Time	

Please supply results electronically as spreadsheet and ESDAT files

Turn around time: (24 hour/48 hour/3 days/5 days)

Please circle

Revision 1

Approved 23 May 2013

DEF 19006_E3_GWM-SWN_HOLDCOC_v1.xls

Printed 27/04/2021

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: ES2116325	Page	: 1 of 5
Client	: CARDNO VICTORIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: +6138549 9609
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021 10:20
Order number	: ---	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ---	Issue Date	: 10-May-2021 13:53
Sampler	: [redacted]		
Site	: PO2		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	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 Contact for details.

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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 ini ial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW209_20210422	0906_MW231_20210423	0906_MW238_20210423	0906_MW239_20210423	----
				Sampling date / time	22-Apr-2021 00:00	23-Apr-2021 00:00	23-Apr-2021 00:00	23-Apr-2021 00:00	----
Compound	CAS Number	LOR	Unit		ES2116325-001	ES2116325-002	ES2116325-003	ES2116325-004	--------
					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	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
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: WATER (Matrix: WATER)				Sample ID	0906_MW209_20210422	0906_MW231_20210423	0906_MW238_20210423	0906_MW239_20210423	----
				Sampling date / time	22-Apr-2021 00:00	23-Apr-2021 00:00	23-Apr-2021 00:00	23-Apr-2021 00:00	----
Compound	CAS Number	LOR	Unit		ES2116325-001	ES2116325-002	ES2116325-003	ES2116325-004	--------
					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	%		**83.4**	**83.3**	**77.7**	**84.9**	----
13C8-PFOA	----	0.02	%		**98.2**	**100**	**91.8**	**97.2**	----

Surrogate Control Limits

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

Cardno

Updated COC

Chain of Custody

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_0906_PFASC Site: PO2
Laboratory (name, phone, & contact person):
ALS

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	QC	Sample preservation: Ice Bricks	Analysis: EP231X - PFAS Standard	HOLD	Comments: Please amend Sample IDs as follows	Please send to Eurofins
1	0906_MW209_20210422		2 x 50ml plastic	22/04/2021			1				1			
2	0906_MW231_20210423		2 x 50ml plastic	23/04/2021			1				1			
3	0906_MW238_20210423		2 x 50ml plastic	23/04/2021			1				1			
4	0906_MW239_20210423		2 x 50ml plastic	23/04/2021			1				1			

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples. Sampler name: John Lyndow / Callum Lake Date: 26/29/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 day Please circle

Revision 1
Approved 23 May 2013

Page of

DEF 19008_E3_GWM-SWM_PO2_Farley.xls

Printed 30/04/2021

Environmental Division
Sydney
Work Order Reference
ES2116325

Telephone : +61-2-8784 8555

Chain of Custody

Sheet of

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_8000_PFAS Site:
Laboratory (name, phone, & contact person): AES

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	QC	Sample preservation: Ice/ Ice Bricks	EP231X - PFAS Standard	HOLD	Comments: Please amend Sample IDs as follows	Please send to Fyreflex
0008_MW244_20210420		2 x 50ml plastic	20/04/2021			1					1		
0008_MW245_20210420		2 x 50ml plastic	20/04/2021			1					1		
0008_MW240_20210420		2 x 50ml plastic	20/04/2021			1					1		
0008_MW213_20210420		2 x 50ml plastic	20/04/2021			1					1		
0008_MW235_20210420		2 x 50ml plastic	20/04/2021			1					1		
0008_MW219_20210420		2 x 50ml plastic	20/04/2021			1					1		
0008_MW254_20210420		2 x 50ml plastic	20/04/2021			1					1		
0008_MW253_20210420		2 x 50ml plastic	20/04/2021			1					1		
0008_MW246_20210420		2 x 50ml plastic	20/04/2021			1					1		
0008_SW204_20210420		2 x 50ml plastic	20/04/2021				1				1		
0008_SW205_20210420		2 x 50ml plastic	20/04/2021				1				1		
0008_SW206_20210420		2 x 50ml plastic	20/04/2021				1				1		
0008_SW207_20210420		2 x 50ml plastic	20/04/2021				1				1		
0008_SW204_20210420		2 x 50ml plastic	20/04/2021				1				1		
0008_MW233_20210420		2 x 50ml plastic	20/04/2021			1					1		
0008_MW231_20210420		2 x 50ml plastic	20/04/2021			1					1		
0008_SW215_20210420		2 x 50ml plastic	20/04/2021				1				1		
0008_SW202_20210420		2 x 50ml plastic	20/04/2021				1				1		
0008_QC201_20210420		2 x 60ml plastic	20/04/2021					1			1		
0008_QC202_20210420		2 x 60ml plastic	20/04/2021					1			1		
0008_QC203_20210420		2 x 60ml plastic	20/04/2021					1			1		
0008_MW213_20210421		2 x 50ml plastic	21/04/2021			1					1		
0008_GW219_20210421		2 x 50ml plastic	21/04/2021				1				1		
0008_MW250_20210421		2 x 50ml plastic	21/04/2021			1					1		
0008_MW249_20210421		2 x 50ml plastic	21/04/2021			1					1		
0008_MW302_20210421		2 x 50ml plastic	21/04/2021			1					1		
0008_MW309_20210421		2 x 60ml plastic	21/04/2021			1					1		
0008_MW308_20210421		2 x 60ml plastic	21/04/2021			1					1		
0008_SW305_20210421		2 x 50ml plastic	21/04/2021				1				1		
0008_MW308_20210421		2 x 60ml plastic	21/04/2021			1					1		
0008_QC101_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC205_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC102_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC202_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC104_20210421		2 x 60ml plastic	21/04/2021					1			1		
0008_QC204_20210421		2 x 60ml plastic	21/04/2021					1			1		
0008_QC103_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC001_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC003_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_QC004_20210421		2 x 50ml plastic	21/04/2021					1			1		
0008_SW206_20210422		2 x 50ml plastic	22/04/2021				1				1		
0008_SW249_20210422		2 x 50ml plastic	22/04/2021				1				1		
0008_SW209_20210422		2 x 50ml plastic	22/04/2021				1				1		
0008_MW205_20210422		2 x 60ml plastic	22/04/2021			1					1		
0008_MW213_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW244_20210422		2 x 60ml plastic	22/04/2021			1					1		
0008_MW242_20210422		2 x 50ml plastic	22/04/2021			1					1		
8008_MW251_20210422		2 x 50ml plastic	22/04/2021			1					1		
8008_MW252_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW255_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW256_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW255_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW256_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW258_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_MW310_20210422		2 x 50ml plastic	22/04/2021			1					1		
0008_QC105_20210422		2 x 50ml plastic	22/04/2021					1			1		
0008_QC106_20210422		2 x 50ml plastic	22/04/2021					1			1		
0008_QC206_20210422		2 x 50ml plastic	22/04/2021					1			1		
0008_QC305_20210422		2 x 50ml plastic	22/04/2021					1			1		
0008_QC306_20210422		2 x 50ml plastic	22/04/2021					1			1		
0008_MW231_20210423		2 x 60ml plastic	23/04/2021			1					1		
0008_MW243_20210423		2 x 50ml plastic	23/04/2021			1					1		
0008_MW238_20210423		2 x 50ml plastic	23/04/2021			1					1		
8008_MW234_20210423		2 x 50ml plastic	23/04/2021			1					1		
8008_MW210_20210423		2 x 50ml plastic	23/04/2021			1					1		
0008_SW213_20210423		2 x 50ml plastic	23/04/2021				1				1		
0008_QC108_20210423		2 x 50ml plastic	23/04/2021					1			1		
0008_QC208_20210423		2 x 60ml plastic	23/04/2021					1			1		
0008_QC207_20210423		2 x 50ml plastic	23/04/2021					1			1		
0008_QC308_20210423		2 x 50ml plastic	23/04/2021					1			1		
0008_QC007_20210423		2 x 50ml plastic	23/04/2021					1			1		
0008_QC008_20210423		2 x 50ml plastic	23/04/2021					1			1		

Samples Labelled, Sun'ed and Packed according to procedures which could delay the submission of these samples.

Emails sent to: Ada Ludlow Date: 20/04/2021

	Date	Time	Received by: (print and sign/time)	Date	Time
	Date	Time	Received by: (print and signature)	Date	Time
	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and EDIAT files

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Revision 1
Approved 20 May 2013

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2116327**	Page	: 1 of 9
Client	: **CARDNO VICTORIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021 10:20
Order number	: ----	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ----	Issue Date	: 10-May-2021 13:53
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 16		
No. of samples analysed	: 15		

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

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

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- Analytical Results
- Surrogate Control Limits

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Signatories

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

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

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: PFAS results for sample #5 confirmed by re-extraction and re-analysis.
- EP231X: PFAS results for sample #14 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 ini ial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW104_20210421	0906_MW243_20210423	0906_MW214_20210427	0906_MW300_20210422	0906_MW302_20210421
				Sampling date / time	21-Apr-2021 00:00	23-Apr-2021 00:00	27-Apr-2021 00:00	22-Apr-2021 00:00	21-Apr-2021 00:00
					ES2116327-001	ES2116327-002	ES2116327-003	ES2116327-005	ES2116327-006
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.04**	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.02**	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		**0.20**	<0.02	<0.02	**0.03**	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.28**	<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		**0.06**	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.02**	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_SW104_20210421	0906_MW243_20210423	0906_MW214_20210427	0906_MW300_20210422	0906_MW302_20210421
				Sampling date / time	21-Apr-2021 00:00	23-Apr-2021 00:00	27-Apr-2021 00:00	22-Apr-2021 00:00	21-Apr-2021 00:00
Compound	CAS Number	LOR	Unit		ES2116327-001	ES2116327-002	ES2116327-003	ES2116327-005	ES2116327-006
					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		**0.06**	<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		**0.68**	<0.01	<0.01	**0.03**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.48**	<0.01	<0.01	**0.03**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.66**	<0.01	<0.01	**0.03**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**81.4**	**79.9**	**84.4**	**80.1**	**85.0**
13C8-PFOA	----	0.02	%		**94.6**	**94.6**	**99.0**	**95.1**	**98.1**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW304_20210428	0906_MW306_20210422	0906_MW308_20210422	0906_QC102_20210421	0906_QC103_20210421
				Sampling date / time	28-Apr-2021 00:00	22-Apr-2021 00:00	22-Apr-2021 00:00	21-Apr-2021 00:00	21-Apr-2021 00:00
					ES2116327-007	ES2116327-008	ES2116327-009	ES2116327-010	ES2116327-011
					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	**0.03**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.02**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.20**	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	**0.26**	<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	**0.05**	<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	**0.02**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW304_20210428	0906_MW306_20210422	0906_MW308_20210422	0906_QC102_20210421	0906_QC103_20210421
				Sampling date / time	28-Apr-2021 00:00	22-Apr-2021 00:00	22-Apr-2021 00:00	21-Apr-2021 00:00	21-Apr-2021 00:00
					ES2116327-007	ES2116327-008	ES2116327-009	ES2116327-010	ES2116327-011
					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	**0.63**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	**0.46**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	<0.01	**0.61**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**87.7**	**78.1**	**82.8**	**83.0**	**84.0**
13C8-PFOA	----	0.02	%		**97.3**	**94.1**	**98.1**	**95.4**	**98.6**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC106_20210423	0906_QC105_20210422	0906_MW308_20210421	0906_MW309_20210421	0906_MW310_20210422
				Sampling date / time	23-Apr-2021 00:00	22-Apr-2021 00:00	21-Apr-2021 00:00	21-Apr-2021 00:00	22-Apr-2021 00:00
					ES2116327-012	ES2116327-014	ES2116327-015	ES2116327-016	ES2116327-017
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	**0.03**	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	**0.04**	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.03**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	**0.03**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_QC106_20210423	0906_QC105_20210422	0906_MW308_20210421	0906_MW309_20210421	0906_MW310_20210422
				Sampling date / time	23-Apr-2021 00:00	22-Apr-2021 00:00	21-Apr-2021 00:00	21-Apr-2021 00:00	22-Apr-2021 00:00
Compound	CAS Number	LOR	Unit		ES2116327-012	ES2116327-014	ES2116327-015	ES2116327-016	ES2116327-017
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
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	**0.03**	<0.01	**0.10**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.03**	<0.01	**0.04**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.03**	<0.01	**0.10**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**79.2**	**84.1**	**80.1**	**82.5**	**89.6**
13C8-PFOA	----	0.02	%		**97.5**	**96.9**	**94.4**	**98.3**	**100**

Surrogate Control Limits

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

Cardno

Updated COC

5

Chain of Custody

[redacted]

Project Number: NSW_0906_PFAS Site:

Laboratory (name, phone, & contact person):
ALS

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks	EP231X - PFAS Standard	HOLD	Forward to Eurofins	Please amend Sample IDs as follows	Please send to Eurofins
1	0906_SW104_20210421		2 x 50ml plastic	21/04/2021				1			1				
2	0906_MW243_20210423		2 x 50ml plastic	23/04/2021			1				1				
3	0906_MW214_20210427		2 x 50ml plastic	27/04/2021			1				1				
4	0906_MW300_20210421		2 x 50ml plastic	21/04/2021			1					1			
5	0906_MW300_20210422		2 x 50ml plastic	22/04/2021			1				1				
6	0906_MW302_20210421		2 x 50ml plastic	21/04/2021			1				1				
7	0906_MW304_20210428		2 x 50ml plastic	28/04/2021			1				1				
8	0906_MW306_20210422		2 x 50ml plastic	22/04/2021			1				1				
9	0906_MW308_20210422		2 x 50ml plastic	22/04/2021			1				1				
*	0906_MW310_20210422		2 x 50ml plastic	22/04/2021			1				1				
10	0906_QC102_20210421		2 x 50ml plastic	21/04/2021				1			1				
-	0906_QC202_20210421		2 x 50ml plastic	21/04/2021				1					1		
11	0906_QC103_20210421		2 x 50ml plastic	21/04/2021			1				1				
-	0906_QC203_20210421		2 x 50ml plastic	21/04/2021			1						1		
12	0906_QC106_20210423		2 x 50ml plastic	23/04/2021			1					1			
13	0906_QC206_20210423		2 x 50ml plastic	23/04/2021			1					1			
14	0906_QC105_20210422		2 x 50ml plastic	22/04/2021			1				1				
-	0906_QC205_20210422		2 x 50ml plastic	22/04/2021			1						1		

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** Jake Ludlow / Callum Lever Date: 26/26/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days Please circle

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Revision 1
Approved 23 May 2013

DEF19008_E3_GWM-SWM_RAAF_DoD.xls

Printed 30/04/2021

Subcon / Forward Lab / Split WO

Lab / Analysis: Eurofins

Organised By / Date: 0906_QC202_20210421,

Relinquished By / Date: 0906_QC203_20210421,

Connote / Courier: 0906_QC205_20210422

WO No:

Attached By PO / Internal Sheet:

*0906_MW310_20210422 has been logged under ES2116318 on a separate COC provided

Environmental Division
Sydney
Work Order Reference
ES2116327

Telephone : +61-2-8784 8555

? Cardno

Chain of Custody

Sheet of

[redacted]

Project Number: WSW_0008_PFAS Sites

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Soil/Sediment	Sample Matrix: Groundwater	Sample Matrix: Surface Water	Sample Matrix: QC	Sample preservation: Ice Bricks	Analysis: SUITE A - PFAS Standard	Analysis: HOLD	Comments: Please forward Sample Dis as follows	Comments: Please read to Cardno
0008_MW244_20210420		2 x 60ml plastic	20/04/2021			1					1		
0008_MW245_20210420		2 x 60ml plastic	20/04/2021			1					1		
0008_MW246_20210420		2 x 60ml plastic	20/04/2021			1					1		
0008_MW212_20210420		2 x 60ml plastic	20/04/2021			1					1		
0008_MW235_20210420		2 x 60ml plastic	20/04/2021			1					1		
0008_MW249_20210420		2 x 60ml plastic	20/04/2021			1					1		
0008_MW258_20210420		2 x 60ml plastic	20/04/2021			1					1		
0008_MW253_20210420		2 x 60ml plastic	20/04/2021			1					1		
0008_MW248_20210420		2 x 60ml plastic	20/04/2021			1					1		
0008_SW236_20210420		2 x 60ml plastic	20/04/2021				1				1		
0008_SW309_20210420		2 x 60ml plastic	20/04/2021				1				1		
0008_SW308_20210420		2 x 60ml plastic	20/04/2021				1				1		
0008_SW206_20210420		2 x 60ml plastic	20/04/2021				1				1		
0008_SW234_20210420		2 x 60ml plastic	20/04/2021				1				1		
0008_MW213_20210420		2 x 60ml plastic	20/04/2021			1					1		
0008_MW211_20210420		2 x 60ml plastic	20/04/2021			1					1		
0008_SW216_20210420		2 x 60ml plastic	20/04/2021				1				1		
0008_SW202_20210420		2 x 60ml plastic	20/04/2021				1				1		
0008_QC201_20210420		2 x 60ml plastic	20/04/2021					1			1		
0008_QC202_20210420		2 x 60ml plastic	20/04/2021					1			1		
0008_QC501_20210420		2 x 60ml plastic	20/04/2021					1			1		
0008_QC500_20210420		2 x 60ml plastic	20/04/2021					1			1		
0008_MW213_20210421		2 x 60ml plastic	21/04/2021			1					1		
0008_SW339_20210421		2 x 60ml plastic	21/04/2021				1				1		
0008_MW250_20210421		2 x 60ml plastic	21/04/2021			1					1		
0008_MW249_20210421		2 x 60ml plastic	21/04/2021			1					1		
0008_MW260_20210421		2 x 60ml plastic	21/04/2021			1					1		
0008_MW260_20210421		2 x 60ml plastic	21/04/2021			1					1		
0008_MW263_20210421		2 x 60ml plastic	21/04/2021			1					1		
0008_SW164_20210421		2 x 60ml plastic	21/04/2021				1				1		
0008_MW263_20210421		2 x 60ml plastic	21/04/2021			1					1		
0008_QC401_20210421		2 x 60ml plastic	21/04/2021					1			1		
0008_QC201_20210421		2 x 60ml plastic	21/04/2021					1			1		
0008_QC402_20210421		2 x 60ml plastic	21/04/2021					1			1		
0008_QC202_20210421		2 x 60ml plastic	21/04/2021					1			1		
0008_QC404_20210421		2 x 60ml plastic	21/04/2021					1			1		
0008_QC204_20210421		2 x 60ml plastic	21/04/2021					1			1		
0008_QC403_20210421		2 x 60ml plastic	21/04/2021					1			1		
0008_QC203_20210421		2 x 60ml plastic	21/04/2021					1			1		
0008_QC404_20210421		2 x 60ml plastic	21/04/2021					1			1		
0008_SW230_20210422		2 x 60ml plastic	22/04/2021				1				1		
0008_SW240_20210422		2 x 60ml plastic	22/04/2021				1				1		
0008_SW286_20210422		2 x 60ml plastic	22/04/2021				1				1		
0008_MW209_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_MW233_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_MW244_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_MW240_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_MW251_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_MW252_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_MW255_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_MW256_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_MW260_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_MW262_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_MW263_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_SW339_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_MW310_20210422		2 x 60ml plastic	22/04/2021		1						1		
0008_QC105_20210422		2 x 60ml plastic	22/04/2021					1			1		
0008_QC101_20210422		2 x 60ml plastic	22/04/2021					1			1		
0008_QC102_20210422		2 x 60ml plastic	22/04/2021					1			1		
0008_QC105_20210422		2 x 60ml plastic	22/04/2021					1			1		
0008_QC103_20210422		2 x 60ml plastic	22/04/2021					1			1		
0008_MW234_20210423		2 x 60ml plastic	23/04/2021		1						1		
0008_MW243_20210423		2 x 60ml plastic	23/04/2021		1						1		
0008_MW234_20210423		2 x 60ml plastic	23/04/2021		1						1		
0008_MW234_20210423		2 x 60ml plastic	23/04/2021		1						1		
0008_MW210_20210423		2 x 60ml plastic	23/04/2021		1						1		
0008_SW210_20210423		2 x 60ml plastic	23/04/2021			1					1		
0008_QC106_20210423		2 x 60ml plastic	23/04/2021					1			1		
0008_QC206_20210423		2 x 60ml plastic	23/04/2021					1			1		
0008_QC207_20210423		2 x 60ml plastic	23/04/2021					1			1		
0008_QC208_20210423		2 x 60ml plastic	23/04/2021					1			1		
0008_QC207_20210423		2 x 60ml plastic	23/04/2021					1			1		
0008_QC208_20210423		2 x 60ml plastic	23/04/2021					1			1		

Examples: Where and the practice that sampling procedures must exist during the collection of these samples.

Sample name: see below — Date: 27/04/2021

	Date	Time	Received by: (print and sign/date)	Date	Time
Relinquished by: (print and sign/date)					
Relinquished by: (print and sign/date)			Received by: (print and sign/date)		
Relinquished by: (print and sign/date)			Received by: (print and sign/date)		

Please supply results electronically in spreadsheet and ESDAT files

Turn around time: (24 hour/48 hour/3 days/5 days)

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Please circle

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[redacted]

Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks	EP231X - PFAS Standard	HOLD	Please amend Sample IDs as follows	Please send to Eurofins
0906_MW200_20210423		2 x 50ml plastic	23/04/2021			1					1		
0906_MW204_20210423		2 x 50ml plastic	23/04/2021			1					1		
0906_MW214_20210427		2 x 50ml plastic	27/04/2021			1					1		
0906_MW247_20210427		2 x 50ml plastic	27/04/2021			1					1		
0906_MW248_20210427		2 x 50ml plastic	27/04/2021			1					1		
0906_SW228_20210427		2 x 50ml plastic	27/04/2021				1				1		
0906_SW288_20210427		2 x 50ml plastic	27/04/2021				1				1		
0906_SW289_20210427		2 x 50ml plastic	27/04/2021				1				1		
0906_QC309_20210427		2 x 50ml plastic	27/04/2021					1			1		
0906_QC509_20210427		2 x 50ml plastic	27/04/2021					1			1		
0906_MW304_20210428		2 x 50ml plastic	28/04/2021			1					1		
0906_MW250_20210428		2 x 50ml plastic	28/04/2021			1					1		
0906_MW249_20210428		2 x 50ml plastic	28/04/2021			1					1		
0906_QC107_20210428		2 x 50ml plastic	28/04/2021					1			1		
0906_QC207_20210428		2 x 50ml plastic	28/04/2021					1			1		
0906_QC108_20210428		2 x 50ml plastic	28/04/2021					1			1		
0906_QC310_20210428		2 x 50ml plastic	28/04/2021					1			1		

Sample Matrix | Sample preservation | Analysis | Comments

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** Callum Laker Date: 30/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
[redacted]			[redacted]	30/4/21	7pm
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

- Please see below actions for the extra samples
  - 0906_MW213_20210420 **Please transfer to ES2116324**; EP231X - PFAS Standard
  - 0906_MW249_20210420 HOLD
  - 0906_MW255_20210421 HOLD
  - 0906_MW308_20210421 **Please transfer to ES2116327**; EP231X - PFAS Standard
  - 0906_MW309_20210421 **Please transfer to ES2116327**; EP231X - PFAS Standard
  - 0906_QC101_20210421 HOLD
  - 0906_QC201_20210421 HOLD
  - 0906_QC204_20210421 Send to Eurofins for PFAS analysis as per above

Cheers,

[redacted]

Cardno

Environmental Division
Sydney
Work Order Reference
ES2116327

[redacted]

Telephone : + 61-2-8784 8555

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Cardno's management systems are certified to ISO9001 (quality) and AS4801/OHSAS18001 (occupational health and safety)

[redacted]

Regarding workorder ES2116333, please note the following:

- 0906_QC104_20210421 is duplicated on the COC. We have only received one sample for this ID which has not been forwarded to Eurofins. Can you please confirm if you would like us to test this sample or forward to Eurofins?
- 0906_QC208_20210428 was not received so it could not be forwarded to Eurofins
- Sample 0906_SW261_20210420 has been labelled as 0906_SW216_20210420
- We have received the below extra samples. Can you please confirm if you would like us to tests these and if so, which tests do you require?
  - 0906_MW213_20210420
  - 0906_MW249_20210420
  - 0906_MW255_20210421
  - 0906_MW308_20210421
  - 0906_MW309_20210421

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[redacted]
Sent: Tuesday, 4 May 2021 12:29 PM
[redacted]
Subject: [EXTERNAL] - RE: ALS Workorder ES2116327, Project NSW_0906_PFASOMP

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.

[redacted]

Can we please cancel workorder ES2116318 and transfer sample 0906_MW310_20210422 into workorder ES2116327?

Apologies for the stuff around.

Cheers,

[redacted]
SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno

[redacted]

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Environmental Division
Sydney
Work Order Reference
ES2116327

Telephone : +61-2-8784 8555

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From: [redacted]
Sent: Monday, 3 May 2021 4:51 PM
To: [redacted]
Subject: ALS Workorder ES2116327, Project NSW_0906_PFASOMP

[redacted]

Regarding workorder ES2116327, please note that Sample 0906_MW310_20210422 has already been logged under workorder ES2116318 as per separate COC that was provided to us.

Let me know if there are any issues with this.

Kind Regards,

[redacted]
Client Services Officer, Environmental
Sydney

[redacted]

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[redacted]
Sent: Tuesday, 4 May 2021 10:01 AM
[redacted]
Subject: [EXTERNAL] - FW: SRN for ALS Workorder : ES2116327 | Your Reference: NSW_0906_PFASOMP

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.

[redacted]

Can we please request the following amendments to the SRN?

- 0906_QC106_20210423 analysed for EP231X
- 0906_QC206_20210423 forwarded to Eurofins for PFAS analysis

Cheers,

Environmental Division
Sydney
Work Order Reference
ES2116327

Telephone : +61-2-8784 8555

[redacted]
SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno

[redacted]

[redacted]

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[redacted]
Sent: Saturday, 1 May 2021 1:48 PM
[redacted]
Subject: SRN for ALS Workorder : ES2116327 | Your Reference: NSW_0906_PFASOMP

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: ES2116332	Page	: 1 of 11
Client	: CARDNO VICTORIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021 10:20
Order number	: ---	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ---	Issue Date	: 10-May-2021 09:26
Sampler	: [redacted]		
Site	: ---		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 19		
No. of samples analysed	: 17		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

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

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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 ini ial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC301_20210420	0906_QC302_20210420	0906_QC501_20210420	0906_QC502_20210420	0906_QC303_20210421
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	21-Apr-2021 00:00
					ES2116332-001	ES2116332-002	ES2116332-003	ES2116332-004	ES2116332-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC301_20210420	0906_QC302_20210420	0906_QC501_20210420	0906_QC502_20210420	0906_QC303_20210421
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	21-Apr-2021 00:00
					ES2116332-001	ES2116332-002	ES2116332-003	ES2116332-004	ES2116332-005
					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	<0.01	<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	%		**80.8**	**83.5**	**84.7**	**81.9**	**80.5**
13C8-PFOA	----	0.02	%		**94.9**	**96.4**	**96.0**	**96.8**	**96.6**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC304_20210421	0906_QC503_20210421	0906_QC504_20210421	0906_QC305_20210422	0906_QC306_20210422
				Sampling date / time	21-Apr-2021 00:00	21-Apr-2021 00:00	20-Apr-2021 00:00	22-Apr-2021 00:00	22-Apr-2021 00:00
					ES2116332-006	ES2116332-007	ES2116332-008	ES2116332-009	ES2116332-010
					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	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC304_20210421	0906_QC503_20210421	0906_QC504_20210421	0906_QC305_20210422	0906_QC306_20210422
				Sampling date / time	21-Apr-2021 00:00	21-Apr-2021 00:00	20-Apr-2021 00:00	22-Apr-2021 00:00	22-Apr-2021 00:00
					ES2116332-006	ES2116332-007	ES2116332-008	ES2116332-009	ES2116332-010
					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	<0.05	<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	%		**82.7**	**81.9**	**84.7**	**80.8**	**82.0**
13C8-PFOA	----	0.02	%		**91.8**	**93.9**	**99.3**	**90.8**	**97.4**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC505_20210422	0906_QC307_20210423	0906_QC308_20210423	0906_QC507_20210423	0906_QC508_20210423
				Sampling date / time	22-Apr-2021 00:00	23-Apr-2021 00:00	23-Apr-2021 00:00	23-Apr-2021 00:00	20-Apr-2021 00:00
					ES2116332-011	ES2116332-013	ES2116332-014	ES2116332-015	ES2116332-016
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_QC505_20210422	0906_QC307_20210423	0906_QC308_20210423	0906_QC507_20210423	0906_QC508_20210423
				Sampling date / time	22-Apr-2021 00:00	23-Apr-2021 00:00	23-Apr-2021 00:00	23-Apr-2021 00:00	20-Apr-2021 00:00
Compound	CAS Number	LOR	Unit		ES2116332-011	ES2116332-013	ES2116332-014	ES2116332-015	ES2116332-016
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<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	%		**83.4**	**82.9**	**85.9**	**80.3**	**79.4**
13C8-PFOA	----	0.02	%		**97.1**	**93.0**	**100**	**92.7**	**93.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_QC509_20210427	0906_QC310_20210428	----	----	----
				Sampling date / time	20-Apr-2021 00:00	28-Apr-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2116332-018	ES2116332-019	--------	--------	--------
					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	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_QC509_20210427	0906_QC310_20210428	----	----	----
				Sampling date / time	20-Apr-2021 00:00	28-Apr-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2116332-018	ES2116332-019	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**80.4**	**80.0**	----	----	----
13C8-PFOA	----	0.02	%		**95.6**	**97.6**	----	----	----

Surrogate Control Limits

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

Cardno 19 Updated COC

Chain of Custody

Environmental Division
Sydney
Work Order Reference
ES2116332

Telephone : +61-2-8784 8555

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_0906_PFASOMP
Laboratory (name, phone, & contact person):
ALS

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	log/ log Bricks	EP231X - PFAS Standard	HOLD	Please amend Sample IDs as follows	Please send to Eurofins
1	0906_QC301_20210420		2 x 50ml plastic	20/04/2021					1		1			
2	0906_QC302_20210420		2 x 50ml plastic	20/04/2021					1		1			
3	0906_QC501_20210420		2 x 50ml plastic	20/04/2021					1		1			
4	0906_QC502_20210420		2 x 50ml plastic	20/04/2021					1		1			
5	0906_QC303_20210421		2 x 50ml plastic	21/04/2021					1		1			
6	0906_QC304_20210421		2 x 50ml plastic	21/04/2021					1		1			
7	0906_QC503_20210421		2 x 50ml plastic	21/04/2021					1		1			
8	0906_QC504_20210421		2 x 50ml plastic	21/04/2021					1		1			
9	0906_QC305_20210422		2 x 50ml plastic	22/04/2021					1		1			
10	0906_QC306_20210422		2 x 50ml plastic	22/04/2021					1		1			
11	0906_QC505_20210422		2 x 50ml plastic	22/04/2021					1		1			
12	0906_QC506_20210422		2 x 50ml plastic	22/04/2021					1					
13	0906_QC307_20210423		2 x 50ml plastic	23/04/2021					1		1			
14	0906_QC308_20210423		2 x 50ml plastic	23/04/2021					1		1			
15	0906_QC507_20210423		2 x 50ml plastic	23/04/2021					1		1			
16	0906_QC508_20210423		2 x 50ml plastic	23/04/2021					1		1			
17	0906_QC309_20210427		2 x 50ml plastic	27/04/2021					1					
18	0906_QC509_20210427		2 x 50ml plastic	27/04/2021					1		1			
19	0906_QC310_20210428		2 x 50ml plastic	28/04/2021					1		1			

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples. Sampler name: Jake Lucius / Callum Lister Date: 29/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 day Please circle

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Approved 23 May 2013

DEF19008_E3_GWM-SWM_QC.xls

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Sheet of

PM Name:	[redacted]
Phone:	[redacted]
Address:	[redacted]
Site Email:	[redacted]
Project Number: 265W_0906_PP_Ash Bay	
Laboratory (name, phone, & contact person): AL S	

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Sample Matrix: Groundwater	Sample Matrix: Surface Water	Sample Matrix: QC	Sample preservation: Refer to Ethics	Analysis: EP231C - PFAS Standard	Analysis: HOLD	Comments: Preliminary Sample On ice Ethics	Comments: Please send to Sampling
0910_SW244_20210420		2 x 50ml plastic	28/04/2021			1					1		
0930_SW245_20210420		2 x 50ml plastic	28/04/2021			1					1		
0930_MW240_20210420		2 x 50ml plastic	28/04/2021			1					1		
0935_MW212_20210420		2 x 50ml plastic	28/04/2021			1					1		
0935_MW235_20210420		2 x 50ml plastic	28/04/2021			1					1		
0935_MW249_20210420		2 x 50ml plastic	20/04/2021			1					1		
0935_MW114_20210420		2 x 50ml plastic	20/04/2021			1					1		
0935_MW223_20210420		2 x 50ml plastic	20/04/2021			1					1		
0935_MW246_20210420		2 x 50ml plastic	20/04/2021			1					1		
0935_SW204_20210420		2 x 50ml plastic	20/04/2021				1				1		
0935_SW360_20210420		2 x 50ml plastic	20/04/2021				1				1		
0935_SW218_20210420		2 x 50ml plastic	20/04/2021				1				1		
0935_SW308_20210420		2 x 50ml plastic	20/04/2021				1				1		
0935_SW234_20210420		2 x 50ml plastic	20/04/2021				1				1		
0935_MW215_20210420		2 x 50ml plastic	20/04/2021		1						1		
0935_MW211_20210420		2 x 50ml plastic	20/04/2021		1						1		
0935_SW210_20210420		2 x 50ml plastic	20/04/2021				1				1		
0935_SW202_20210420		2 x 50ml plastic	20/04/2021				1				1		
0935_QC301_20210420		2 x 50ml plastic	20/04/2021					1			1		
0935_QC302_20210420		2 x 50ml plastic	20/04/2021					1			1		
0935_QC531_20210420		2 x 50ml plastic	20/04/2021					1			1		
0935_QC532_20210420		2 x 50ml plastic	20/04/2021					1			1		
0930_MW213_20210421		2 x 50ml plastic	21/04/2021		1						1		
0930_SW348_20210421		2 x 50ml plastic	21/04/2021				1				1		
0930_MW250_20210421		2 x 50ml plastic	21/04/2021		1						1		
0930_MW209_20210421		2 x 50ml plastic	21/04/2021		1						1		
0935_MW302_20210421		2 x 50ml plastic	21/04/2021		1						1		
0935_MW350_20210421		2 x 50ml plastic	21/04/2021		1						1		
0935_MW306_20210421		2 x 50ml plastic	21/04/2021		1						1		
0935_SW104_20210421		2 x 50ml plastic	21/04/2021				1				1		
0935_MW106_20210421		2 x 50ml plastic	21/04/2021		1						1		
0935_QC401_20210421		2 x 50ml plastic	21/04/2021					1			1		
0935_QC201_20210421		2 x 50ml plastic	21/04/2021					1			1		
0935_QC402_20210421		2 x 50ml plastic	21/04/2021					1			1		
0935_QC202_20210421		2 x 50ml plastic	21/04/2021					1			1		
0935_QC404_20210421		2 x 50ml plastic	21/04/2021					1			1		
0935_QC204_20210421		2 x 50ml plastic	21/04/2021					1			1		
0935_QC403_20210421		2 x 50ml plastic	21/04/2021					1			1		
0935_QC304_20210421		2 x 50ml plastic	21/04/2021					1			1		
0935_QC503_20210421		2 x 50ml plastic	21/04/2021					1			1		
0935_QC504_20210421		2 x 50ml plastic	21/04/2021					1			1		
0935_SW236_20210422		2 x 50ml plastic	22/04/2021				1				1		
0935_SW240_20210422		2 x 50ml plastic	22/04/2021				1				1		
0935_SW295_20210422		2 x 50ml plastic	22/04/2021				1				1		
0935_MW249_20210422		2 x 50ml plastic	22/04/2021		1						1		
0935_MW233_20210422		2 x 50ml plastic	22/04/2021		1						1		
0935_MW344_20210422		2 x 50ml plastic	22/04/2021		1						1		
0935_MW342_20210422		2 x 50ml plastic	22/04/2021		1						1		
0935_MW251_20210422		2 x 50ml plastic	22/04/2021		1						1		
0935_MW202_20210422		2 x 50ml plastic	22/04/2021		1						1		
0935_MW255_20210422		2 x 50ml plastic	22/04/2021		1						1		
0935_MW206_20210422		2 x 50ml plastic	22/04/2021		1						1		
0935_MW306_20210422		2 x 50ml plastic	22/04/2021		1						1		
0935_MW308_20210422		2 x 50ml plastic	22/04/2021		1						1		
0935_MW310_20210422		2 x 50ml plastic	22/04/2021		1						1		
0935_QC105_20210422		2 x 50ml plastic	22/04/2021					1			1		
0935_QC108_20210422		2 x 50ml plastic	22/04/2021					1			1		
0935_QC305_20210422		2 x 50ml plastic	22/04/2021					1			1		
0935_QC308_20210422		2 x 50ml plastic	22/04/2021					1			1		
0935_QC505_20210422		2 x 50ml plastic	22/04/2021					1			1		
0935_QC508_20210422		2 x 50ml plastic	22/04/2021					1			1		
0935_MW234_20210423		2 x 50ml plastic	23/04/2021		1						1		
0935_MW243_20210423		2 x 50ml plastic	23/04/2021		1						1		
0935_MW239_20210423		2 x 50ml plastic	23/04/2021		1						1		
0935_MW234_20210423		2 x 50ml plastic	23/04/2021		1						1		
0935_MW213_20210423		2 x 50ml plastic	23/04/2021		1						1		
0935_SW212_20210423		2 x 50ml plastic	23/04/2021			1					1		
0935_QC106_20210423		2 x 50ml plastic	23/04/2021					1			1		
0935_QC206_20210423		2 x 50ml plastic	23/04/2021					1			1		
0935_QC207_20210423		2 x 50ml plastic	23/04/2021					1			1		
0935_QC208_20210423		2 x 50ml plastic	23/04/2021					1			1		
0935_QC507_20210423		2 x 50ml plastic	23/04/2021					1			1		
0935_QC508_20210423		2 x 50ml plastic	23/04/2021					1			1		

Samples taken over the proper field sampling procedures were used during the collection of these samples.

Sampler name: John Collins Date: 28/04/2021

	Date	Time	Received by (print and signature)	Date	Time
	Date	Time	Received by (print and signature)	Date	Time
	Date	Time	Received by (print and signature)	Date	Time

Please supply results electronically in spreadsheet and EDDAT file

Turn around time: (24 hour/48 hour/3 days/5 days)

Revision 1

Approved 23 May 2013

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DEP 0906_E3_GWM-SWM_HOLDCOC_v1.xls

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Chain of Custody

PM Name: [redacted]

Phone: [redacted]

Address: [redacted]

PM Email: [redacted]

Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks	EP231X - PFAS Standard	HOLD	Please amend Sample IDs as follows	Please send to Eurofins
0906_MW200_20210423		2 x 50ml plastic	23/04/2021			1					1		
0906_MW204_20210423		2 x 50ml plastic	23/04/2021			1					1		
0906_MW214_20210427		2 x 50ml plastic	27/04/2021			1					1		
0906_MW247_20210427		2 x 50ml plastic	27/04/2021			1					1		
0906_MW248_20210427		2 x 50ml plastic	27/04/2021			1					1		
0906_SW228_20210427		2 x 50ml plastic	27/04/2021				1				1		
0906_SW288_20210427		2 x 50ml plastic	27/04/2021				1				1		
0906_SW289_20210427		2 x 50ml plastic	27/04/2021				1				1		
0906_QC309_20210427		2 x 50ml plastic	27/04/2021					1			1		
0906_QC509_20210427		2 x 50ml plastic	27/04/2021					1			1		
0906_MW304_20210428		2 x 50ml plastic	28/04/2021			1					1		
0906_MW250_20210428		2 x 50ml plastic	28/04/2021			1					1		
0906_MW249_20210428		2 x 50ml plastic	28/04/2021			1					1		
0906_QC107_20210428		2 x 50ml plastic	28/04/2021					1			1		
0906_QC207_20210428		2 x 50ml plastic	28/04/2021					1			1		
0906_QC108_20210428		2 x 50ml plastic	28/04/2021					1			1		
0906_QC310_20210428		2 x 50ml plastic	28/04/2021					1			1		

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** Celium Laker Date: 30/04/2021

	Date	Time		Date	Time
Relinquished by: (print and signature) [redacted]			[redacted]	30/4/21	7pm
Relinquished by: (print and signature)			Received by: (print and signature)		
Relinquished by: (print and signature)			Received by: (print and signature)		

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2116333**	Page	: 1 of 15
Client	: **CARDNO VICTORIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: +61 03 8415 7777	Telephone	: +6138549 9609
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021 10:20
Order number	: ----	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ----	Issue Date	: 10-May-2021 13:54
Sampler	: [redacted]		
Site	: PO7		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 35		
No. of samples analysed	: 27		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

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

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: PFAS results for sample #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: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW244_20210420	0906_MW245_20210420	0906_MW240_20210420	0906_MW254_20210420	0906_MW253_20210420
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00
					ES2116333-001	ES2116333-002	ES2116333-003	ES2116333-004	ES2116333-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.04**	**0.04**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.03**	**0.03**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	**0.02**	**0.23**	**0.19**	**0.04**
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	**0.04**	<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	**0.03**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	**0.07**	**0.06**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	**0.05**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	**0.01**	**0.14**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW244_20210420	0906_MW245_20210420	0906_MW240_20210420	0906_MW254_20210420	0906_MW253_20210420
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00
Compound	CAS Number	LOR	Unit		ES2116333-001	ES2116333-002	ES2116333-003	ES2116333-004	ES2116333-005
					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	**0.02**	**0.42**	**0.54**	**0.04**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.02**	**0.27**	**0.19**	**0.04**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.02**	**0.39**	**0.51**	**0.04**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**81.8**	**96.8**	**92.6**	**89.7**	**83.6**
13C8-PFOA	----	0.02	%		**74.0**	**70.5**	**74.1**	**76.5**	**75.3**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW246_20210420	0906_SW294_20210420	0906_SW218_20210420	0906_SW206_20210420	0906_SW234_20210420
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00
					ES2116333-006	ES2116333-007	ES2116333-008	ES2116333-009	ES2116333-010
					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	**0.03**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	<0.02	**0.04**	**0.12**	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	**0.01**	**0.13**	**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**	**0.04**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.01**	<0.01	**0.01**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW246_20210420	0906_SW294_20210420	0906_SW218_20210420	0906_SW206_20210420	0906_SW234_20210420
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00
Compound	CAS Number	LOR	Unit		ES2116333-006	ES2116333-007	ES2116333-008	ES2116333-009	ES2116333-010
					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	<0.05	<0.05	<0.05	**0.34**
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	**0.03**	**0.05**	**0.31**	**0.42**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.05**	**0.25**	**0.02**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.03**	**0.05**	**0.31**	**0.42**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**90.0**	**80.0**	**77.1**	**78.1**	**71.3**
13C8-PFOA	----	0.02	%		**75.0**	**81.9**	**81.2**	**86.1**	**88.3**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW261_20210420	0906_SW262_20210420	0906_SW310_20210421	0906_SW236_20210422	0906_SW240_20210422
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	21-Apr-2021 00:00	22-Apr-2021 00:00	22-Apr-2021 00:00
					ES2116333-011	ES2116333-012	ES2116333-013	ES2116333-014	ES2116333-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.10**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.03**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	<0.02	**0.38**	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	**0.85**	<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	**0.06**	<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	**0.02**	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_SW261_20210420	0906_SW262_20210420	0906_SW310_20210421	0906_SW236_20210422	0906_SW240_20210422
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	21-Apr-2021 00:00	22-Apr-2021 00:00	22-Apr-2021 00:00
Compound	CAS Number	LOR	Unit		ES2116333-011	ES2116333-012	ES2116333-013	ES2116333-014	ES2116333-015
					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	**1.46**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**1.23**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**1.43**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**74.8**	**78.5**	**67.2**	**73.3**	**68.7**
13C8-PFOA	----	0.02	%		**84.6**	**99.8**	**100**	**102**	**105**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW286_20210422	0906_MW255_20210422	0906_MW256_20210422	0906_SW212_20210423	0906_MW248_20210427
				Sampling date / time	22-Apr-2021 00:00	22-Apr-2021 00:00	22-Apr-2021 00:00	23-Apr-2021 00:00	27-Apr-2021 00:00
					ES2116333-016	ES2116333-017	ES2116333-018	ES2116333-019	ES2116333-020
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.02**	**0.07**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.04**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	**0.10**	**0.23**	<0.02	**0.05**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	**0.04**	**0.07**	<0.01	**0.07**
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	**0.05**	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW286_20210422	0906_MW255_20210422	0906_MW256_20210422	0906_SW212_20210423	0906_MW248_20210427
				Sampling date / time	22-Apr-2021 00:00	22-Apr-2021 00:00	22-Apr-2021 00:00	23-Apr-2021 00:00	27-Apr-2021 00:00
					ES2116333-016	ES2116333-017	ES2116333-018	ES2116333-019	ES2116333-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<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	**0.16**	**0.46**	<0.01	**0.14**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.14**	**0.30**	<0.01	**0.12**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.16**	**0.42**	<0.01	**0.14**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**69.0**	**61.5**	**67.7**	**69.2**	**75.7**
13C8-PFOA	----	0.02	%		**101**	**105**	**110**	**108**	**107**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW247_20210427	0906_SW228_20210427	0906_SW288_20210427	0906_SW289_20210427	0906_MW250_20210428
				Sampling date / time	27-Apr-2021 00:00	27-Apr-2021 00:00	27-Apr-2021 00:00	27-Apr-2021 00:00	28-Apr-2021 00:00
					ES2116333-021	ES2116333-022	ES2116333-023	ES2116333-024	ES2116333-025
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.19**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.10**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	**0.08**	**1.09**	**0.34**	**0.03**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	**0.06**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	**1.10**	**0.24**	<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	**0.10**	<0.02	**0.03**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	**0.48**	**0.10**	**0.02**
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	**0.06**	**0.02**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW247_20210427	0906_SW228_20210427	0906_SW288_20210427	0906_SW289_20210427	0906_MW250_20210428
				Sampling date / time	27-Apr-2021 00:00	27-Apr-2021 00:00	27-Apr-2021 00:00	27-Apr-2021 00:00	28-Apr-2021 00:00
Compound	CAS Number	LOR	Unit		ES2116333-021	ES2116333-022	ES2116333-023	ES2116333-024	ES2116333-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	**0.08**	**3.22**	**0.70**	**0.08**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.08**	**2.19**	**0.58**	**0.03**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.08**	**3.06**	**0.70**	**0.08**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**79.5**	**80.9**	**86.6**	**81.2**	**83.5**
13C8-PFOA	----	0.02	%		**93.6**	**99.2**	**98.1**	**95.7**	**100**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW249_20210428	0906_QC107_20210428	----	----	----
				Sampling date / time	28-Apr-2021 00:00	28-Apr-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2116333-026	ES2116333-028	--------	--------	--------
					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	0.02	µg/L		<0.02	**0.03**	----	----	----
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	**0.03**	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.02**	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW249_20210428	0906_QC107_20210428	----	----	----
				Sampling date / time	28-Apr-2021 00:00	28-Apr-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2116333-026	ES2116333-028	--------	--------	--------
					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	**0.08**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.03**	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.08**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**81.2**	**84.9**	----	----	----
13C8-PFOA	----	0.02	%		**95.7**	**99.4**	----	----	----

Surrogate Control Limits

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

[redacted]

From: [redacted]
Sent: Tuesday, 4 May 2021 3:26 PM
To: [redacted]
Cc: [redacted]
Subject: FW: [EXTERNAL] - RE: ALS Workorder ES2116333, Project NSW_0906_PFASOMP

Hi team,

Sorry, to be a pain again.

Please see below email with additional amendments to be made.

Kind Regards,

[redacted]

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Environmental Division
Sydney
Work Order Reference
ES2116333

[redacted]

Telephone : +61-2-8784 8555

[redacted]
Sent: Tuesday, 4 May 2021 12:21 PM
[redacted]
Subject: RE: [EXTERNAL] - RE: ALS Workorder ES2116333, Project NSW_0906_PFASOMP

Thanks [redacted]

It has also come to our attention that samples 0906_MW247_20210427 and 0906_MW248_20210427 have been labelled the wrong way around.
The bottles labelled MW247 should in actual fact be MW248, and vice versa.

ES2116333-020 should be MW248
ES2116333-021 should be MW247

Could you please correct this on your end?
Apologies for the inconvenience.

Cheers,

[redacted]

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From: [redacted]
Sent: Tuesday, 4 May 2021 10:17 AM
To: [redacted]
Cc: [redacted]
Subject: RE: [EXTERNAL] - RE: ALS Workorder ES2116333, Project NSW_0906_PFASOMP

Hi [redacted]

Not a problem, we'll get that organised for you.

Kind Regards,

[redacted]

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EnviroMail™ 128 – Revised PFAS Bottle Requirements

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From: [redacted]
Sent: Tuesday, 4 May 2021 10:03 AM
To: [redacted]
Cc: [redacted]
Subject: [EXTERNAL] - RE: ALS Workorder ES2116333, Project NSW_0906_PFASOMP

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Hi [redacted]

Further to my email below, [redacted] advised that sample 0906_QC208_20210428 does not exist and was mistakenly included in the COC.
Can we please request that sample 0906_QC108_20210428 be put on HOLD (instead of analysis)?

Cheers,

[redacted]

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From: [redacted]
Sent: Monday, 3 May 2021 7:36 PM
To: [redacted]
Cc: [redacted]
Subject: RE: ALS Workorder ES2116333, Project NSW_0906_PFASOMP

Hi [redacted]

- The duplicated "0906_QC104_20210421" on the COC should actually be 0906_QC204_20210421 (which is one of the extra samples you've received). Please forward 0906_QC204_20210421 to Eurofins for PFAS analysis.

- [redacted] – can you please advise the whereabouts of sample 0906_QC208_20210428?
- 0906_SW216_20210420 should be SW261
- Please see below actions for the extra samples
    - 0906_MW213_20210420 **Please transfer to ES2116324**; EP231X - PFAS Standard
    - 0906_MW249_20210420 HOLD
    - 0906_MW255_20210421 HOLD
    - 0906_MW308_20210421 **Please transfer to ES2116327**; EP231X - PFAS Standard
    - 0906_MW309_20210421 **Please transfer to ES2116327**; EP231X - PFAS Standard
    - 0906_QC101_20210421 HOLD
    - 0906_QC201_20210421 HOLD
    - 0906_QC204_20210421 Send to Eurofins for PFAS analysis as per above

Cheers,

[redacted]

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From: [redacted]
Sent: Monday, 3 May 2021 4:44 PM
To: [redacted]
Subject: ALS Workorder ES2116333, Project NSW_0906_PFASOMP

Hi [redacted]

Regarding workorder ES2116333, please note the following:

- 0906_QC104_20210421 is duplicated on the COC. We have only received one sample for this ID which has not been forwarded to Eurofins. Can you please confirm if you would like us to test this sample or forward to Eurofins?
- 0906_QC208_20210428 was not received so it could not be forwarded to Eurofins
- Sample 0906_SW261_20210420 has been labelled as 0906_SW216_20210420
- We have received the below extra samples. Can you please confirm if you would like us to tests these and if so, which tests do you require?
    - 0906_MW213_20210420
    - 0906_MW249_20210420
    - 0906_MW255_20210421
    - 0906_MW308_20210421

- 0906_MW309_20210421
- 0906_QC101_20210421
- 0906_QC201_20210421
- 0906_QC204_20210421

Let me know if you have any questions.

Kind Regards,

[redacted]

We are keen for your feedback! Please click here for your 3 minute survey

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Updated COC

Chain of Custody

[redacted]

Project Number: NSW_0906_PFASC Site: PO7

Laboratory (name, phone, & contact person): ALS

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks	EP231X - PFAS Standard	HOLD	Forward to Eurofins	Please amend Sample IDs as follows	Please send to Eurofins
1	0906_MW244_20210420		2 x 50ml plastic	20/04/2021			1				1				
2	0906_MW245_20210420		2 x 50ml plastic	20/04/2021			1				1				
3	0906_MW240_20210420		2 x 50ml plastic	20/04/2021			1				1				
4	0906_MW254_20210420		2 x 50ml plastic	20/04/2021			1				1				
5	0906_MW253_20210420		2 x 50ml plastic	20/04/2021			1				1				
6	0906_MW246_20210420		2 x 50ml plastic	20/04/2021			1				1				
7	0906_SW294_20210420		2 x 50ml plastic	20/04/2021				1			1				
8	0906_SW218_20210420		2 x 50ml plastic	20/04/2021				1			1				
9	0906_SW206_20210420		2 x 50ml plastic	20/04/2021				1			1				
10	0906_SW234_20210420		2 x 50ml plastic	20/04/2021				1			1				
* 11	0906_SW261_20210420		2 x 50ml plastic	20/04/2021				1			1			* 0906-SW216-20210420 on bottles	
12	0906_SW262_20210420		2 x 50ml plastic	20/04/2021				1			1				
13	0906_SW310_20210421		2 x 50ml plastic	21/04/2021				1			1				
14	0906_SW236_20210422		2 x 50ml plastic	22/04/2021				1			1				
15	0906_SW240_20210422		2 x 50ml plastic	22/04/2021				1			1				
16	0906_SW286_20210422		2 x 50ml plastic	22/04/2021				1			1				
17	0906_MW255_20210422		2 x 50ml plastic	22/04/2021			1				1				
18	0906_MW256_20210422		2 x 50ml plastic	22/04/2021			1				1				
19	0906_SW212_20210423		2 x 50ml plastic	23/04/2021				1			1				
20	0906_MW247_20210427		2 x 50ml plastic	27/04/2021			1				1				
21	0906_MW248_20210427		2 x 50ml plastic	27/04/2021			1				1				
22	0906_SW228_20210427		2 x 50ml plastic	27/04/2021				1			1				
23	0906_SW288_20210427		2 x 50ml plastic	27/04/2021				1			1				
24	0906_SW289_20210427		2 x 50ml plastic	27/04/2021				1			1				
25	0906_MW250_20210428		2 x 50ml plastic	28/04/2021			1				1				
26	0906_MW249_20210428		2 x 50ml plastic	28/04/2021			1				1				
27	0906_QC104_20210421		2 x 50ml plastic	21/04/2021				1			1				
*	0906_QC104_20210421		2 x 50ml plastic	21/04/2021				1					1	* Duplicate ID	
28	0906_QC107_20210428		2 x 50ml plastic	28/04/2021			1				1				
-	0906_QC207_20210428		2 x 50ml plastic	28/04/2021			1						1		
29	0906_QC108_20210428		2 x 50ml plastic	28/04/2021			1				1				
*	0906_QC208_20210428		2 x 50ml plastic	28/04/2021			1						1	* Sample not received	
30	0906_MW250_20210421		2 x 50ml plastic	21/04/2021								1			
31	0906_MW249_20210421		2 x 50ml plastic	21/04/2021								1			

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. Sampler name: Jake Ludlow / Callum Lake Date: 26/29/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 day: Please circle

Revision 1
Approved 23 May 2013

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32 0906_MW213_20210420
33 0906-MW249-20210420
34 0906-MW255-20210421
35 0906-MW308-20210421
36 0906-MW309-20210421
37 0906-QC101-20210421
38 0906-QC201-20210421
39 0906-QC204-20210421

Extra Samples

Environmental Division
Sydney
Work Order Reference
ES2116333

Telephone : +61-2-8784 8555

Subcon / Forward Lab / Split WO
Lab / Analysis: Eurofins
Organised By / Date: 0906-QC207-20210428
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Printed 30/04/2021

Gardiner

Chain of Custody

Sheet ___ of

[redacted]

Sample ID	Laboratory ID	Containers	Sampling Date	Sampling Time	Sample Matrix: Soil/Sediment	Sample Matrix: Groundwater	Sample Matrix: Surface Water	Sample Matrix: QC	Sample preservation: Total Iron Bottles	Sample preservation:	Sample preservation:	Sample preservation:	Analysis: EB2300 - PFAS Standard	Analysis: HOLD	Comments: Please amend Sample IDs as follows	Comments: Please void in Gardiner
0005_MW244_20210420		2 x 50ml plastic	20/04/2021			1								1		
0005_MW245_20210420		2 x 50ml plastic	20/04/2021			1								1		
0005_MW249_20210420		2 x 50ml plastic	20/04/2021			1								1		
0005_MW212_20210420		2 x 50ml plastic	20/04/2021			1								1		
0005_MW206_20210420		2 x 50ml plastic	20/04/2021			1								1		
0005_MW249_20210420		2 x 50ml plastic	20/04/2021			1								1		
0005_MW254_20210420		2 x 50ml plastic	20/04/2021			1								1		
0005_MW255_20210420		2 x 50ml plastic	20/04/2021			1								1		
0005_MW246_20210420		2 x 50ml plastic	20/04/2021			1								1		
0005_MW204_20210420		2 x 50ml plastic	20/04/2021				1							1		
0005_MW250_20210420		2 x 50ml plastic	20/04/2021				1							1		
0005_MW216_20210420		2 x 50ml plastic	20/04/2021				1							1		
0005_MW251_20210420		2 x 50ml plastic	20/04/2021				1							1		
0005_MW234_20210420		2 x 50ml plastic	20/04/2021				1							1		
0005_MW213_20210420		2 x 50ml plastic	20/04/2021			1								1		
0005_MW211_20210420		2 x 50ml plastic	20/04/2021			1								1		
0005_MW218_20210420		2 x 50ml plastic	20/04/2021				1							1		
0005_MW260_20210420		2 x 50ml plastic	20/04/2021				1							1		
0005_QC001_20210420		2 x 50ml plastic	20/04/2021					1						1		
0005_QC002_20210420		2 x 50ml plastic	20/04/2021					1						1		
0005_QC003_20210420		2 x 50ml plastic	20/04/2021					1						1		
0005_QC004_20210420		2 x 50ml plastic	20/04/2021					1						1		
0005_MW213_20210421		2 x 50ml plastic	21/04/2021			1								1		
0005_SW310_20210421		2 x 50ml plastic	21/04/2021				1							1		
0005_MW250_20210421		2 x 50ml plastic	21/04/2021			1								1		
0005_MW249_20210421		2 x 50ml plastic	21/04/2021			1								1		
0005_MW260_20210421		2 x 50ml plastic	21/04/2021			1								1		
0005_MW260_20210421		2 x 50ml plastic	21/04/2021			1								1		
0005_MW260_20210421		2 x 50ml plastic	21/04/2021			1								1		
0005_SW104_20210421		2 x 50ml plastic	21/04/2021				1							1		
0005_MW308_20210421		2 x 50ml plastic	21/04/2021			1								1		
0005_QC001_20210421		2 x 50ml plastic	21/04/2021					1						1		
0005_QC201_20210421		2 x 50ml plastic	21/04/2021					1						1		
0005_QC002_20210421		2 x 50ml plastic	21/04/2021					1						1		
0005_QC202_20210421		2 x 50ml plastic	21/04/2021					1						1		
0005_QC004_20210421		2 x 50ml plastic	21/04/2021					1						1		
0005_QC204_20210421		2 x 50ml plastic	21/04/2021					1						1		
0005_QC003_20210421		2 x 50ml plastic	21/04/2021					1						1		
0005_QC203_20210421		2 x 50ml plastic	21/04/2021					1						1		
0005_QC005_20210421		2 x 50ml plastic	21/04/2021					1						1		
0005_QC205_20210421		2 x 50ml plastic	21/04/2021					1						1		
0005_SW226_20210422		2 x 50ml plastic	22/04/2021				1							1		
0005_SW246_20210422		2 x 50ml plastic	22/04/2021				1							1		
0005_SW206_20210422		2 x 50ml plastic	22/04/2021				1							1		
0005_MW209_20210422		2 x 50ml plastic	22/04/2021		1									1		
0005_MW233_20210422		2 x 50ml plastic	22/04/2021		1									1		
0005_MW244_20210422		2 x 50ml plastic	22/04/2021		1									1		
0005_MW242_20210422		2 x 50ml plastic	22/04/2021		1									1		
0005_MW231_20210422		2 x 50ml plastic	22/04/2021		1									1		
0005_MW252_20210422		2 x 50ml plastic	22/04/2021		1									1		
0005_MW256_20210422		2 x 50ml plastic	22/04/2021		1									1		
0005_MW258_20210422		2 x 50ml plastic	22/04/2021		1									1		
0005_MW300_20210422		2 x 50ml plastic	22/04/2021		1									1		
0005_MW306_20210422		2 x 50ml plastic	22/04/2021		1									1		
0005_MW308_20210422		2 x 50ml plastic	22/04/2021		1									1		
0005_MW310_20210422		2 x 50ml plastic	22/04/2021		1									1		
0005_QC105_20210422		2 x 50ml plastic	22/04/2021					1						2		
0005_QC106_20210422		2 x 50ml plastic	22/04/2021					1						1		
0005_QC206_20210422		2 x 50ml plastic	22/04/2021					1						1		
0005_QC305_20210422		2 x 50ml plastic	22/04/2021					1						1		
0005_QC306_20210422		2 x 50ml plastic	22/04/2021					1						1		
0005_QC505_20210422		2 x 50ml plastic	22/04/2021					1						1		
0005_MW218_20210423		2 x 50ml plastic	23/04/2021		1									1		
0005_MW248_20210423		2 x 50ml plastic	23/04/2021		1									1		
0005_MW238_20210423		2 x 50ml plastic	23/04/2021		1									1		
0005_MW234_20210423		2 x 50ml plastic	23/04/2021		1									1		
0005_MW236_20210423		2 x 50ml plastic	23/04/2021		1									1		
0005_SW212_20210423		2 x 50ml plastic	23/04/2021			1								1		
0005_QC106_20210423		2 x 50ml plastic	23/04/2021					1						1		
0005_QC206_20210423		2 x 50ml plastic	23/04/2021					1						1		
0005_QC207_20210423		2 x 50ml plastic	23/04/2021					1						1		
0005_QC308_20210423		2 x 50ml plastic	23/04/2021					1						1		
0005_QC507_20210423		2 x 50ml plastic	23/04/2021					1						1		
0005_QC605_20210423		2 x 50ml plastic	23/04/2021					1						1		

Samples: Tested that the proper field sampling parameters were used during the collection of these samples.

Sampler name: John Kirby

Tel: 07967[illegible]

Relinquished by: (print and signature)	Date:	Time:	Received by: (print and signature)	Date:		Time:	
Relinquished by: (print and signature)	Date:	Time:	Received by: (print and signature)	Date:		Time:	
Relinquished by: (print and signature)	Date:	Time:	Received by: (print and signature)	Date:		Time:	

Please supply results electronically in spreadsheet and EDDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days)

Revision 1

Approved 23 May 2013

Balance due to

DEF19006_ES_GWM-SWM_HOLDCOC_v1.xls

Page ___ of ___

Printed 27/04/2021

Cardno

Chain of Custody

[redacted]

Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks	EP231X - PFAS Standard	HOLD	Please amend Sample IDs as follows	Please send to Eurofins
0906_MW200_20210423		2 x 50ml plastic	23/04/2021			1					1		
0906_MW204_20210423		2 x 50ml plastic	23/04/2021			1					1		
0906_MW214_20210427		2 x 50ml plastic	27/04/2021			1					1		
0906_MW247_20210427		2 x 50ml plastic	27/04/2021			1					1		
0906_MW248_20210427		2 x 50ml plastic	27/04/2021			1					1		
0906_SW228_20210427		2 x 50ml plastic	27/04/2021				1				1		
0906_SW288_20210427		2 x 50ml plastic	27/04/2021				1				1		
0906_SW289_20210427		2 x 50ml plastic	27/04/2021				1				1		
0906_QC309_20210427		2 x 50ml plastic	27/04/2021					1			1		
0906_QC509_20210427		2 x 50ml plastic	27/04/2021					1			1		
0906_MW304_20210428		2 x 50ml plastic	28/04/2021			1					1		
0906_MW250_20210428		2 x 50ml plastic	28/04/2021			1					1		
0906_MW249_20210428		2 x 50ml plastic	28/04/2021			1					1		
0906_QC107_20210428		2 x 50ml plastic	28/04/2021					1			1		
0906_QC207_20210428		2 x 50ml plastic	28/04/2021					1			1		
0906_QC108_20210428		2 x 50ml plastic	28/04/2021					1			1		
0906_QC310_20210428		2 x 50ml plastic	28/04/2021					1			1		

Sample Matrix | Sample preservation | Analysis | Comments

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. Sampler name: Callum Laker Date: 30/04/2021

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
[redacted]			[redacted]	30/4/21	7pm
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2118542**	Page	: 1 of 5
Client	: **CARDNO VICTORIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: +6138549 9609
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021 10:20
Order number	: ----	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ----	Issue Date	: 18-May-2021 14:54
Sampler	: [redacted]		
Site	: PO4		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

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

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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 ini ial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW251_20210422	0906_MW252_20210422	----	----	----
				Sampling date / time	22-Apr-2021 00:00	22-Apr-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2118542-001	ES2118542-002	--------	--------	--------
					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	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW251_20210422	0906_MW252_20210422	----	----	----
				Sampling date / time	22-Apr-2021 00:00	22-Apr-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2118542-001	ES2118542-002	--------	--------	--------
					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		<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**82.7**	**82.5**	----	----	----
13C8-PFOA	----	0.02	%		**97.2**	**97.1**	----	----	----

Surrogate Control Limits

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2116333**	Page	: 1 of 15
Amendment	: **4**		
Client	: **CARDNO VICTORIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021 10:20
Order number	: ----	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ----	Issue Date	: 21-May-2021 15:14
Sampler	: [redacted]		
Site	: PO7		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 35		
No. of samples analysed	: 28		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Organic Chemist	Sydney Organics, Smithfield, NSW
[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 Contact for details.

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: PFAS results for sample #28 confirmed by re-extraction and re-analysis.
- Amendment (13/12/2021): This report has been amended following a change to the Method Code- EP231X result reported for samples: Client ID 0906_SW228_20210427, 0906_SW288_20210427 (ALS ID- ES2116333-23 and ES2116333-23) due to Log in error-incorrect sample ID labelling. All details are recorded in client query - 21SYCC123.
- Amendment (13/05/2021):This report has been amended following incorrect sample IDs
- Amendment (17/05/2021):This report has been amended to add analysis to sample 027
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW244_20210420	0906_MW245_20210420	0906_MW240_20210420	0906_MW254_20210420	0906_MW253_20210420
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00
					ES2116333-001	ES2116333-002	ES2116333-003	ES2116333-004	ES2116333-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.04**	**0.04**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.03**	**0.03**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	**0.02**	**0.23**	**0.19**	**0.04**
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	**0.04**	<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	**0.03**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	**0.07**	**0.06**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	**0.05**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	**0.01**	**0.14**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW244_20210420	0906_MW245_20210420	0906_MW240_20210420	0906_MW254_20210420	0906_MW253_20210420
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00
Compound	CAS Number	LOR	Unit		ES2116333-001	ES2116333-002	ES2116333-003	ES2116333-004	ES2116333-005
					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	**0.02**	**0.42**	**0.54**	**0.04**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.02**	**0.27**	**0.19**	**0.04**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.02**	**0.39**	**0.51**	**0.04**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**81.8**	**96.8**	**92.6**	**89.7**	**83.6**
13C8-PFOA	----	0.02	%		**74.0**	**70.5**	**74.1**	**76.5**	**75.3**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW246_20210420	0906_SW294_20210420	0906_SW218_20210420	0906_SW206_20210420	0906_SW234_20210420
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00
					ES2116333-006	ES2116333-007	ES2116333-008	ES2116333-009	ES2116333-010
					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	**0.03**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	<0.02	**0.04**	**0.12**	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	**0.01**	**0.13**	**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**	**0.04**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.01**	<0.01	**0.01**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW246_20210420	0906_SW294_20210420	0906_SW218_20210420	0906_SW206_20210420	0906_SW234_20210420
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00	20-Apr-2021 00:00
Compound	CAS Number	LOR	Unit		ES2116333-006	ES2116333-007	ES2116333-008	ES2116333-009	ES2116333-010
					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	<0.05	<0.05	<0.05	**0.34**
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	**0.03**	**0.05**	**0.31**	**0.42**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.05**	**0.25**	**0.02**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.03**	**0.05**	**0.31**	**0.42**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**90.0**	**80.0**	**77.1**	**78.1**	**71.3**
13C8-PFOA	----	0.02	%		**75.0**	**81.9**	**81.2**	**86.1**	**88.3**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW261_20210420	0906_SW262_20210420	0906_SW310_20210421	0906_SW236_20210422	0906_SW240_20210422
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	21-Apr-2021 00:00	22-Apr-2021 00:00	22-Apr-2021 00:00
					ES2116333-011	ES2116333-012	ES2116333-013	ES2116333-014	ES2116333-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.10**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.03**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	<0.02	**0.38**	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	**0.85**	<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	**0.06**	<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	**0.02**	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_SW261_20210420	0906_SW262_20210420	0906_SW310_20210421	0906_SW236_20210422	0906_SW240_20210422
				Sampling date / time	20-Apr-2021 00:00	20-Apr-2021 00:00	21-Apr-2021 00:00	22-Apr-2021 00:00	22-Apr-2021 00:00
Compound	CAS Number	LOR	Unit		ES2116333-011	ES2116333-012	ES2116333-013	ES2116333-014	ES2116333-015
					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	**1.46**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**1.23**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**1.43**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**74.8**	**78.5**	**67.2**	**73.3**	**68.7**
13C8-PFOA	----	0.02	%		**84.6**	**99.8**	**100**	**102**	**105**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW286_20210422	0906_MW255_20210422	0906_MW256_20210422	0906_SW212_20210423	0906_MW248_20210427
				Sampling date / time	22-Apr-2021 00:00	22-Apr-2021 00:00	22-Apr-2021 00:00	23-Apr-2021 00:00	27-Apr-2021 00:00
					ES2116333-016	ES2116333-017	ES2116333-018	ES2116333-019	ES2116333-020
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.02**	**0.07**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.04**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	**0.10**	**0.23**	<0.02	**0.05**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	**0.04**	**0.07**	<0.01	**0.07**
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	**0.05**	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW286_20210422	0906_MW255_20210422	0906_MW256_20210422	0906_SW212_20210423	0906_MW248_20210427
				Sampling date / time	22-Apr-2021 00:00	22-Apr-2021 00:00	22-Apr-2021 00:00	23-Apr-2021 00:00	27-Apr-2021 00:00
					ES2116333-016	ES2116333-017	ES2116333-018	ES2116333-019	ES2116333-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<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	**0.16**	**0.46**	<0.01	**0.14**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.14**	**0.30**	<0.01	**0.12**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.16**	**0.42**	<0.01	**0.14**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**69.0**	**61.5**	**67.7**	**69.2**	**75.7**
13C8-PFOA	----	0.02	%		**101**	**105**	**110**	**108**	**107**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW247_20210427	0906_SW228_20210427	0906_SW288_20210427	0906_SW289_20210427	0906_MW250_20210428
				Sampling date / time	27-Apr-2021 00:00	27-Apr-2021 00:00	27-Apr-2021 00:00	27-Apr-2021 00:00	28-Apr-2021 00:00
					ES2116333-021	ES2116333-022	ES2116333-023	ES2116333-024	ES2116333-025
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.19**	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.10**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	**1.09**	<0.02	**0.34**	**0.03**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	**0.06**	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	**1.10**	<0.01	**0.24**	<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	**0.10**	<0.02	<0.02	**0.03**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.48**	<0.02	**0.10**	**0.02**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**0.04**	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.06**	<0.01	**0.02**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW247_20210427	0906_SW228_20210427	0906_SW288_20210427	0906_SW289_20210427	0906_MW250_20210428
				Sampling date / time	27-Apr-2021 00:00	27-Apr-2021 00:00	27-Apr-2021 00:00	27-Apr-2021 00:00	28-Apr-2021 00:00
Compound	CAS Number	LOR	Unit		ES2116333-021	ES2116333-022	ES2116333-023	ES2116333-024	ES2116333-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	**3.22**	<0.01	**0.70**	**0.08**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**2.19**	<0.01	**0.58**	**0.03**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**3.06**	<0.01	**0.70**	**0.08**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**79.5**	**86.6**	**80.9**	**81.2**	**83.5**
13C8-PFOA	----	0.02	%		**93.6**	**98.1**	**99.2**	**95.7**	**100**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW249_20210428	0906_QC104_20210421	0906_QC107_20210428	----	----
				Sampling date / time	28-Apr-2021 00:00	21-Apr-2021 00:00	28-Apr-2021 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2116333-026	ES2116333-027	ES2116333-028	--------	--------
					Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.06**	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.03**	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.02	**0.43**	**0.03**	----	----
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	**0.92**	<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**	**0.03**	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.08**	**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	**0.03**	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW249_20210428	0906_QC104_20210421	0906_QC107_20210428	----	----
				Sampling date / time	28-Apr-2021 00:00	21-Apr-2021 00:00	28-Apr-2021 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2116333-026	ES2116333-027	ES2116333-028	--------	--------
					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	**1.57**	**0.08**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**1.35**	**0.03**	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**1.54**	**0.08**	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**81.2**	**89.0**	**84.9**	----	----
13C8-PFOA	----	0.02	%		**95.7**	**110**	**99.4**	----	----

Surrogate Control Limits

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2116333**	Page	: 1 of 8
Amendment	: **4**		
Client	: **CARDNO VICTORIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: +[redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021
Order number	: ----	Date Analysis Commenced	: 08-May-2021
C-O-C number	: ----	Issue Date	: 21-May-2021
Sampler	: [redacted]		
Site	: PO7		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 35		
No. of samples analysed	: 28		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

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

General Comments

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

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

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

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: 3687394)									
ES2118034-006	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.15	1.20	3.8	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.22	0.23	0.0	0% - 50%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.21	0.20	0.0	0% - 50%
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	1.06	1.00	6.3	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.07	0.06	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: 3687394)									
ES2118034-006	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.45	0.46	0.0	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.19	0.18	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.70	0.59	17.2	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.17	0.20	16.1	0% - 50%
		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	0.2	0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3687394)									
ES2118034-006	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	0.06	0.06	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3687394) - continued									
ES2118034-006	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3687394)									
ES2118034-006	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: 3687394)									
ES2118034-006	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	4.48	4.28	4.6	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: 3665688)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	123	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	124	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.25 µg/L	117	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	102	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	125	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3665742)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.25 µg/L	111	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	112	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	102	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	105	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3687394)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.25 µg/L	85.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	82.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	96.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3665688)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	123	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	123	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	122	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	122	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	129	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	126	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	118	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	118	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3665742)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	107	73.0	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3665742) - continued								
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	120	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	122	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	119	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	115	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	121	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	123	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3687394)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	81.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	97.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	98.0	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	108	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	83.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	94.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	107	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	91.3	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3665688)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	119	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	106	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.9	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	117	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	118	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	128	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	124	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3665742)								
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	104	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.4	62.6	147

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3665742) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	107	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	113	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3687394)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	91.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	85.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	72.8	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	79.7	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	112	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	90.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3665688)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	123	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	120	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	124	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	123	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3665742)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	113	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	121	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3687394)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	101	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	85.4	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	103	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	82.6	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: **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: 3687394)							
ES2118034-006	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	98.3	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	99.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	110	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	98.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3687394)							
ES2118034-006	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	106	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	99.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	82.5	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	97.7	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	120	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	98.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	107	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	105	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	103	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	91.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	84.6	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3687394)							
ES2118034-006	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	83.1	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	75.3	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	81.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	83.5	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	99.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	106	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	109	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3687394)							
ES2118034-006	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	94.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	92.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	111	67.0	138

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3687394) - continued							
ES2118034-006	Anonymous	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.8	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2116333**	Page	: 1 of 8
Amendment	: **4**		
Client	: **CARDNO VICTORIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 27-Apr-2021
Site	: PO7	Issue Date	: 21-May-2021
Sampler	: [redacted]	No. of samples received	: 35
Order number	: ----	No. of samples analysed	: 28

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2118034--006	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	ES2118034--006	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	57	1.75	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	57	1.75	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container* / Client Sample ID(s)	*Sample Date*	*Extraction / Preparation* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW244_20210420, 0906_MW245_20210420, 0906_MW240_20210420, 0906_MW254_20210420, 0906_MW253_20210420, 0906_MW246_20210420, 0906_SW294_20210420, 0906_SW218_20210420, 0906_SW206_20210420, 0906_SW234_20210420, 0906_SW261_20210420, 0906_SW262_20210420	**20-Apr-2021**	**08-May-2021**	17-Oct-2021	✓	**08-May-2021**	17-Oct-2021	✓
HDPE (no PTFE) (EP231X)							
0906_SW310_20210421	**21-Apr-2021**	**08-May-2021**	18-Oct-2021	✓	**08-May-2021**	18-Oct-2021	✓
HDPE (no PTFE) (EP231X)							
0906_QC104_20210421	**21-Apr-2021**	**20-May-2021**	18-Oct-2021	✓	**20-May-2021**	18-Oct-2021	✓
HDPE (no PTFE) (EP231X)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids - Continued							
0906_SW236_20210422, 0906_SW240_20210422, 0906_SW286_20210422, 0906_MW255_20210422, 0906_MW256_20210422	**22-Apr-2021**	**08-May-2021**	19-Oct-2021	✓	**08-May-2021**	19-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW212_20210423	**23-Apr-2021**	**08-May-2021**	20-Oct-2021	✓	**08-May-2021**	20-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_MW248_20210427, 0906_MW247_20210427, 0906_SW228_20210427, 0906_SW288_20210427, 0906_SW289_20210427	**27-Apr-2021**	**08-May-2021**	24-Oct-2021	✓	**08-May-2021**	24-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_MW250_20210428, 0906_MW249_20210428, 0906_QC107_20210428	**28-Apr-2021**	**08-May-2021**	25-Oct-2021	✓	**08-May-2021**	25-Oct-2021	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW244_20210420, 0906_MW245_20210420, 0906_MW240_20210420, 0906_MW254_20210420, 0906_MW253_20210420, 0906_MW246_20210420, 0906_SW294_20210420, 0906_SW218_20210420, 0906_SW206_20210420, 0906_SW234_20210420, 0906_SW261_20210420, 0906_SW262_20210420	**20-Apr-2021**	**08-May-2021**	17-Oct-2021	✓	**08-May-2021**	17-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW310_20210421	**21-Apr-2021**	**08-May-2021**	18-Oct-2021	✓	**08-May-2021**	18-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_QC104_20210421	**21-Apr-2021**	**20-May-2021**	18-Oct-2021	✓	**20-May-2021**	18-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW236_20210422, 0906_SW240_20210422, 0906_SW286_20210422, 0906_MW255_20210422, 0906_MW256_20210422	**22-Apr-2021**	**08-May-2021**	19-Oct-2021	✓	**08-May-2021**	19-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW212_20210423	**23-Apr-2021**	**08-May-2021**	20-Oct-2021	✓	**08-May-2021**	20-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_MW248_20210427, 0906_MW247_20210427, 0906_SW228_20210427, 0906_SW288_20210427, 0906_SW289_20210427	**27-Apr-2021**	**08-May-2021**	24-Oct-2021	✓	**08-May-2021**	24-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_MW250_20210428, 0906_MW249_20210428, 0906_QC107_20210428	**28-Apr-2021**	**08-May-2021**	25-Oct-2021	✓	**08-May-2021**	25-Oct-2021	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW244_20210420, 0906_MW245_20210420, 0906_MW240_20210420, 0906_MW254_20210420, 0906_MW253_20210420, 0906_MW246_20210420, 0906_SW294_20210420, 0906_SW218_20210420, 0906_SW206_20210420, 0906_SW234_20210420, 0906_SW261_20210420, 0906_SW262_20210420	**20-Apr-2021**	**08-May-2021**	17-Oct-2021	✓	**08-May-2021**	17-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW310_20210421	**21-Apr-2021**	**08-May-2021**	18-Oct-2021	✓	**08-May-2021**	18-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_QC104_20210421	**21-Apr-2021**	**20-May-2021**	18-Oct-2021	✓	**20-May-2021**	18-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW236_20210422, 0906_SW240_20210422, 0906_SW286_20210422, 0906_MW255_20210422, 0906_MW256_20210422	**22-Apr-2021**	**08-May-2021**	19-Oct-2021	✓	**08-May-2021**	19-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW212_20210423	**23-Apr-2021**	**08-May-2021**	20-Oct-2021	✓	**08-May-2021**	20-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_MW248_20210427, 0906_MW247_20210427, 0906_SW228_20210427, 0906_SW288_20210427, 0906_SW289_20210427	**27-Apr-2021**	**08-May-2021**	24-Oct-2021	✓	**08-May-2021**	24-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_MW250_20210428, 0906_MW249_20210428, 0906_QC107_20210428	**28-Apr-2021**	**08-May-2021**	25-Oct-2021	✓	**08-May-2021**	25-Oct-2021	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW244_20210420, 0906_MW245_20210420, 0906_MW240_20210420, 0906_MW254_20210420, 0906_MW253_20210420, 0906_MW246_20210420, 0906_SW294_20210420, 0906_SW218_20210420, 0906_SW206_20210420, 0906_SW234_20210420, 0906_SW261_20210420, 0906_SW262_20210420	**20-Apr-2021**	**08-May-2021**	17-Oct-2021	✓	**08-May-2021**	17-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW310_20210421	**21-Apr-2021**	**08-May-2021**	18-Oct-2021	✓	**08-May-2021**	18-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_QC104_20210421	**21-Apr-2021**	**20-May-2021**	18-Oct-2021	✓	**20-May-2021**	18-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW236_20210422, 0906_SW240_20210422, 0906_SW286_20210422, 0906_MW255_20210422, 0906_MW256_20210422	**22-Apr-2021**	**08-May-2021**	19-Oct-2021	✓	**08-May-2021**	19-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW212_20210423	**23-Apr-2021**	**08-May-2021**	20-Oct-2021	✓	**08-May-2021**	20-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_MW248_20210427, 0906_MW247_20210427, 0906_SW228_20210427, 0906_SW288_20210427, 0906_SW289_20210427	**27-Apr-2021**	**08-May-2021**	24-Oct-2021	✓	**08-May-2021**	24-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_MW250_20210428, 0906_MW249_20210428, 0906_QC107_20210428	**28-Apr-2021**	**08-May-2021**	25-Oct-2021	✓	**08-May-2021**	25-Oct-2021	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW244_20210420, 0906_MW245_20210420, 0906_MW240_20210420, 0906_MW254_20210420, 0906_MW253_20210420, 0906_MW246_20210420, 0906_SW294_20210420, 0906_SW218_20210420, 0906_SW206_20210420, 0906_SW234_20210420, 0906_SW261_20210420, 0906_SW262_20210420	**20-Apr-2021**	**08-May-2021**	17-Oct-2021	✓	**08-May-2021**	17-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW310_20210421	**21-Apr-2021**	**08-May-2021**	18-Oct-2021	✓	**08-May-2021**	18-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_QC104_20210421	**21-Apr-2021**	**20-May-2021**	18-Oct-2021	✓	**20-May-2021**	18-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW236_20210422, 0906_SW240_20210422, 0906_SW286_20210422, 0906_MW255_20210422, 0906_MW256_20210422	**22-Apr-2021**	**08-May-2021**	19-Oct-2021	✓	**08-May-2021**	19-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_SW212_20210423	**23-Apr-2021**	**08-May-2021**	20-Oct-2021	✓	**08-May-2021**	20-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_MW248_20210427, 0906_MW247_20210427, 0906_SW228_20210427, 0906_SW288_20210427, 0906_SW289_20210427	**27-Apr-2021**	**08-May-2021**	24-Oct-2021	✓	**08-May-2021**	24-Oct-2021	✓
HDPE (no PTFE) (EP231X) 0906_MW250_20210428, 0906_MW249_20210428, 0906_QC107_20210428	**28-Apr-2021**	**08-May-2021**	25-Oct-2021	✓	**08-May-2021**	25-Oct-2021	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	57	**1.75**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	57	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	57	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	57	**1.75**	**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.

APPENDIX

D

FIELD RECORDS & CALIBRATION CERTIFICATES

Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (bTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)
MW200	Off-site	540489.09	6111231.75	23/04/2021	-	183.137	-	-	Clear	Low	Sample collected from aquaculture pond fill point.	18.3	4.41	1524	990.6	7.06	-23.2
MW204	Off-site	540107.16	6110883.61	23/04/2021	43.12	183.024	15.385	167.639	Cloudy	Medium		19.5	0.32	486.9	316.5	7.42	-174.6
MW209	Off-site	542521.77	6114403.23	22/04/2021	60	-	23.45	-	Clear	Low	Well locked in pump shed, sample taken from pipe attached to bore pump.	17.4	0.75	333.2	216.6	6.58	-6.5
MW210	Off-site	540664.20	6114397.70	23/04/2021	-	-	-	-	Clear	Low	Standing water level not taken, no monitoring well. Sample taken from tap at base of bore.	18.1	5.95	233.7	151.9	6.9	91.2
MW211	On-site	535735.79	6113725.27	20/04/2021	-	181.707	-	-	Clear	Low	Sampled from hose connected to bore.	19.7	0.99	293	190.5	6.47	198.5
MW212	On-site	535681.87	6113475.53	20/04/2021	-	181.215	-	-			Stand pipe and tap, unable to gauge water level.	19.9	2.98	480	312	6.65	177.6
MW213	On-site	536651.55	6114239.35	20/04/2021	-	180.533	-	-	Clear	Low	Riverina Water East Wagga Bore No. 3 pump house. Not gauged.	19.3	2.06	228.7	148.7	6.5	121.2
MW214	On-site	542678.11	6111434.75	27/04/2021	-	186.043	-	-	Clear	Low	Production pumping bore, run to purge prior to sampling. Sampled.	20.5	0.94	561	364.7	6.64	3.2
MW215	On-site	542678.11	6111434.75	27/04/2021	48.56	-	14.545	-	-	-	Well only gauged, not sampled as per SAQP, logger present	-	-	-	-	-	-
MW231	On-site	540910.71	6113541.05	23/04/2021	-	-	-	-	Cloudy	Medium	Unable to gauge water levels, as there is no monitoring well, sample taken from irrigation system.	16.8	0.98	510.8	332	6.48	19.3
MW233	Off-site	539802.59	6112448.66	22/04/2021	-	-	-	-	Clear	Low	Sampled from hose connected to bore	16	4.41	2209	1436	6.76	109.1
MW235	Off-site	[redacted]	[redacted]	20/04/2021	-	-	-	-	Clear	Low	Sample taken from hose connected to bore, no monitoring well present.	19.3	1.01	171.5	111.5	6.65	88.4
MW238	Off-site	540682.06	6112227.81	23/04/2021	69.96	182.88	17.29	165.59	Clear	Low	Logger in well.	18.6	1.56	1389	902.9	6.65	-124
MW239	Off-site	540678.34	6112216.01	23/04/2021	20.95	182.8	16.615	166.185	Clear	Low	Logger deployed	18.9	4.94	1920	1248	6.93	127.9
MW240	Off-site	538090.54	6112266.06	20/04/2021	27.43	182.54	16.91	165.63	Cloudy	Medium		19.5	3.03	611	397.2	6.66	86.2
MW241	Off-site	544118.31	6109524.74	22/04/2021	75.4	200.07	14.31	185.76	Clear	Low	Sleeve requires replacement	17.3	1.59	1012	657.8	11.92	-209
MW242	Off-site	544118.75	6109538.52	22/04/2021	62.1	199.89	14.355	185.535	Cloudy	Medium	Logger deployed.	17.1	1.35	528.3	343.4	7.32	-78.1
MW243	On-site	542979.06	6110074.36	23/04/2021	54.02	211.48	39.44	172.04	Cloudy	Medium	Sleeve redeployed before sampling.	18.4	3.41	1315	854.8	6.83	148
MW244	Off-site	536997.10	6113055.36	20/04/2021	60.42	180.37	15.77	164.6	Clear	Low	Logger deployed.	18	1.48	235	152.8	7.18	-166.2
MW245	Off-site	537011.85	6113066.50	20/04/2021	20.83	180.37	16.41	163.96	Cloudy	Medium	Logger tangled in sleeve, Logger data may be affected	16.9	2.39	430.9	280.1	6.44	198.8
MW246	Off-site	541737.871	6110580.212	20/04/2021	-	189.563	19.209	170.354	Cloudy	Medium	Logger deployed.	19.2	1.84	451.8	293.7	6.83	-27.1
MW247	Off-site	536050.951	6112506.299	27/04/2021	24.6	181.343	14.2	167.143	Cloudy	Medium	Logger deployed.	15.6	1.59	2342	1522	6.59	118.6
MW248	Off-site	536049.397	6112509.06	27/04/2021	34.81	181.361	14.175	167.186	Clear	Low	Logger deployed.	17.5	0.67	1160	754	7.23	-107
MW249	Off-site	536082.812	6113454.968	28/04/2021	60.9	180.008	18.74	161.268	Clear	Low	New sleeve installed.	18.4	1.00	458	297.7	6.42	118
MW250	Off-site	536087.341	6113452.451	28/04/2021	26.03	179.936	17.91	162.026	Cloudy	Medium	Logger deployed.	19.6	3.67	655	425.8	6.74	112.2
MW251	Off-site	536569.189	6113765.545	22/04/2021	23.75	178.394	16.68	161.714	Cloudy	Medium		17.2	1.32	754	490.1	5.97	-4.5
MW252	Off-site	536569.976	6113769.891	22/04/2021	62.3	178.607	16.23	162.377	Clear	Low		16.2	1.27	544.5	353.9	6.10	58
MW253	Off-site	537469.028	6112456.611	20/04/2021	49.03	180.991	17.18	163.811	Clear	Low		18.1	3.13	421	273.7	6.64	73
MW254	Off-site	537469.851	6112462.06	21/04/2021	26.03	181.122	16.295	164.827	Cloudy	Low			4.12	345	224.3	16.42	82.4
MW255	Off-site	539219.759	6112296.567	22/04/2021	52.89	182.094	16.48	165.614	Cloudy	Medium	New sleeve installed.	13.9	1.99	1098	713.7	6.55	110
MW256	Off-site	539217.619	6112291.105	22/04/2021	24.5	182.128	16.48	165.648	Clear	Low		16.4	3.15	1379	896.4	6.48	120.7
MW257	Off-site	538761.456	6111519.667	21/04/2021	16	-	-	-	-	-	Well Dry	-	-	-	-	-	-
MW300	On-site	542277.11	6110129.15	21/04/2021	61.83	200.538	29.94	170.598	Clear	Low		14	4.24	1523	990	6.52	154.5
MW301	On-site	542281.27	6110125.89	22/04/2021	18.765	200.705	-	-	-	-	Dry, not sampled, 20mm pipe in well	14.5	3.71	1522	989.3	6.50	147.7
MW302	On-site	542356.16	6109473.31	21/04/2021	64.67	309.607	-	-	Clear	Low		17.1	3.04	949	616.9	6.54	142.2
MW303	On-site	542358.37	6109470.43	21/04/2021	19.7	209.568	-	-	-	-	Dry, not sampled	-	-	-	-	-	-
MW304	On-site	541367.48	6108802.00	28/04/2021	69.25	211.767	39.053	172.714	Cloudy	Medium		13.1	2.64	1793	1165	7.16	96.5
MW305	On-site	541363.15	6108795.52	27/04/2021	24.925	211.774	-	-	-	-	Dry, not sampled	-	-	-	-	-	-
MW306	On-site	542799.42	6107013.89	22/04/2021	61.95	233.058	44.92	188.138	Clear	Low	Wire around base of bore	16.2	3.30	932	605.8	8.63	-16
MW307	On-site	542791.05	6107014.44	22/04/2021	31.05	232.904	-	-	Clear	Low	Dry, not sampled	-	-	-	-	-	-
MW308	On-site	543139.39	6109381.63	21/04/2021	66.5	213.901	41.895	172.006	Cloudy	Low		18.8	2.75	701	455.7	6.35	117.5
MW309	On-site	543133.57	6109377.71	21/04/2021	24.95	213.826	24.455	-	Brown	High	Well bailed	21.6	2.28	2020	1313	6.89	-57.2
MW310	On-site	543564.83	6108980.78	22/04/2021	58.57	210.274	23.5	186.774	Cloudy	Low	Well bailed	11.5	1.58	1155	750.8	7.25	-143.7
MW311	On-site	543566.06	6108977.08	22/04/2021	22.13	210.651	-	-	-	-	Dry, not sampled	-	-	-	-	-	-
MW312	Off-site	-	-	-	62.3	182.97	-	-	-	-	Not sampled. No access granted. Land owner could not be contacted	-	-	-	-	-	-
MW313	Off-site	-	-	-	11.88	182.99	-	-	-	-	Not sampled. No access granted. Land owner could not be contacted	-	-	-	-	-	-

Sample ID	Property	Easting	Northing	Monitoring Date	Sample Depth (m)	Water Body Depth	Flow Rate	Water Colour	Turbidity	Other Observations	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)
SW104	On-site	542263.80	6110131.68	21/04/2021	0.01	0.01	Low	Clear	Low	Very slow rate of flow.	15.4	7.2	609.3	396.045	8.3	83.1
SW206	Off-site	541675.39	6110527.28	20/04/2021	0	0.2	Medium	Clear	Low		17.3	5.39	788	512.2	8.38	72.7
SW212	Off-site	539563.37	6114381.22	23/04/2021	0.2	0.5	Medium	Clear	Low		13.6	5.45	173.2	112.58	7.71	74.8
SW218	Off-site	541679.77	6110529.39	20/04/2021	0.1	0.2	Low	Brown	Medium		17.1	5.54	1346	874.9	8.36	62
SW228	Off-site	543262.03	6112272.39	20/04/2021	0.2	0.8	Low	Green	Low		19.9	11.19	650	422.5	9.67	11.5
SW234	Off-site	536166.15	6112334.13	20/04/2021	0.5	1.5	Medium	Clear	Low		16.9	5.34	743	482.95	7.47	129.5
SW236	Off-site	543767.40	6112318.00	20/04/2021	0.05	0.1	Low	Cloudy	Medium	Water stagnant with minimal flow	12.8	7.52	1061	689.65	8.28	96.6
SW240	Off-site	545028.00	6110672.00	20/04/2021	0.1	0.3	Low	Cloudy	Medium		11.8	3.5	1183	768.95	7.41	129.3
SW261	Off-site	534761.81	6114107.59	21/04/2021	0.3	1	High	Clear	Low		14.3	6.38	185.5	120.575	7.79	149.6
SW262	Off-site	534970.84	6113903.83	22/04/2021	0.2	0.8	Low	Clear	Low	Water stagnant due to trees blocking flow from Marshalls Creek	14.4	7.75	258.6	168.09	7.76	172.5
SW286	Off-site	543605.67	6114255.45	22/04/2021	0.2	1.5	High	Clear	Low		14.8	5.98	162.4	105.56	7.73	116.4
SW288	Off-site	542930.77	6112004.76	22/04/2021	0.1	0.5	High	Cloudy	Medium		23.8	0.81	1009	655.85	7.74	-172.3
SW289	Off-site	543054.42	6112176.56	22/04/2021	0.1	0.3	High	Cloudy	High		23.8	0.37	1275	828.75	7.71	-28.9
SW294	Off-site	535307.66	6113375.69	27/04/2021	0.2	0.5	Medium	Clear	Low		15.1	4.79	589	382.85	8.13	169.9
SW309	Off-site	535436.96	6113744.17	27/04/2021	0.5	1	High	Clear	Low		16.7	5.42	169.6	110.24	7.73	142.5
SW310	Off-site	538809.34	6111596.73	27/04/2021	0.05	0.1	Low	Cloudy	Medium		17.8	3.73	200.8	130.52	7.02	144.1

Oil / Water Interface Meter

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Instrument	**Solinst Interface Meter (60M)**
Serial No.	**122 009772-1**

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: **21/04/2021**

Next calibration due: **20/06/2021**

Gas Detection Air Sampling & Monitoring Environmental & Water Quality Monitoring

Air-Met Scientific Pty Ltd

ABN 73 006 849 949

Ph 1300 137 067

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus

Serial No. 20M101177

Item	Test	Pass	
Battery	Charge Condition	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
	Seal	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. Conductivity	✓	
	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		Instrument Reading
Temp		21.4 °C	*water*	21.4°C
pH10		pH 10	*355386*	pH 10.11
pH7		pH 7	355072	pH 7.05
pH4		pH 4	351412	pH 4.03
EC		2.76µS/cm	350510	2.77µS/cm
ORP (mV)		231.8mV	364217/358634	232.3 mV
DO Zero		0.00ppm	*10959*	0.02ppm

Calibrated by: [redacted]

Calibration date: 16-Apr-21

Next calibration due: 13-Oct-21

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 21B104020

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. PH 10.00		PH1 10.00		355386	PH 9.98
2. pH 7.00		pH 7.00		360390	pH 6.98
3. pH 4.00		pH 4.00		367234	pH 4.14
4. mV		231.8mV		364217/358634	230.4mV
5. EC		2.76mS		350510	2.76mS
6. D.O		0.00 ppm		10959	0.01ppm
7. Temp		21.4°C		MultiTherm	21.5°C

Calibrated by: [redacted]

Calibration date: 16/04/2021

Next calibration due: 16/10/2021

APPENDIX

E

DATA QUALITY REVIEW

Data Quality Review
RAAF Base Wagga, NSW, 2650

This Appendix reviews the Quality Assurance (QA) and Quality Control (QC) documentation. Quality assurance encompasses the actions, procedures, checks and decisions undertaken to ensure sample integrity and representativeness, and the reliability and accuracy of analysis results. The QA documentation should also include an indication of the Data Quality Objectives sought in relation to each significant action, test or process involved in the Assessment.

QC activities measure the effectiveness of the QA procedures by undertaking testing, and then comparing results to previously established objectives. QC work will include the internal laboratory testing as well as results of QC samples submitted such as trip blanks and duplicates. The quality of the information and/or data is deemed satisfactory when the QC results demonstrate that agreed objectives have been met.

Cardno undertook a review of its QA/QC as part of the data validation exercise. The findings are summarised below.

QA/QC Aspects	Evidence and Evaluation
	QA Documentation
Sampling and Analysis Quality Plan and Data Quality Objectives	Cardno was engaged by Department of Defence (the client) to carry out the PFAS Ongoing Monitoring Plan (OMP) of RAAF Base Wagga, NSW, 2650 (the site). The monitoring event commenced on 20 April 2021 until 28 April 2021, and is in general accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP) of 22 April 2021 (Our Ref: 20191021_OMP002_Wagga_ SAQP_Rev5). The assessment was carried out in general compliance with the following: ▪ Australian Standard AS 4482-2005 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds. ▪ Australian Standard AS 4482-1999 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 2 - Volatile substances. ▪ Department of Defence (2019), Contamination Management Manual (DCMM), August 2019. ▪ Department of Defence (2019), Pollution Prevention Guideline - Routine Water Quality Monitoring, Department of Defence, Department of Energy, 2018, Quality System Manual Schedule B15. ▪ EPA Victoria (2009), Industrial Waste Resources Guidelines, Sampling and Analysis of Waters, Wastewaters, Soils and Wastes, Publication 701. ▪ Heads of Environmental Protection Authority's Australia and New Zealand (HEPA) (2020), PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020. ▪ National Environment Protection Council (NEPC), 1999, National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM). ▪ National Health and Medical Research Council (NHMRC) (2019), Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water, August 2019. ▪ USEPA (2000), Guidance for the Data Quality Objectives Process (EPA QA/G-4).

QA/QC Aspects	Evidence and Evaluation
	A quality control program was implemented during the investigation and the quality assurance procedures used have been reiterated in the report. The investigation was carried out in accordance with the Safe Work method Statements (SWMS) and Occupational Health and Safety (OHS) plan for the site. Detailed work plans were also provided for each phase of investigation and are outlined in the SAQP. The Data Quality Objectives were expressed in terms of the purpose of the assessment and the relevant assessment criteria.
Data Validation Report	This review constitutes a data validation review. This was supported by an Esdat generated "QAQC Checker" excel report, summarised in Tables B3 and B4, Appendix B.
Data Representativeness	
Holding Times	Groundwater and surface water sample analysis holding times were in conformance with EPA Publication IWRG701 2009 *'Sampling and Analysis of Waters, Wastewaters, Soils and Wastes*.
Background Samples	No background samples were collected as part of this assessment.
Equipment Decontamination	The decontamination methodology conducted during this investigation is documented in the body of the report, and was in general conformance with the SAQP and work plans. ▪ All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection.
Data Precision and Accuracy	
QC Testing – Blind Replicates (Primary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 37 ▪ Blind Replicate Samples Analysed: 5 ▪ Blind Replicate Analyte Pairs: 135 ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% RPD exceedances were observed for PFAS compounds and are due to low reported concentrations of analytes close to the LOR. Since they are within the same order of magnitude, it is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 16 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 61 ▪ Number of Analyte Pairs Exceeding Criteria: 2 ▪ Percentage of Analyte Pairs Exceeding Criteria: 3% RPD exceedances were observed for PFAS compounds and are due to low reported concentrations of analytes close to the LOR. Since they are within the same order of magnitude, it is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B.
QC Testing – Field Splits (Secondary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 36 ▪ Blind Replicate Samples Analysed: 4 ▪ Blind Replicate Analyte Pairs: 126 ▪ Number of Analyte Pairs Exceeding Criteria: 5

QA/QC Aspects	Evidence and Evaluation
	▪ Percentage of Analyte Pairs Exceeding Criteria: 4% RPD exceedances were observed for PFAS compounds and are due to low reported concentrations of analytes close to the LOR. Since they are within the same order of magnitude, it is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 16 ▪ Blind Replicate Samples Analysed: 3 ▪ Blind Replicate Analyte Pairs: 91 ▪ Number of Analyte Pairs Exceeding Criteria: 7 ▪ Percentage of Analyte Pairs Exceeding Criteria: 8% RPD exceedances were associated with PFAS compounds and are likely attributed to low concentrations of analyte pairs. Since they are within the same order of magnitude, it is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B.
Trip Blanks	Eight (8) trip blanks were collected and laboratory tested for PFAS. All analytes were reported below the limit of reporting (LOR). Trip blank results are presented in Table B4, Appendix B.
Laboratory Internal QC	Evidence of the laboratories internal QC testing is present and complete. Both ALS (the primary laboratory) and Eurofins-mgt performed internal QC with adequate testing and mostly satisfactory results for matrix spikes, method blanks and laboratory duplicates. Exceptions include: Report ES2116333: Matrix Spike ES2118034—006 did not determine a matrix spike recovery as the background level was in excess of spike level for PFHxS and PFOS.
Laboratory Method Detection Limit	Laboratory reports indicate the method detection limits were lower than the respective assessment criteria.
NATA endorsement of laboratory reports	Laboratory reports were stamped with the NATA endorsement stamp and signature. Laboratory reports are included in Appendix C of this report.
Calibration of Field Equipment	All field equipment used was calibrated by the equipment supplier. Certificates are included in Appendix D of this report.
Decontamination and Equipment Blanks	All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection. Nine (9) rinsate blanks were collected during the investigation. The rinsate collected on 27/04/2021 was not scheduled for analysis by mistake. However, two rinsates were collected on 20/04/2021, 21/04/2021, 22/04/2021 and 23/04/2021 and analysed, so total number of rinsate blank samples collected meets the requirement for one per day. Additionally, no PFAS compounds were reported above LOR in any rinsate blank sample, indicating that decontamination was adequate. Rinsate blank samples were tested for PFAS which all reported a concentration below the laboratory LOR. Results are shown in Table B4, Appendix B.
Data Comparability	
Full Review of Data	Once all results have been received, Cardno undertook a full review of the data for any anomalies in consideration of historical data at each location (where available), such as first-time detections or exceedances being reported at locations which have not had detections or exceedances previously. Where potentially anomalous data is identified or suspected, further confirmatory measures were undertaken such as re-extraction and reanalysis of the sample by the laboratory and/or additional data quality review. Four samples were requested for re-extraction and reanalysis. Their results are as follows:

QA/QC Aspects	Evidence and Evaluation
	▪ MW255 – initial results confirmed ▪ MW309 – initial results confirmed ▪ SW228 – initial results confirmed ▪ SW288 – repeat results <LOR, original result is positive PFAS (due to false positive peak). Original results superseded. The data review also identified that the results for two samples were mixed-up due to a laboratory error (MW247 and MW248). This was subsequently corrected. MW255 was resampled by Jacobs on 2 July 2021, including the collection of a blind replicate and a field split. All three sample results were consistent (no RPD exceedances) and confirmed the initial results for MW255.
Standard Procedures	Fieldwork procedures are detailed in the report and followed the work methods outlined in the SAQP.
Qualified Personnel	Staff involved in managing and reviewing the project and those involved in fieldwork are qualified personnel.
Volatile Losses	Volatile losses are not applicable to PFAS.
Sample Integrity	Field Chain of Custody forms are included in Appendix C of this report and demonstrate sample integrity.
Data Completeness	
Completeness of Test Program	The scope of work undertaken was generally consistent with that set out in the Sampling and Analysis Quality Plan (SAQP) and Addendum to the SAQP. Variations to the SAQP are detailed in the Factual Report.
Validity of Data Set	The data quality review indicates no significant systematic errors in the data collection process for surface water and groundwater and therefore, the data set used as the basis for the assessment is considered valid and complete.

APPENDIX

F

INFORMATION ABOUT ENVIRONMENTAL REPORTS

About Site Environmental Assessment Reports

1. Introduction

This document explains the Environmental Site Assessment (ESA) process and the context that applies to the use of Environmental Reports issued by Cardno.

2. What is an ESA?

Environmental Site Assessments (ESA) are undertaken for a range of purposes, specific to the brief issued by the client in each case. The scope may include one or a combination of any of the following:

- A factual report of the condition of a portion of the site or one aspect of an entire site.
- Assessment of the contamination levels in soil to be removed from a site – a waste classification assessment.
- Validation of the success of remediation of a site or a portion of a site.
- Provision of a professional opinion about the suitability of a site for one or more uses, in terms of its contamination status.

The scope of any ESA needs to be defined at the outset.

An ESA is not an Environmental Audit. Such audits are undertaken in accordance with the provisions of regulations enacted in various states of Australia, and are referred to as Site Audits in some jurisdictions. Statutory audits provide certification by EPA accredited auditors that a site is suitable for one or more uses. An ESA may provide similar advice but cannot be used in place of an audit if the latter is required by regulation in any instance. However in some circumstances and jurisdictions an ESA is sufficient to provide "environmental sign-off" of a site.

An ESA may be undertaken for due diligence purposes, to establish whether the site has been impacted to the extent that some beneficial uses of the site may be precluded. Due diligence audits in many cases may be completed as non-statutory Audits, although in some jurisdictions they can also be statutory audits, if defined as such at the outset.

3. The ESA Process

The Client generally initiates the ESA process by specifying a brief which identifies the specific objectives of the assessment. If not, it is the consultants' duty to so specify the ESA

In the case of an ESA to provide an opinion about the suitability of the site for use, it would be conducted in accordance with NEPM (Site Assessment). Such ESA would not commence until a thorough site history assessment (Phase 1 Assessment: to identify the potential for significant contamination at a site) is conducted. However, where the history is unclear, a broad screening of chemical parameters can be used to test environmental media. This normally includes a broad range of organic and inorganic compounds and elements, often referred to as an Environmental Screen.

(In the case of an ESA for a purpose other than to provide an opinion about the suitability of the site for use, it is not always necessary to undertake a Phase 1 assessment.)

The ESA requires sampling of soil at representative locations across the site. A NATA accredited laboratory performs the analysis of soil. It is impractical for all of the soil to be assessed. The ESA is often based on a statistical method of grid or random sampling, augmented by targeted sampling at locations known or suspected to be contaminated. Guidance on sampling strategy and density is provided in Australian Standard AS4482.1–2005. However, some considerable degree of judgement is still required in the application of any sampling and testing strategy. For example the blanket application of the "hot spot" method presented in this standard is often inappropriate given its limitations.

The field program also investigates the likelihood of contamination below the site surface. Field investigations must sample and test fill as well as the natural soils. If contamination is found then it is common for further work to be undertaken to characterise, to the extent practical, its vertical and horizontal extent. However, where fill is encountered and testing shows it to be uncontaminated, it must be realised that the heterogeneous nature of the material might mean that not all pockets of contaminated material can be detected using normal sampling regimes.

EPA guidelines for auditors, that may be relevant for an ESA, indicate the need in all cases to consider the potential for groundwater contamination in any site. This does not mean all sites need to be drilled to sample groundwater, but it is most often the case. Most hydrogeological settings and groundwater conditions are complex and vary in space and time. The condition of groundwater is investigated to identify if any beneficial use or environmental value of groundwater is precluded due to contamination.

As previously stated for soil, all groundwater at the site cannot be tested. The environmental investigations are conducted in accordance with industry standards and guidelines (e.g. EPA Vic Pub 668). This provides a level of confidence that a sufficiently comprehensive assessment of the groundwater at the site is achieved.

Where an investigation shows that groundwater is polluted, consideration should be given to assessing the risks and the need for and practicality of any clean up.

4. Environmental Assessment Report

The ESA Report details the findings of the ESA. It provides summary information on the site definition, the reasons for the assessment and other relevant facts. It reviews the scope and quality of the site investigations, laboratory testing and data analyses undertaken. These reports also present a review of the contamination status of the site, the need for any further clean up, and an opinion on the suitability of the site for a range of beneficial uses and land uses such as “residential – low density”, “commercial” etc, as appropriate.

However, as noted above, some ESA have a narrow scope such as for classification of waste soil for removal from site, and do not make conclusions on suitability of site for use.

The ESA Report generally includes copies of other documents and reports, necessary to support the assessment findings, presented as appendices. These can contain more detailed information than the body of the ESA Report. Care should be taken to also read the appended documents and the ESA report in full.

Cardno generally issues reports in electronic form (e-Report) on CD ROM. ESA Reports are issued in this format as Adobe Acrobat™ PDF files. However, a paper copy of the executive summary of the ESA Report is generally issued to the client, and others as required by the brief or by regulation.

5. Limitations of Environmental Assessment Report

The ESA Report is prepared in a manner that can be easily read by a lay person with a legitimate interest in the contamination status of the site, such as the site owner or occupier, EPA and Local Planning Authority. The ESA report is not intended for use by other parties or for other purposes. Anyone who uses the assessment report for purposes other than specified in the report, does so at their own risk.

The site should only be used for one or more of the beneficial uses and land uses identified in the ESA as suitable.

The conditions and qualifications may apply to the suitability of the site for use, and it is the responsibility of the Client to be cognizant of and accept these in accepting the report. Cardno are only responsible for the issuing of the ESA report but accepts no liability for the costs incurred in the implementation of ESA findings.

The ESA provides a “snapshot” of the site conditions at the time of the site investigation. Consequently, the report may not be valid at a later time if there has been any change to the contamination status of the site in that time. Verification of the status of the site may be required in cases where a significant time has elapsed, or site conditions have changed since the assessment and audit.

The ESA is necessarily limited by constraints such as time, cost and available information; although normal professional practice at the time has been applied with all due care to prepare the report. A necessary requirement of this process is the horizontal and vertical interpolation of data from discrete locations. However, site conditions are generally not homogenous and some discrepancies will occur between the actual and predicted results at locations not directly sampled. There is a risk that contamination may occur at the site and not be identified by a competent investigation and assessment. The approach adopted in sampling (a combination of statistically based grid and judgmental sampling) seeks to reduce, but cannot eliminate, this risk.

Where unexpected occurrences of contamination arise, subsequent to the issue of the ESA Report, Cardno should be permitted to make an interpretation of these facts in relation to the ESA Report findings. Consequently, the Client should inform Cardno and seek their opinion. Cardno accepts no liability for costs incurred due to such

unexpected occurrences, given the inherent uncertainties in the assessment process.

Cardno uses information provided by other parties as the basis for the ESA, and reliance on this information is at the discretion of Cardno. However, however Cardno cannot guarantee any of the facts, findings or conclusions presented by other parties. Cardno will not be liable for the use of information, provided by others that is subsequently found to be intentionally misleading.

The ESA Report is not and does not purport to be anything other than a contaminated land ESA. It is not a geotechnical report and bore logs reproduced are for interpretation of the likely distribution of contamination. They are not intended for geotechnical interpretations and may not be adequate for this purpose.

The ESA Report is not intended to be a comprehensive analysis of the presence and associated risk of asbestos in buildings and services. Where asbestos in buildings and services is known or likely, the report may only caution that an appropriately qualified person be engaged to undertake demolition to avoid contamination of the site.

Cardno

13 August 2015

APPENDIX

F

E4 FACTUAL REPORT

Cardno

now

Stantec

PFAS OMP Factual Report

Biannual Sampling Event – October 2021

RAAF Base Wagga

DEF19008

Prepared for
Department of Defence

13 January 2022

Cardno

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Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Cardno is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

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List of Abbreviations and Units

Chemical Names

DOC	Dissolved Organic Carbon
DO	Dissolved Oxygen
PFAS	Per- and Poly-fluoroalkyl Substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Per-fluoro-octanoic Acid
PFOS	Per-fluoro-octane Sulfonate
TDS	Total Dissolved Solids (salinity of water)
TSS	Total Suspended Solids

Technical Terms

AFFF	Aqueous Film-Forming Foam
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
AS	Australian Standard
AST	Above-ground Storage Tank
BGL	Below Ground Level
COC	Chain of Custody
DQI	Data Quality Indicator
DQO	Data Quality Objective
EC	Electrical Conductivity
EPA	Environment Protection Authority
ESA	Environmental Site Assessment
HIL	Health Investigation Level
HSL	Health Screening Level
LOR	Limit of Reporting
N/A	Not Applicable
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environmental Protection Measure
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan
SEPP	State Environment Protection Policy

Units

ha	Hectares
mBGL	Metres Below Ground Level
mbTOC	Metres below Top of Casing
mg/kg	Milligram per Kilogram (approximately equivalent to ppm)
mg/L	Milligram per Litre
ppm	Parts per Million
µg/L	Micrograms per Litre
µS/cm	Micro Siemens per Centimetre (Electrical Conductivity - Water)

Site Specific

OMP	Ongoing Monitoring Plan
RAAF	Royal Australian Air Force

1 Introduction

1 1 Background

Cardno was engaged by the Australian Department of Defence (Defence) to carry out the Per- and Poly-Fluoroalkyl Substances (PFAS) Ongoing Monitoring Plan (OMP; Jacobs, 2019b) at RAAF Base Wagga ("the site"). The site is located outside of Wagga Wagga in Forest Hill, New South Wales, as shown in Figure 1, Appendix A.

The OMP was carried out in accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP):

> Cardno, 18 October 2021, Reference: DEF19008, *PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP) RAAF Base Wagga Wagga*.

For the purposes of this report:

> RAAF Base Wagga is defined as "the Site", which also represents the "On-Site Monitoring Area". The Site is inclusive of the RAAF base as well as an operational airfield, Wagga Wagga City Domestic Airport (WWCDA), which is operated by the Wagga Wagga City Council (Council) (Figure 1, Appendix A).

> The "Off-Site Monitoring Area" comprise areas to the east, north, west and northwest of the Site (Figure 1, Appendix A).

> The "Monitoring Area" (MA) is comprised of the "On-Site Monitoring Area" and the "Off-Site Monitoring Area" (Figure 1, Appendix A).

1 Purpose Ob ectives

The objective of the OMP is to assess the changes in the nature and extent of PFAS in groundwater and surface water, specifically where there is an identified potentially elevated risk to a receptor or a potential future risk to a receptor associated with Defence's historical use of Aqueous Film Forming Foam (AFFF). The OMP will also provide confirmation of our current understanding of risk.

The purpose of this PFAS OMP factual report is to provide an up-to-date status of the condition of the site as it is currently understood in relation to the most recent sampling event.

The objectives of the report are to provide:

> A succinct summary of the October 2021 sampling event and provision of analytical results with supporting tables and figures;

> Confirmation of the current understanding of risk; and

> Supporting data for the assessment of management actions, where relevant.

1 Relevant Guidelines

This assessment has been undertaken in general accordance with applicable industry standards for a site investigation for the purpose, objectives and scope identified in this report. These standards are set out in:

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

> Australian Standard AS 4482-2005 *Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds*.

> Department of Defence (2019a), *Contamination Management Manual* (DCMM), August 2019.

> Department of Defence (2019b), *Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring.*

> Department of Defence, Department of Energy, 2018, *Quality System Manual Schedule B15*.

> EPA NSW (2002), *The NSW State Groundwater Dependant Ecosystems Policy*, April 2002.

> EPA NSW (2004), *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales*, Publication 1669.2, March 2004

> NSW EPA (2016), *Designing Sampling Programs for Sites Potentially Contaminated by PFAS*.

> EPA NSW (2014), *Waste Classification Guidelines – Part 1: Classification of Waste*, November 2014.

> Heads of Environmental Protection Authority's Australia and New Zealand (HEPA), January 2020, *PFAS National Environmental Management Plan (NEMP) Version 2.0*.

> National Environment Protection Council (NEPC), 1999, *National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013)* (ASC NEPM).

> National Health and Medical Research Council (NHMR), August 2019, *Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water*.

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

> U.S. Environmental Protection Agency (EPA), 2000, '*Guidance for the Data Quality Objectives Process (EPA QA/G-4)*'.

> USEPA, 2002, '*Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8)'.*

Scope of Work

Cardno carried out the following tasks in order to satisfy the purpose and objectives of this assessment.

1 Review / Revision o the SAQP

Cardno undertook a review of the SAQP prior to commencement of sampling and revised the SAQP to remove references to management zones and to include an appendix presenting available well construction details. The management zones were removed based on advice by the NSW EPA. The decision was based on all current evidence received since the publishing of the PFAS Management Area Plan (PMAP), that management zones are no longer required to manage risk from PFAS leaving the Site. The SAQP will be reviewed and further revised as required prior to the next monitoring event scheduled for March/April 2022.

Groundwater Monitoring

Sampling of selected groundwater bores was performed in accordance with the SAQP, applying methods set out in Section 3 of this report. The groundwater bores monitored as part of the OMP are presented in Table 2-1, and are shown in Figure 4, Appendix A.

Table 2-1 Groundwater Monitoring Locations

Monitoring Area	Location ID
On-site	MW243, MW300, MW301, MW302, MW303, MW304, MW305, MW306, MW307, MW308, MW309, MW310, MW311.
Gumly Gumly Wetland	MW200, MW204, MW233, MW312, MW313.
Down-gradient of Gumly Gumly Wetland	MW238, MW239, MW240, MW244, MW245, MW247[2], MW248[2], MW249[2], MW250[2], MW251[2], MW252[2], MW253[2], MW254[2], MW255[2], MW256[2], MW257[2].
Off-site to the north and north-west of site	MW214[1], MW231, MW235, MW246[2].
Drinking water supply bores to the north and north-west of site	MW209, MW210, MW211, MW212, MW213.
Property to the east of the site	MW241, MW242.

Notes:
1. MW214 is the current production bore supplying irrigation water to the base.
2. New bores installed in 2020 (Jacobs, 2020).

Data loggers previously installed in 13 groundwater monitoring locations to monitor water levels over time were retrieved and the data downloaded: MW215, MW242, MW243, MW304, MW312, MW238, MW239, MW245, MW244, MW247, MW248, MW249 and MW250. The data will be assessed and reported as part of the Annual Interpretive Report (AIR) for 2021.

Sur ace Water Monitoring

Sampling of selected surface water locations was performed in accordance with the SAQP, applying methods set out in Section 3 of this report. The surface water locations monitored as part of the OMP are presented in Table 2-2, and are shown in Figure 5, Appendix A.

Table 2-2 Surface Water Monitoring Locations

Monitoring Area	Location ID
Surface Water Inflows – drains discharging from the Site	SW104, SW206.
Surface Water Outflows – drain parallel to Forest Hill Rural Fire Service	SW218.
Marshalls Creek downstream of Gumly Gumly Wetland	SW234, SW262, SW294, SW310.
Murrumbidgee River	SW212, SW261, SW286, SW309.
Kyeamba Creek	SW236, SW240.
Forest Hill Sewage Treatment Plant	SW228, SW288, SW289.

Data Management

All the data included in the report have been collected, uploaded to the ESdat database and reviewed according to the data management requirements of the Defence Contamination Management Manual (DCMM) Annex L (Department of Defence, 2019).

Deviations rom the OMP SAQP

Deviations from the SAQP are presented in Table 2-3. On-site and off-site sampling and testing was undertaken at 37 groundwater monitoring wells and 16 surface water locations. Eight groundwater monitoring wells could not be sampled as the wells were found to be dry or had insufficient water for sampling.

Table 2-3 Deviations from SAQP

Location	Deviation	Comments	Impact on E isting Dataset
Groundwater			
MW301, MW303, MW305, MW307, MW311.	Not sampled	Dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW257, MW309	Not sampled	Insufficient water within the bore for sampling.	Data gap with respect to MW257 - sampled once in 2020 by Jacobs, results were below LOR. No impact with respect to MW309 – no previous data as bore was dry during previous sampling events.
MW313	Not sampled	Dry. It is noted that MW313 was also dry during the March 2020 and September/October 2020 sampling events.	No impact - no previous data for MW313 due to this location being dry during previous monitoring.
MW200, MW209, MW210, MW211, MW212, MW213, MW214, MW231, MW233, MW235	Alternate sampling method	Existing pumps inside bores; samples collected from tap on outlet pipe.	No impact – sample method has been consistent throughout OMP.
Rinsate blank samples	Alternate sampling frequency	Rinsate not collected on one day of sampling (24/10/21).	This is considered to have little to no impact on the investigation as only one groundwater sample was collected on this day. There were also no PFAS compounds reported above LOR in any rinsate blank samples, indicating that decontamination was adequate.

Methodology

1 Groundwater Sampling Methodology

Groundwater monitoring was undertaken using the no purge HydraSleeve® method, as detailed in Table 3-1, except for deviations as specified in Table 2-3.

Table 3-1 Groundwater Sampling Method

Activity	Details
Dates of Field Activity	18 October 2021 to 22 October 2021; 24 October 2021
Well Gauging	Standing Water Levels (SWLs) were gauged using an interface probe. All wells were measured against a specified mark at the top of the well casing.
Water Quality Parameter Field Measurements	Water quality parameter field measurements were recorded with a water quality meter before sample collection (with the sample in a clean jar). The following field parameters were recorded using a water quality meter: ▪ pH. ▪ electrical conductivity (EC). ▪ oxidation reduction potential (ORP). ▪ Dissolved oxygen (DO). ▪ Temperature. Field measurements made by the water quality meter were recorded on field data records. All field instruments (e.g. water quality meter) were calibrated by the equipment supplier to optimise the accuracy of the measurements taken. Calibration certificates are provided in Appendix D.
Deployment of HydraSleeve	The HydraSleeves® were deployed with attached weights in order for sample collection to begin at the lowest point of the well screen. HydraSleeves were deployed during the first biannual sampling event between 25 March – 1 April 2020. Due to wear, HydraSleeves were re-deployed in wells MW302, MW306, MW310 and MW312 during the September-October 2020 sampling event, and in MW243 and MW308 during the April 2021 sampling event. Following the construction of 12 new groundwater wells (MW246, MW247, MW248, MW249, MW250, MW251, MW252, MW253, MW254, MW255, MW256, MW257) by Jacobs between November 2019 and February 2020, HydraSleeves® were deployed by Jacobs.
Retrieval of HydraSleeves (Sample Collection)	At all locations, HydraSleeve® sampling devices were left in wells from the previous sampling event, ensuring the wells were restabilised following the slight disturbance caused by sampler deployment. Where new HydraSleeve® sampling devices were deployed due to the previous HydraSleeve® being found to be damaged or worn out upon retrieval, they were left in wells for a minimum of 4 hours when deployed with top weights only, to allow restabilisation of the well following the slight disturbance caused by sampler deployment. For wells with a shallow water column, HydraSleeve® sampling devices were deployed with both top and bottom weights, and were left in the well for a minimum of 24 hours, to allow the top weight time to compress the HydraSleeve into the bottom of the well. Samples were collected via continuous pull method at a rate allowing the water to pass through the check valve into the sample sleeve. Samples were discharged immediately (to minimise changes in chemistry) via a discharge tube. HydraSleeves® were redeployed after sampling in preparation for the next sampling event.
Decontamination procedure	Dedicated HydraSleeves® were used at each groundwater bore, thus removing the need for decontamination. All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection.

Activity	Details
Sample identification, preservation transport and holding times	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Samples were collected directly into appropriately preserved, laboratory-supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under Chain of Custody (COC) documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998 and AS 4482.1 as appropriate).
Laboratory Testing	All groundwater samples were submitted for the following analysis: ▪ Full PFAS analytical suite (refer to the SAQP for list of analytes). The primary laboratory was ALS Global Laboratories (Smithfield, NSW) and the secondary laboratory (quality control) was Eurofins (Lane Cove West, NSW). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and Chain of Custody documentation are included in Appendix C.
Laboratory Testing – Quality Control	Groundwater quality control samples were collected as set out in the SAQP and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples (5 samples). ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples (5 samples). ▪ Rinsate blank samples at 1 per day [collected off re-used sampling equipment (e.g. interface probe)], except on the last day of sampling as outlined in the deviations presented in Section 2.5 (4 samples total). ▪ Trip blank samples of 1 per shipment included in the chilled sample containers upon transport to the laboratory (5 samples total).

Sur ace water Sampling Methodology

The surface water monitoring methods and activities are summarised in Table 3-2.

Table 3-2 Surface Water Monitoring Event Summary

Activity	Details
Dates of Field Activity	19 October 2021 to 22 October 2021.
Water Levels	Water depths were measured where relevant with an interface probe, limiting water disturbance.
Water Quality Parameter Field Measurements	Surface water water quality parameter field measurements (pH, electrical conductivity (EC), oxidation reduction potential (ORP), dissolved oxygen (DO) and temperature) were recorded at the time of sampling using a pre-calibrated water quality meter. Field observations such as turbidity, odours or sheen presence were recorded on field sampling sheets.
Sampling Method	Where possible, the samples were collected directly into sample containers. The sample bottles were positioned at least 10 cm below the surface water level and above the sediment bed and orientated with the opening facing downwards to avoid the collection of surface films. Where access to surface water samples was difficult, the samples were collected using a long-handled sampling device (scoop). Samples were then decanted into the laboratory-supplied sample containers. Samples were collected in accordance with Australian/New Zealand Standards (AS/NZS 5667.1:1998) *Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.*
Decontamination	All re-usable sampling equipment (e.g. water scoop) was thoroughly washed using PFAS & phosphate-free detergent (Liquinox) and then double rinsed with de-ionised water before the sample collection.

Activity	Details
Sample identification, preservation, transport and holding times.	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM. Samples were collected in appropriately preserved, laboratory-supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under COC documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998 and AS 4482.1 as appropriate).
Laboratory Testing	Surface water samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Smithfield, NSW) and the secondary laboratory (quality control) was Eurofins (Lane Cove West, NSW). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and Chain of Custody documentation are included in Appendix C.
Laboratory Testing – Quality Control	Surface water quality control samples were collected as set out in the SAQP and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples (2 samples). ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples (2 samples). ▪ Rinsate blank samples at 1 per day [collected off re-used sampling equipment (e.g. long-handled sampling device)] (4 samples total). ▪ Trip blank samples of 1 per shipment included in the chilled sample containers upon transport to the laboratory (5 samples total).

Quality Control / Quality Assurance

A critical aspect of site assessments is the demonstration of the quality of the data used as the basis for the assessment. This is achieved through a Data Validation process which includes a review of the following data quality indicators, as described in the SAQP:

- QA documentation
- Bias
- Data Representativeness
- Data Precision & Accuracy
- Data Comparability
- Data Set Completeness

A detailed review of these aspects has been undertaken, the results of which are presented in Appendix E. A summary of the data validation from the QA/QC review is included in Section 4.5 below.

Assessment Criteria

1 Groundwater

The adopted assessment criteria for groundwater are detailed in Table 3-3.

Table 3-3 Criteria for Groundwater

E posure Scenario	Adopted Assessment Criteria		Guidance
	PFH S / PFOS	PFOA	
	µg/L		
Human Health - Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Ecological	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2019b).

Sur ace Water

The adopted assessment criteria for surface water are detailed in Table 3-4.

Table 3-4 Criteria for Surface Water

E posure Scenario	Adopted Assessment Criteria		Guidance
	PFH S / PFOS	PFOA	
	µg/L		
Human Health - Surface Water Recreational	2[2]	10	HEPA 2020
Human Health - Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Ecological	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2019b).

Field Observations and Results

1 Conditions Impacting the Sampling Event

In the seven days prior to the sampling event, 0 mm of rain was recorded at the nearest weather station (74127), located approximately 10 km north west of the site. Average rainfall in October 2021 (31 mm) was lower than the October monthly average between 2001 and 2020 (41.2 mm).

No on-site activities with the potential to impact sample collection or the results were noted.

Groundwater

1 Summary o Field Observations

4.2.1.1 Water Quality Parameter Field Measurements

Stabilised water quality parameter field measurements, water colour and turbidity observations recorded during the groundwater sampling program are presented in field sampling record sheets, included in Appendix D. Field measurements for each aquifer unit were generally consistent with the previous monitoring event. Groundwater varied from clear to brown with low to high turbidity and no notable changes were recorded relative to previous monitoring events.

4.2.1.2 Groundwater Elevation and Migration

Groundwater elevation during this sampling event ranged from 162.992 mAHD (MW249) to 171.921 mAHD (MW308) for the Cowra Formation (shallow aquifer), and from 163.326 mAHD (MW250) to 188.178 mAHD (MW306) for the Lachlan Formation (deep aquifer).

Groundwater flow for both aquifers was interpreted to be in a north-westerly direction, which is consistent with the flow of Kyeamba Creek and Marshalls Creek and with the previous monitoring event.

Groundwater elevation contours and flow directions are shown in Figures 2 and 3, Appendix A. Gauging records are presented in Appendix D.

Groundwater Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, and are presented in Table B1, Appendix B, and summarised in Table 4-1 below.

Table 4-1 Summary of Groundwater Results Exceeding Adopted Criteria

Analytes	Locations E ceeding Criteria	Lowest Criteria µg/L)	Ma Conc µg/L)	No Analytical Results LOR[1]	No Results Above Drinking Water Criteria[1]	Signi icant Concentration Changes
PFOS	MW200, MW233	0.13[2]	0.31	8	-	-
PFOA	-	0.56[3]	0.08	3	0	-
Sum of PFHxS & PFOS	MW200, MW233, MW240, MW248, MW254, MW256	0.07[3]	0.86	11	6	-

1. Non-inclusive of quality control samples
2. Ecological assessment criteria
3. Drinking water assessment criteria
4. Significant concentration change defined as an order of magnitude increase or decrease

Laboratory results have also been compared to available historical data. All concentrations reported during this event were generally consistent with previous sampling events.

No groundwater sampling locations reported a first time exceedance of adopted assessment criteria or a first time detection during the October 2021 sampling event. Groundwater sampling locations are presented on Figure 4, Appendix A, and the laboratory reports are provided in Appendix C.

Findings are summarised as follows:

- Of the 37 samples that were tested, PFOA was reported above the laboratory limit of detection (LOR) in three (3) samples (MW200, MW248, MW254), and Sum of PFHxS & PFOS in eleven (11) samples (MW200, MW233, MW240, MW248, MW250, MW253, MW254, MW255, MW256, MW300, MW312).
- Six (6) sampling locations (MW200, MW233, MW240, MW248, MW254, MW256) exceeded adopted human health criteria for Sum of PFHxS & PFOS and no sampling locations exceeded adopted criteria for PFOA, consistent with the previous monitoring event.
- No groundwater sampling locations reported a first time exceedance of adopted assessment criteria or a first time detection.

Sur ace water

1 Summary o Field Observations

4.3.1.1 Water Quality Parameter Field Measurements

Stabilised water quality parameter field measurements, water colour and turbidity observations recorded during the surface water sampling program are presented in field sampling record sheets, included in Appendix D. Field measurements were generally consistent with historical observations. Surface water varied from clear to brown with generally low to medium turbidity. In general, water was clearer and slightly less turbid than the previous monitoring round in April 2021.

Sur ace Water Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, and are presented in Table B2, Appendix B, and summarised in Table 4-2 below.

Table 4-2 Summary of Surface Water Results Exceeding Adopted Criteria

Analytes	Locations E ceeding Criteria	Lowest Criteria µg/L)	Ma Conc µg/L)	No Analytical Results LOR[1]	No Results Above Drinking Water Criteria[1]	Signi icant Concentration Changes
PFOS	SW104, SW218, SW228, SW289, SW310	0.13[2]	1.41	9	-	SW206 (decrease)
PFOA	-	0.56[3]	0.06	5	0	-
Sum of PFHxS & PFOS	SW104, SW218, SW228, SW289, SW310.	0.07[3]	2.13	9	5	SW206 (decrease)

Note
1. Non-inclusive of quality control samples
2. Ecological assessment criteria
3. Drinking water assessment criteria
4. Significant concentration change defined as an order of magnitude increase or decrease

Results have also been compared to available historical data. Surface water results reported during this event were generally consistent with previous sampling events, with the exception of SW206 which reported an order of magnitude decrease in Sum of PFHxS & PFOS concentrations.

No surface water sampling locations reported a first time exceedance of adopted assessment criteria or a first time detection during the October 2021 sampling event. Surface water sampling locations are presented on Figure 5, Appendix A, and the laboratory reports are provided in Appendix C.

Findings are summarised as follows:

- Of the 16 samples that were tested, PFOA was reported above the laboratory LOR in five (5) samples (SW104, SW218, SW228, SW289, SW310), and Sum of PFHxS & PFOS was reported above the laboratory LOR in nine (9) samples (SW104, SW206, SW218, SW228, SW234, SW262, SW289, SW294, SW310).
- One (1) sampling location (SW228) reported an exceedance for Sum of PFHxS & PFOS of the Recreational Water criteria.
- Five (5) surface water samples (SW104, SW218, SW228, SW289, SW310) reported exceedances for Sum of PFHxS & PFOS of the Drinking Water criteria, and none reported exceedances for PFOA.
- No surface water samples reported a first time exceedance of adopted criteria or first time detection for Sum of PFHxS & PFOS or PFOA.

Changes to the Monitoring Network Condition

No changes to the monitoring network condition were noted during this sampling event.

Data alidation

The data validation process has concluded that there are no significant systematic errors in the data collection process. Therefore, the data set used as the basis for the surface water and groundwater assessment is considered valid and complete. A detailed Data Quality Review is included in Appendix E.

Risk Pro ile

The PMAP (Jacobs, 2019a) includes the following summary of elevated risks which were originally identified in the DSI (Jacobs, 2018a) and/or the *Human Health and Ecological Risk Assessment for the RAAF Base Wagga PFAS Investigation* (HHERA; Jacobs, 2018b):

- High consumption of certain fish and yabbies sourced from local waterways around the Base.

- Direct toxicity to aquatic ecology at farm dams in the Gumly Gumly Wetland and in Marshalls Creek.
- Effects on terrestrial or aquatic ecology due to bioaccumulation in higher order consumers at various off-Base locations.
- Potential future risks if residents at certain properties commence home consumption of food produced with PFAS impacted water or soil.
- Potential risks if PFAS impacted groundwater is used for drinking water or home food production in the future.
- Potential risks to groundwater users due to PFAS migration in the future.
- Discharge of PFAS impacted sewage from the Base at concentrations that would present an elevated risk if treated sewage is recycled for irrigation of land close to Kyeamba Creek (potential ecological risk) or irrigation of crops for home consumption (potential human health risk).

No new source of PFAS contamination, transport pathway or potential receptor has been identified during this sampling event.

Summary and Conclusions

Cardno conducted the October 2021 biannual groundwater and surface water monitoring event at RAAF Base Wagga as part of the PFAS OMP. On-site and off-site sampling and testing was undertaken at 37 groundwater monitoring wells and 16 surface water locations.

Groundwater levels were gauged in all wells before sampling. Groundwater was interpreted to flow in a north-westerly direction, consistent with local drainage patterns and consistent with previous monitoring events.

The results of the October 2021 monitoring event confirm that there is no overall change in the risk profile associated with Defence's historical use of AFFF since the previous monitoring event in April 2021.

Table 5-1 Summary of Results

Item	Details
Deviations from OMP SAQP	> 6 groundwater wells were not sampled due to the wells being dry. > 2 groundwater wells were not sampled due to insufficient water within the bore for sampling. > 10 groundwater wells were sampled from pump discharge pipe, bore tap or discharge dam due to there being no direct bore access.
Groundwater Analytical Results	> 37 groundwater samples were collected in total. > 3 samples reported PFOA concentrations above the limit of reporting. > 11 samples reported Sum of PFOS & PFHxS concentrations above the limit of reporting. > No samples reported PFOA concentrations above the Drinking Water assessment criteria. > 6 samples reported Sum of PFOS and PFHxS concentrations above Drinking Water assessment criteria. > No samples reported a first time detection of PFOA or Sum of PFHxS & PFOS. > No samples reported a first time exceedance of the Drinking Water assessment criteria for PFOA. > No samples reported a first time exceedance of the Recreational Water assessment criteria for Sum of PFOS & PFHxS. > Groundwater results were generally consistent with the previous monitoring event.

Item	Details
Surface Water Analytical Results	> 16 surface water samples were collected in total. > 5 samples reported PFOA concentrations above the limit of reporting. > 9 samples reported Sum of PFOS & PFHxS concentrations above the limit of reporting. > No samples reported PFOA concentrations above the Drinking Water assessment criteria. > 5 samples reported Sum of PFOS and PFHxS concentrations above the Drinking Water assessment criteria. > 1 sample reported Sum of PFOS and PFHxS concentrations above the Recreational Water assessment criteria. > No samples reported a first time detection of PFOA or Sum of PFHxS & PFOS. > No samples reported a first time exceedance of the Drinking Water assessment criteria for PFOA. > No samples reported a first time exceedance of the Recreational Water assessment criteria for Sum of PFOS & PFHxS. > Surface water results reported during this event were generally consistent with previous sampling events, with the exception of SW206 which reported an order of magnitude decrease in Sum of PFHxS & PFOS concentrations.
Next Scheduled Monitoring Event	Considering all deviations for this event have been consistent throughout the OMP and there were no changes to the monitoring network, revision of the SAQP is not required at this time. However, the SAQP will be reviewed to consider any relevant changes occurring on site prior to the next monitoring event scheduled for March/April 2022.

References

General Re erences

1. ANZECC and ARMCANZ (2000) Australian Water Quality Guidelines for Fresh and Marine Water Quality.
2. Department of Defence (2019a), Contamination Management Manual (DCMM), August 2019.
3. Department of Defence (2019b), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring.
4. Defence (2021) Defence OMP Factual Report Preparation Guidance, Revised May 2021.
5. Environmental Protection Agency (United States EPA; 2002) EPA/240/R-02/004 Guidance on Environmental Data Verification and Data Validation, November 2002.
6. The Heads of EPAs Australia and New Zealand (HEPA; 2020) PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020.
7. National Environment Protection Council (NEPC; 1999) National Environmental Protection (Assessment of Site Contamination) Measure (as amended), registered May 2013.
8. National Health and Medical Research Council (2011 – updated 2018) National Water Quality Management Strategy Australian Drinking Water Guidelines, 6 August 2018.
9. Nation Health and Medical Research Council (NHMR; 2019) Guidance on Per and Poly-fluoroalkyl Substances (PFAS) in Recreational Water, August 2019.
10. Standards Australia/Standards New Zealand (1998) AS5667.1:1998 Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.
11. Standards Australia (1999) AS4482.2-1999 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 – Non-volatile and semi-volatile compounds.
12. US EPA (2000) Guidance for the Data Quality Objectives Process (EPA QA/G-4), United States Environmental Protection Agency.
13. US EPA (2002) Guidance on Environmental Data Verification and Data Validation, Reference: EPA/240/R-02/004, United States Environmental Protection Agency, November 2002.

Site Speci ic Re erences

14. Jacobs (2018a) *Comprehensive Investigation of Per- And Poly- Fluoroalkyl Substances (PFAS) at RAAF Base Wagga. Detailed Site Investigation*, June 2018.
15. Jacobs (2018b) *Human Health and Ecological Risk Assessment for the RAAF Base Wagga PFAS Investigation*, 6 November 2018.
16. Jacobs (2019a) *RAAF Base Wagga; PFAS Management Area Plan*, September 2019.
17. Jacobs (2019b) *PFAS Ongoing Monitoring Plan*, September 2019.
18. Jacobs (2020) *RAAF Base Wagga Comprehensive PFAS Investigation - Ongoing Monitoring Program Groundwater Well Installation Report.* Prepared for Department of Defence, December 2020.
19. Cardno (2021) *PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP),* RAAF Base Wagga. Prepared for Department of Defence, October 2021.

APPENDIX A

FIGURES

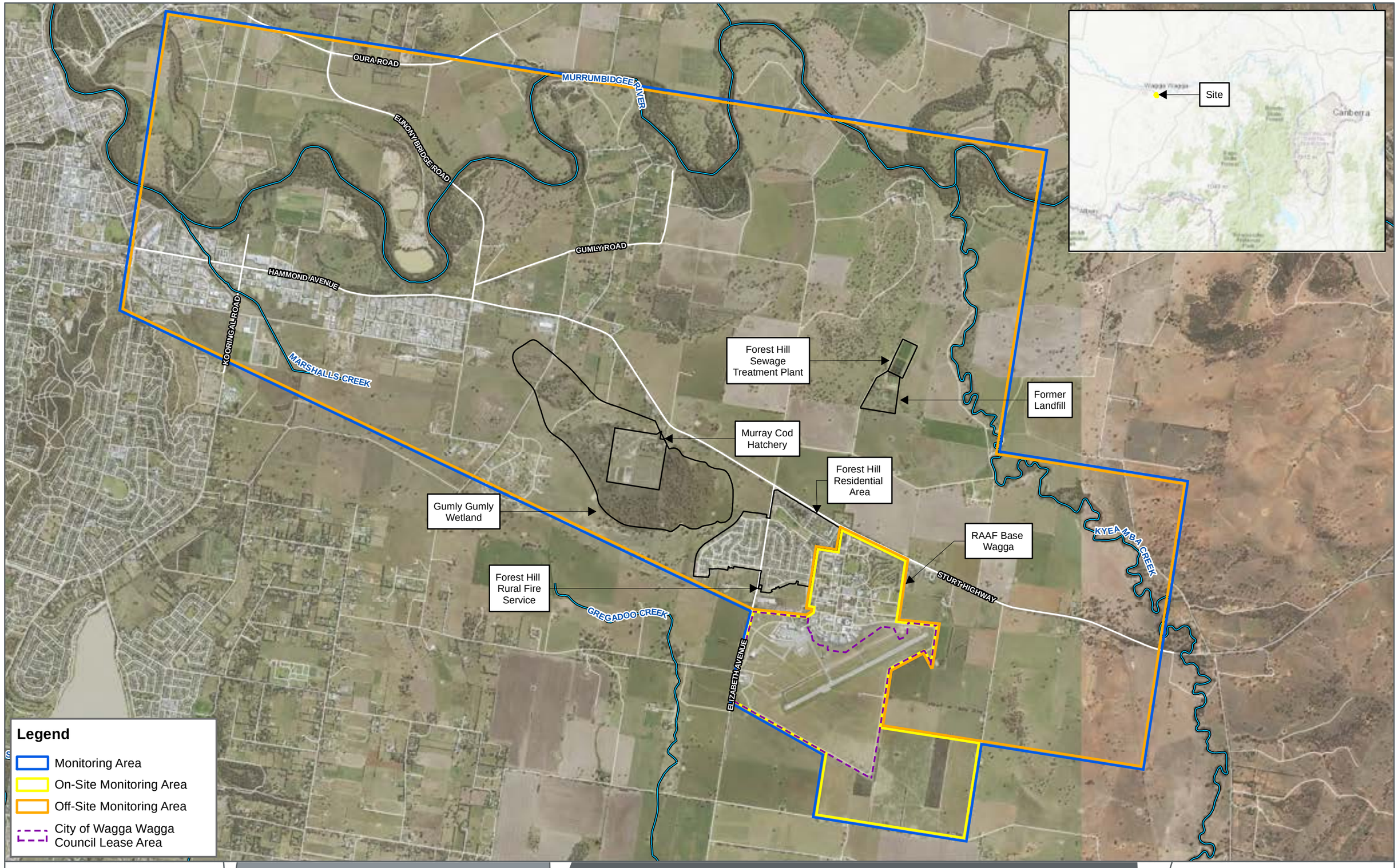

FIGURE 1

1:40,000 Scale at A3

Metres

0 1,000 2,000

Site Locality Plan

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno

Map Produced by Cardno
Date: 2021-11-25 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-032-SiteLocalityPlan_WW_.mxd 06
Aerial Imagery Supplied by Metromap (April, 2021)

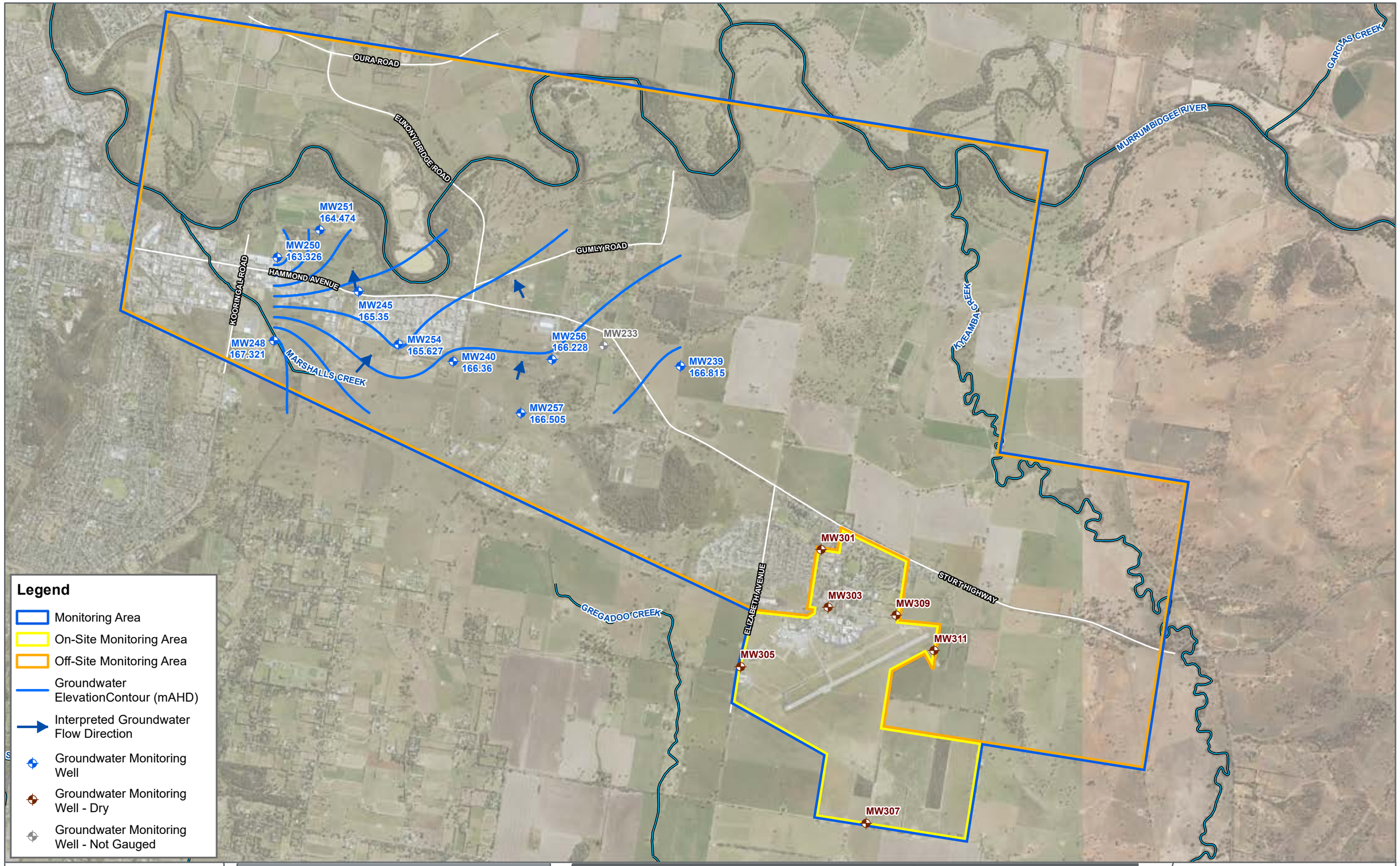

FIGURE 2

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours – Cowra Shallow Aquifer (October 2021)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2022-03-10 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0137-GWBoreContours_Cowra_WW.mxd 02
Aerial Imagery Supplied by Metromap (April, 2021)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
ELIZABETH AVENUE
STURT HIGHWAY
GREGADOO CREEK
KYEAMBA CREEK
GARCIAS CREEK
MURRUMBIDGEE RIVER

MW213
MW252 164.377
MW211
MW249 162.988
MW212
MW244 166.25
MW235
MW253 165.381
MW247 167.258
MW255 166.514
MW208
MW238 166.665
MW210
MW209
MW231
MW215 171.448
MW214
MW200
MW312 169.081
MW204 168.754
MW246 170.173
MW300 170.468
MW243 171.94
MW302 170.637
MW308 171.931
MW242 185.825
MW310 186.824
MW304 172.747
MW306 188.178

165m
166m
167m
168m
169m
170m
171m
172m
173m
174m
175m
176m
177m
178m
179m
180m
181m
182m
183m
184m
185m
186m
187m
188m
189m
190m

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Groundwater Elevation Contour (mAHD)
- Interpreted Groundwater Flow Direction
- Groundwater Monitoring Well
- Groundwater Monitoring Well - Not Gauged

FIGURE 3

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours – Lachlan Deep Aquifer (October 2021)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2022-03-10 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0138-GWContours_Lachlan_WW.mxd 03
Aerial Imagery Supplied by Metromap (April, 2021)

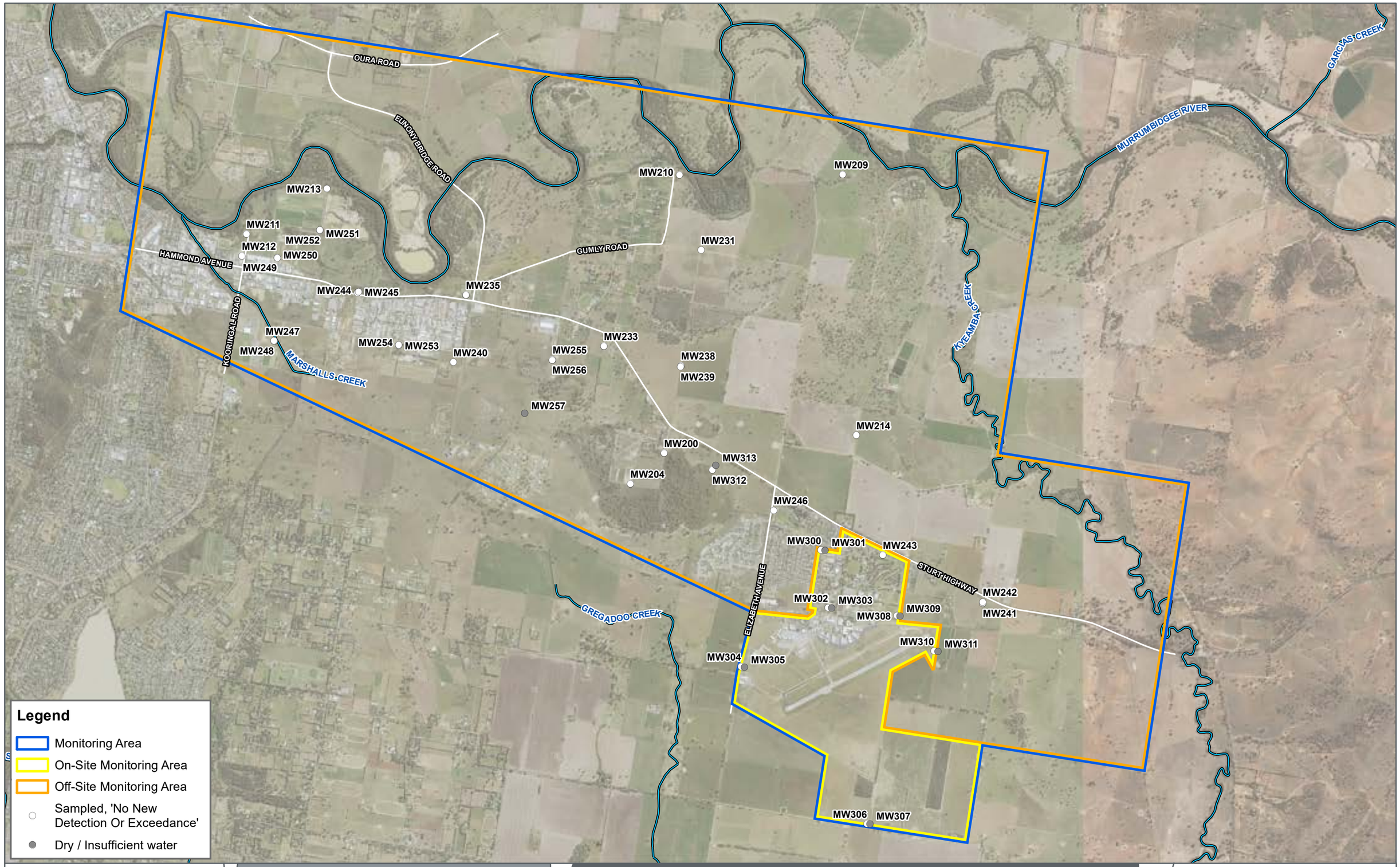

FIGURE 4

1:40,000 Scale at A3

Metres

0 1,000 2,000

PFAS Results Summary - Groundwater (October, 2021)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2022-01-11 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0173-GW_PFAS_Summary_WW.mxd 01
Aerial Imagery Supplied by Metromap (November, 2020)

OURA ROAD
ELINONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY

SW261
SW262
SW309
SW294
SW234
SW212
SW286
SW228
SW289
SW236
SW288
SW310
SW240
SW218
SW206
SW104

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Sampled, 'No New Detection Or Exceedance'

FIGURE 5

1:40,000 Scale at A3

Metres

0 800 1,600

PFAS Results Summary - Surface Water (October, 2021)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2021-11-25 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0174-SW_PFAS_Summary_WW.mxd 01
Aerial Imagery Supplied by Nearmap (April, 2021)

APPENDIX

B

DATA ASSESSMENT TABLES

					Perfluorocarbons																														
					Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR					0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water						**0.56**	**0.07**																												
PFAS NEMP 2.0 Table 5 Freshwater 95%					*0.13*	*220*																													
Location Code	**Sampled Date**	**Sample Type**	**Field ID**	**Lab Report Number**																															
MW200	7/07/2017	Normal	0906_GW200_D_07072017	ES1716876	*1.36*	0.08	**3.36**	0.34	0.29	2	0.08	<0.02	<0.1	0.1	0.32	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.62	-
MW200	25/03/2020	Normal	0906_MW200_20200325	ES2011455	*0.75*	0.05	**1.9**	0.18	0.19	1.15	0.04	<0.02	<0.1	0.05	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.7	-
MW200	30/09/2020	Normal	0906_MW200_20200930	ES2034893	*0.6*	0.04	**1.56**	0.14	0.18	0.96	0.05	<0.02	<0.1	0.04	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.3	-
MW200	23/04/2021	Normal	0906_MW200_20210423	ES2116296	*0.39*	0.04	**1.39**	0.14	0.15	1	<0.02	<0.02	<0.1	0.05	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.04	-
MW200	21/10/2021	Normal	0906_MW200_20211021	ES2139300	*0.31*	0.02	**0.86**	0.1	0.1	0.55	0.03	<0.02	<0.1	0.03	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.29	-
MW204	7/07/2017	Normal	0906_GW204_D_07072017	ES1716876	0.03	<0.01	0.07	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
MW204	7/07/2017	Duplicate	0906_QC101_07072017	ES1716876	0.04	<0.01	**0.08**	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
MW204	7/07/2017	Split	0906_QC201_07072017	553701	0.02	<0.01	-	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-
MW204	18/01/2018	Normal	0906_MW204_D_180118	ES1802488	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
MW204	18/01/2018	Duplicate	0906_QC101_180118	ES1802488	0.02	<0.01	0.04	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
MW204	18/01/2018	Split	0906_QC201_180118	581448	0.01	<0.01	0.04	<0.01	<0.01	0.03	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
MW204	20/02/2018	Normal	0906_MW204_D_180220	ES1805693	0.03	<0.01	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
MW204	30/03/2020	Normal	0906_MW204_20200330	ES2011455	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW204	1/10/2020	Normal	0906_MW204_20201001	ES2034893	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW204	23/04/2021	Normal	0906_MW204_20210423	ES2116296	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW204	21/10/2021	Normal	0906_MW204_20211021	ES2139300	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW209	7/09/2017	Normal	0906_GW209_D_170907	EM1712263	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW209	7/09/2017	Duplicate	0906_QC101_170907	EM1712263	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW209	7/09/2017	Split	0906_QC201_170907	562566	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
MW209	12/01/2018	Normal	0906_MW209_D_180112	ES1801990	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW209	31/03/2020	Normal	0906_MW209_20200331	ES2011456	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW209	30/09/2020	Normal	0906_MW209_20200930	ES2034898	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW209	22/04/2021	Normal	0906_MW209_20210422	ES2116325	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW209	21/10/2021	Normal	0906_MW209_20211021	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW210	20/06/2017	Normal	0906_0S002_170620	ES1715329	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW210	20/06/2017	Duplicate	0906_QC101_170620	ES1715329	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW210	20/06/2017	Split	0906_QC201_170620	551365	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-
MW210	18/01/2018	Normal	0906_MW210_D_180112	ES1802470	0.03	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
MW210	21/02/2018	Normal	0906_MW210_D_180221	ES1805664	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW210	17/07/2018	Normal	0906_MW210_D_180717	EM1811457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW210	17/07/2018	Duplicate	0906_QC101_180717	EM1811457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW210	17/07/2018	Split	0906_QC201_180717	608455	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW210	26/03/2020	Normal	0906_MW210_20200326	ES2011461	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW210	1/10/2020	Normal	0906_MW210_20201001	ES2034897	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW210	23/04/2021	Normal	0906_MW210_20210423	ES2116321	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW210	21/10/2021	Normal	0906_MW210_20211021	ES2139302	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW211	20/06/2017	Normal	0906_EWB1_170620	ES1715334	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW211	4/12/2017	Normal	0906_EWB1_171204	ES1731229	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW211	27/03/2020	Normal	0906_MW211_20200327	ES2011459	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW211	28/09/2020	Normal	0906_MW211_20200928	ES2034885	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW211	20/04/2021	Normal	0906_MW211_20210420	ES2116324	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW211	20/10/2021	Normal	0906_MW211_20211020	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW212	20/06/2017	Normal	0906_EWB2_170620	ES1715334	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW212	4/12/2017	Normal	0906_EWB2_171204	ES1731229	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW212	27/03/2020	Normal	0906_MW212_20200327	ES2011459	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW212	28/09/2020	Normal	0906_MW212_20200928	ES2034885	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW212	20/04/2021	Normal	0906_MW212_20210420	ES2116324	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW212	20/10/2021	Normal	0906_MW212_20211020	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW213	20/06/2017	Normal	0906_EWB3_170620	ES1715334	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW213	4/12/2017	Normal	0906_EWB3_171204	ES1731229	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW213	27/03/2020	Normal	0906_MW213_20200327	ES2011459	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW213	27/03/2020	Duplicate	0906_QC101_20200327	ES2011459	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW213	27/03/2020	Split	0906_QC201_20200327	712442	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW213	28/09/2020	Normal	0906_MW213_20200928	ES2034885	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW213	28/09/2020	Duplicate	0906_QC101_20200928	ES2034862-AA	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW213	28/09/2020	Split	0906_QC201_20200928	749083	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW213	20/04/2021	Normal	0906_MW213_20210420	ES2116324	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW213	20/10/2021	Normal	0906_MW213_20211020	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW213	20/10/2021	Duplicate	0906_QC104_20211020	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW213	20/10/2021	Split	0906_QC204_20211020	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW214	20/06/2017	Normal	0906_GW047279_170620	ES1715334	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW214	18/01/2018	Normal	0906_MW214_D_180118	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW214	31/03/2020	Normal	0906_MW214_20200331	ES2011568	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW214	1/10/2020	Normal	0906_MW214_20201001	ES2034891	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW214	27/04/2021	Normal	0906_MW214_20210427	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW214	21/10/2021	Normal	0906_MW214_20211021	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW231	12/01/2018	Normal	0906_MW231_D_180112	ES1802473	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW231	26/03/2020	Normal	0906_MW231_20200326	ES2011459	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW231	26/03/2020	Normal	0906_MW231_20200326	ES2011456	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW231	30/09/2020	Normal	0906_MW231_20200930	ES2034898	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW231	23/04/2021	Normal	0906_MW231_20210423	ES2116325	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW231	22/10/2021	Normal	0906_MW231_20211022	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW233	20/02/2018	Normal	0906_MW233_I_180220	ES1805656	0.08	<0.01	**0.18**	<0.02	<0.02	0.1	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.2	-

					Perfluorocarbons																														
					Perfluorooctane sulfonic acid (PFOS)	**Perfluorooctanoate (PFOA)**	**Sum of PFHxS and PFOS**	**Perfluorobutane sulfonic acid (PFBS)**	**Perfluoropentane sulfonic acid (PFPeS)**	**Perfluorohexane sulfonic acid (PFHxS)**	**Perfluoroheptane sulfonic acid (PFHpS)**	**Perfluorodecanesulfonic 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)**	**Perfluorooctane sulfonamide (FOSA)**	**N-Methyl perfluorooctane sulfonamide (MeFOSA)**	**2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)**	**N-Ethyl perfluorooctane sulfonamide (EtFOSA)**	**N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)**	**N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)**	**N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)**	**4:2 Fluorotelomer sulfonic acid (4:2 FTS)**	**6:2 Fluorotelomer Sulfonate (6:2 FtS)**	**8:2 Fluorotelomer sulfonate (8:2 FtS)**	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	**Sum of PFAS**	**Sum of enHealth PFAS (PFHxS + PFOS + PFOA)***
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR					0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water						**0.56**	**0.07**																												
PFAS NEMP 2.0 Table 5 Freshwater 95%					*0.13*	*220*																													
Location Code	**Sampled Date**	**Sample Type**	**Field ID**	**Lab Report Number**																															
MW233	25/03/2020	Normal	0906_MW233_20200325	ES2011451	*0.18*	<0.01	**0.37**	<0.02	0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-
MW233	30/09/2020	Normal	0906_MW233_20200930	ES2034890	*0.25*	<0.01	**0.44**	0.02	0.03	0.19	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	-
MW233	22/04/2021	Normal	0906_MW233_20210422	ES2116319	*0.17*	<0.01	**0.38**	0.02	0.02	0.21	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-
MW233	19/10/2021	Normal	0906_MW233_20211019	ES2139304	*0.28*	<0.01	**0.52**	0.03	0.04	0.24	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-
MW235	11/01/2018	Normal	0906_MW235_D_180111	ES1802460	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW235	19/12/2019	Normal	0906_MW235_D_191219	ES1942606-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
MW235	27/03/2020	Normal	0906_MW235_20200327	ES2011450	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW235	30/09/2020	Normal	0906_MW235_20200930	ES2034899	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW235	20/04/2021	Normal	0906_MW235_20210420	ES2115488	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW235	20/10/2021	Normal	0906_MW235_20211020	ES2139305	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW238	12/12/2019	Normal	0906_MW238_I_191212	ES1941492-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
MW238	30/03/2020	Normal	0906_MW238_20200330	ES2011456	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW238	30/09/2020	Normal	0906_MW238_20200930	ES2034898	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW238	23/04/2021	Normal	0906_MW238_20210423	ES2116325	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW238	21/10/2021	Normal	0906_MW238_20211021	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW239	12/12/2019	Normal	0906_MW239_S_191212	ES1941492-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
MW239	30/03/2020	Normal	0906_MW239_20200330	ES2011456	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW239	1/10/2020	Normal	0906_MW239_20201001	ES2034898	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW239	23/04/2021	Normal	0906_MW239_20210423	ES2116325	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW239	21/10/2021	Normal	0906_MW239_20211021	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW240	12/12/2019	Normal	0906_MW240_D_191212	ES1941492-AD	0.05	<0.01	**0.26**	0.04	-	0.21	-	-	<0.1	<0.02	0.06	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
MW240	12/12/2019	Duplicate	0906_QC101_191212	ES1941492-AD	0.04	<0.01	**0.33**	0.05	-	0.29	-	-	<0.1	<0.02	0.08	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
MW240	19/12/2019	Normal	0906_MW240_I_191219	ES1942606-AB	0.02	<0.01	**0.19**	0.03	-	0.17	-	-	<0.1	<0.02	0.04	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
MW240	19/12/2019	Duplicate	0906_QC101_191219	ES1942606-AB	0.02	<0.01	**0.19**	0.03	-	0.17	-	-	<0.1	<0.02	0.05	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
MW240	19/12/2019	Split	0906_QC201_191219	695221	0.01	<0.01	**0.12**	0.02	0.01	0.11	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.19	0.00012
MW240	1/04/2020	Normal	0906_MW240_20200330	ES2011453	0.01	<0.01	**0.11**	<0.02	<0.02	0.1	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-
MW240	30/09/2020	Normal	0906_MW240_20200930	ES2034866	0.06	0.02	**0.41**	0.04	0.05	0.35	<0.02	<0.02	<0.1	0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-
MW240	20/04/2021	Normal	0906_MW240_20210420	ES2116333	0.04	0.01	**0.27**	0.04	0.03	0.23	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.42	-
MW240	19/10/2021	Normal	0906_MW240_20211019	ES2139237	0.04	<0.01	**0.19**	0.02	0.02	0.15	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	-
MW241	18/03/2020	Normal	0906_MW241_D_200318	ES2009949	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW241	31/03/2020	Normal	0906_MW241_20200331	ES2011462	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.15	<0.05	<0.05	0.15	-
MW241	1/10/2020	Normal	0906_MW241_20201001	ES2034889	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW241	22/04/2021	Normal	0906_MW241_20210422	ES2116320	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.12	<0.05	<0.05	0.12	-
MW241	24/10/2021	Normal	0906_MW241_20211024	ES2139236	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW242	12/03/2020	Normal	0906_MW242_I_200312	ES2008845	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW242	31/03/2020	Normal	0906_MW242_20200331	ES2011462	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW242	1/10/2020	Normal	0906_MW242_20201001	ES2034889	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW242	22/04/2021	Normal	0906_MW242_20210422	ES2116320	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW242	22/10/2021	Normal	0906_MW242_20211022	ES2139236	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW243	10/03/2020	Normal	0906_MW243_I_200310	ES2008845	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW243	10/03/2020	Split	0906_QC201_200310	707955	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW243	30/03/2020	Normal	0906_MW243_20200330	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW243	1/10/2020	Normal	0906_MW243_20201001	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW243	23/04/2021	Normal	0906_MW243_20210423	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW243	23/04/2021	Duplicate	0906_QC106_20210423	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW243	23/04/2021	Split	0906_QC206_20210423	792771	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW243	20/10/2021	Normal	0906_MW243_20211020	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW244	13/03/2020	Normal	0906_MW244_I_200313	ES2009442	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW244	1/04/2020	Normal	0906_MW244_20200401	ES2011562	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW244	1/10/2020	Normal	0906_MW244_20201001	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW244	20/04/2021	Normal	0906_MW244_20210420	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW244	19/10/2021	Normal	0906_MW244_20211019	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW245	13/03/2020	Normal	0906_MW245_S_200313	ES2009442	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
MW245	1/04/2020	Normal	0906_MW245_20200401	ES2011562	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
MW245	1/10/2020	Normal	0906_MW245_20201001	ES2034866	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
MW245	20/04/2021	Normal	0906_MW245_20210420	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
MW245	19/10/2021	Normal	0906_MW245_20211019	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW246	22/06/2020	Normal	0906_MW246_I_200622	ES2021594	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW246	30/07/2020	Split	0906_QC202_200730	735782	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW246	30/07/2020	Normal	0906_MW246_I_200730	ES2026752	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW246	20/04/2021	Normal	0906_MW246_20210420	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW246	20/10/2021	Normal	0906_MW246_20211020	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW247	30/07/2020	Normal	0906_MW247_I_200730	ES2026752	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW247	27/04/2021	Normal	0906_MW247_20210427	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW247	21/10/2021	Normal	0906_MW247_20211021	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW248	30/07/2020	Normal	0906_MW248_S_200730	ES2026752	0.09	0.01	**0.15**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.04	0.04	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	-
MW248	27/04/2021	Normal	0906_MW248_20210427	ES2116333	0.07	<0.01	**0.12**	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-
MW248	20/10/2021	Normal	0906_MW248_20211020	ES2139237	0.08	0.01	**0.14**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.03	0.03	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.24	-
MW249	30/07/2020	Normal	0906_MW249_I_200730	ES2026752	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW249	28/04/2021	Normal	0906_MW249_20210428	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW249	21/10/2021	Normal	0906_MW249_20211021	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW250	30/07/2020	Normal	0906_MW250_S_200730	ES2026752	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.03	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
MW250	2/09/2020	Normal	0906_MW250_S_200902	ES2031377	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-

					Perfluorocarbons																														
Location Code	Sampled Date	Sample Type	Field ID	Lab Report Number	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR					0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water						**0.56**	**0.07**																												
PFAS NEMP 2.0 Table 5 Freshwater 95%					*0.13*	*220*																													
MW250	2/09/2020	Split	0906_QC202_200902	742937	0.06	<0.01	**0.1**	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.14	0.0001
MW250	28/04/2021	Normal	0906_MW250_20210428	ES2116333	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.03	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
MW250	28/04/2021	Duplicate	0906_QC107_20210428	ES2116333	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.03	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
MW250	28/04/2021	Split	0906_QC207_20210428	792804	<0.01	<0.01	0.02	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00002
MW250	19/10/2021	Normal	0906_MW250_20211019	ES2139237	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
MW251	30/07/2020	Normal	0906_QC201_200730	735782	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW251	30/07/2020	Normal	0906_MW251_S_200730	ES2026752	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW251	22/04/2021	Normal	0906_MW251_20210422	ES2118542	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW251	21/10/2021	Normal	0906_MW251_20211021	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW252	30/07/2020	Normal	0906_MW252_I_200730	ES2026752	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW252	22/04/2021	Normal	0906_MW252_20210422	ES2118542	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW252	19/10/2021	Normal	0906_MW252_20211019	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW253	30/07/2020	Normal	0906_MW253_I_200730	ES2026752	0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
MW253	20/04/2021	Normal	0906_MW253_20210420	ES2116333	<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
MW253	19/10/2021	Normal	0906_MW253_20211019	ES2139237	0.02	<0.01	0.05	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
MW253	19/10/2021	Duplicate	0906_QC102_20211019	ES2139231	0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
MW253	19/10/2021	Split	0906_QC202_20211019	837704	0.02	<0.01	0.06	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00006
MW254	30/07/2020	Normal	0906_MW254_S_200730	ES2026752	<0.01	0.14	**0.15**	0.02	0.03	0.15	<0.02	<0.02	<0.1	0.04	0.07	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-
MW254	20/04/2021	Normal	0906_MW254_20210420	ES2116333	<0.01	0.14	**0.19**	0.04	0.03	0.19	<0.02	<0.02	<0.1	0.03	0.06	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	-
MW254	19/10/2021	Normal	0906_MW254_20211019	ES2139237	<0.01	0.08	**0.13**	0.02	0.02	0.13	<0.02	<0.02	<0.1	0.02	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.43	-
MW254	19/10/2021	Duplicate	0906_QC101_20211019	ES2139231	<0.01	0.12	**0.14**	0.02	0.02	0.14	<0.02	<0.02	<0.1	0.03	0.05	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-
MW254	19/10/2021	Split	0906_QC201_20211019	837704	<0.01	0.13	**0.14**	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.03	0.05	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.44	0.00027
MW255	30/07/2020	Normal	0906_MW255_I_200730	ES2026752	<0.01	0.02	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
MW255	22/04/2021	Normal	0906_MW255_20210422	ES2116333	0.04	<0.01	**0.14**	0.02	<0.02	0.1	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.16	-
MW255	2/07/2021	Normal	0906_MW255_02072021	ES2124834	0.04	<0.01	**0.12**	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-
MW255	2/07/2021	Duplicate	0906_QC101_02072021	ES2124834	0.03	<0.01	**0.11**	<0.02	-	0.08	-	-	<0.1	<0.02	0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
MW255	2/07/2021	Split	0906_QC201_210702	808916	0.04	<0.01	**0.13**	-	-	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	0.00013
MW255	19/10/2021	Normal	0906_MW255_20211019	ES2139237	0.01	<0.01	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
MW256	10/09/2020	Normal	0906_MW256_S_200910	ES2032277	0.04	<0.01	**0.32**	0.05	0.05	0.28	<0.02	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-
MW256	10/09/2020	Duplicate	0906_QC101_200910	ES2032277	0.02	<0.01	**0.32**	0.06	-	0.3	-	-	<0.1	<0.02	0.1	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
MW256	10/09/2020	Split	0906_QC201_200910	744316	<0.01	<0.01	**0.21**	-	-	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	0.00021
MW256	22/04/2021	Normal	0906_MW256_20210422	ES2116333	0.07	<0.01	**0.3**	0.07	0.04	0.23	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.46	-
MW256	19/10/2021	Normal	0906_MW256_20211019	ES2139237	0.01	<0.01	**0.1**	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-
MW300	12/01/2018	Normal	0906_MW300_D_180112	ES1802545	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
MW300	13/04/2018	Normal	0906_MW300_D_180413	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW300	30/03/2020	Normal	0906_MW300_20200330	ES2011457	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
MW300	29/09/2020	Normal	0906_MW300_20200929	ES2034862-AB	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
MW300	22/04/2021	Normal	0906_MW300_20210422	ES2116327	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
MW300	22/04/2021	Duplicate	0906_QC105_20210422	ES2116327	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
MW300	22/04/2021	Split	0906_QC205_20210422	792803	<0.01	<0.01	0.02	0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00002
MW300	20/10/2021	Normal	0906_MW300_20211020	ES2139228	<0.01	<0.01	0.05	0.04	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.18	-
MW300	20/10/2021	Duplicate	0906_QC106_20211020	ES2139231	<0.01	<0.01	0.05	0.04	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-
MW300	20/10/2021	Split	0906_QC206_20211020	837704	<0.01	<0.01	0.07	0.04	0.02	0.07	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.17	0.00007
MW302	12/01/2018	Normal	0906_MW302_D_180112	ES1802545	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
MW302	11/04/2018	Normal	0906_MW302_D_180411	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW302	30/03/2020	Normal	0906_MW302_20200330	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW302	29/09/2020	Normal	0906_MW302_20200929	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW302	29/09/2020	Duplicate	0906_QC102_20200929	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW302	29/09/2020	Split	0906_QC202_20200929	749220	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW302	21/04/2021	Normal	0906_MW302_20210421	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW302	21/04/2021	Duplicate	0906_QC103_20210421	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW302	21/04/2021	Split	0906_QC203_20210421	792803	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW302	20/10/2021	Normal	0906_MW302_20211020	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW302	20/10/2021	Duplicate	0906_QC107_20211020	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW302	20/10/2021	Split	0906_QC207_20211020	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW304	16/01/2018	Normal	0906_MW304_D_180116	ES1802545	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	<0.02	<0.05	<0.00005	<0.05	0.15	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.24	-
MW304	13/04/2018	Normal	0906_MW304_D_180413	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW304	31/03/2020	Normal	0906_MW304_20200331	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.06	-
MW304	29/09/2020	Normal	0906_MW304_20200929	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW304	28/04/2021	Normal	0906_MW304_20210428	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW304	20/10/2021	Normal	0906_MW304_20211020	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW306	16/01/2018	Normal	0906_MW306_D_180116	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.08	-
MW306	12/04/2018	Normal	0906_MW306_D_180412	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW306	30/03/2020	Normal	0906_MW306_20200330	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW306	29/09/2020	Normal	0906_MW306_20200929	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW306	22/04/2021	Normal	0906_MW306_20210422	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW306	22/10/2021	Normal	0906_MW306_20211022	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW308	15/01/2018	Normal	0906_MW308_D_180115	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW308	15/01/2018	Duplicate	0906_QC103_180115	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW308	15/01/2018	Split	0906_QC203_180115	581313	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
MW308	11/04/2018	Normal	0906_MW308_D_180411	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW308	30/03/2020	Normal	0906_MW308_20200330	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW308	29/09/2020	Normal	0906_MW308_20200929	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

				Perfluorocarbons																															
				Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ng/L
LOR				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water					**0.56**	**0.07**																													
PFAS NEMP 2.0 Table 5 Freshwater 95%				*0.13*	*220*																														
Location Code	**Sampled Date**	**Sample Type**	**Field ID**	**Lab Report Number**																															
MW308	21/04/2021	Normal	0906_MW308_20210421	ES2116327	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW308	22/04/2021	Normal	0906_MW308_20210422	ES2116327	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW308	21/10/2021	Normal	0906_MW308_20211021	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW310	16/01/2018	Normal	0906_MW310_D_180116	ES1802545	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW310	12/04/2018	Normal	0906_MW310_D_180412	EM1806331	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW310	31/03/2020	Normal	0906_MW310_20200331	ES2011457	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW310	30/09/2020	Normal	0906_MW310_20200930	ES2034862-AB	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW310	22/04/2021	Normal	0906_MW310_20210422	ES2116327	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW310	22/10/2021	Normal	0906_MW310_20211022	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW312	16/01/2018	Normal	0906_MW312_D_180115	ES1802566	0.02	<0.01	**0.1**	<0.02	<0.02	0.08	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.1	-
MW312	13/04/2018	Normal	0906_MW312_D_180413	EM1806331	0.02	<0.01	**0.08**	<0.02	<0.02	0.06	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
MW312	1/04/2020	Normal	0906_MW312_200401	ES2011454	0.01	<0.01	0.07	<0.02	<0.02	0.06	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
MW312	1/10/2020	Normal	0906_MW312_20201001	ES2034888	0.01	<0.01	0.06	<0.02	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
MW312	21/10/2021	Normal	0906_MW312_20211021	ES2139399	0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-

						Perfluorocarbons																														
Location Type	Location Code	Sampled Date Time	Sample Type	Field ID	Lab Report Number	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**																												
PFAS NEMP 2.0 Table 5 Freshwater 95%						*0.13*	*220*																													
PFAS NEMP 2.0 Table 1 Health Recreational Water							10	2																												
On-base	SW104	4/12/2017	Normal	0906_SW104_171204	ES1731266	0.27	0.02	0.34	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.39	-
On-base	SW104	16/08/2018	Normal	0906_SW104_180816	ES1824412	0.05	<0.01	0.17	<0.02	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.17	-
On-base	SW104	17/10/2018	Normal	0906_SW104_181017	ES1831100	0.38	0.02	0.67	0.03	<0.02	0.29	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.75	-
On-base	SW104	25/03/2020	Normal	0906_SW104_20200325	ES2011457	0.09	<0.01	0.15	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15	-
On-base	SW104	2/09/2020	Normal	0906_SW104_200904	ES2031377	2.83	0.13	4.27	0.17	0.16	1.44	0.09	<0.02	<0.1	0.15	0.44	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.48	-
On-base	SW104	4/09/2020	Split	0906_QC201_200904	742937	2.3	0.1	3.29	0.13	0.13	0.99	0.06	<0.01	0.06	0.1	0.41	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	4.4	0.00339
On-base	SW104	29/09/2020	Normal	0906_SW104_20200929	ES2034862-AB	2.8	0.17	4.61	0.21	0.23	1.81	0.12	<0.02	<0.1	0.17	0.59	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	6.18	-
On-base	SW104	21/04/2021	Normal	0906_SW104_20210421	ES2116327	0.28	0.02	0.48	0.04	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.68	-
On-base	SW104	21/04/2021	Duplicate	0906_QC102_20210421	ES2116327	0.26	0.02	0.46	0.03	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	0.63	-
On-base	SW104	21/04/2021	Split	0906_QC202_20210421	792803	0.27	0.02	0.41	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.51	0.00043
On-base	SW104	21/10/2021	Normal	0906_SW104_20211020	ES2139228	0.41	0.01	0.63	0.05	0.04	0.22	<0.02	<0.02	<0.1	0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.82	-
On-base	SW104	20/10/2021	Duplicate	0906_QC105_20211020	ES2139231	0.4	0.01	0.65	0.04	0.03	0.25	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.79	-
On-base	SW104	20/10/2021	Split	0906_QC205_20211020	837704	0.61	0.02	0.91	0.04	0.03	0.3	0.02	<0.01	<0.05	0.02	0.07	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.14	0.00093
Off-base	SW206	20/06/2017	Normal	0906_SW001_170620	ES1715334	0.23	<0.01	0.34	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.36	-
Off-base	SW206	7/07/2017	Normal	0906_SW001_07072017	ES1716880	0.27	0.01	0.36	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.37	-
Off-base	SW206	13/12/2017	Normal	0906_SW206_171213	ES1732701	0.57	0.02	1.09	0.05	0.04	0.52	<0.02	<0.02	<0.1	0.03	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.32	-
Off-base	SW206	25/03/2020	Normal	0906_SW206_20200325	ES2011453	0.38	0.01	0.54	<0.02	<0.02	0.16	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.59	-
Off-base	SW206	1/10/2020	Normal	0906_SW206_20201001	ES2034866	1.21	0.06	1.87	0.07	0.08	0.66	0.04	<0.02	<0.1	0.08	0.21	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.44	-
Off-base	SW206	20/04/2021	Normal	0906_SW206_20210420	ES2116333	0.13	0.01	0.25	0.03	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.31	-
Off-base	SW206	21/10/2021	Normal	0906_SW206_20211021	ES2139237	0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
Off-base	SW212	11/12/2017	Normal	0906_SW212_171211	ES1731989	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW212	18/06/2018	Normal	0906_SW212_180619	ES1818232	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW212	15/08/2019	Normal	0906_SW212_190815	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW212	27/03/2020	Normal	0906_SW212_20200327	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW212	30/09/2020	Normal	0906_SW212_20200930	ES2034866	0.09	<0.01	0.09	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09	-
Off-base	SW212	30/09/2020	Normal	0906_SW212_20200930 Dup	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW212	23/04/2021	Normal	0906_SW212_20210423	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW212	19/10/2021	Normal	0906_SW212_20211019	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW218	17/01/2018	Normal	0906_SW218_180117	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW218	25/03/2020	Normal	0906_SW218_20200325	ES2011453	0.03	<0.01	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
Off-base	SW218	1/10/2020	Normal	0906_SW218_20201001	ES2034866	0.1	0.02	0.39	0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72	-
Off-base	SW218	1/10/2020	Duplicate	0906_QC104_20201001	ES2034866	0.06	0.01	0.36	0.08	0.05	0.3	<0.02	<0.02	<0.1	0.05	0.13	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.71	-
Off-base	SW218	1/10/2020	Split	0906_QC204_20201001	749074	0.04	<0.01	0.23	0.04	0.03	0.19	0.01	<0.01	<0.05	0.04	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.47	0.00023
Off-base	SW218	20/04/2021	Normal	0906_SW218_20210420	ES2116333	0.01	<0.01	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
Off-base	SW218	21/10/2021	Normal	0906_SW218_20211021	ES2139237	0.27	0.01	0.51	0.04	0.04	0.24	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66	-
Off-base	SW228	7/12/2017	Normal	0906_SW228_171207	ES1731266	2.9	0.17	4.33	0.21	0.19	1.43	0.1	<0.02	<0.1	0.14	0.51	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	0.06	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.77	-
Off-base	SW228	12/04/2018	Normal	0906_SW228_180412	EM1806331	0.3	0.04	0.53	0.02	0.02	0.23	<0.02	<0.02	<0.1	0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.73	-
Off-base	SW228	7/08/2018	Normal	0906_SW228_A_180807	EM1812664	0.49	0.03	0.96	<0.02	0.02	0.47	0.02	<0.02	<0.1	<0.02	0.09	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	-
Off-base	SW228	7/08/2018	Normal	0906_SW228_B_180807	EM1812664	0.49	0.03	0.98	<0.02	0.02	0.49	0.02	<0.02	<0.1	<0.02	0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.17	-
Off-base	SW228	4/04/2019	Normal	0906_SW228_190408	ES1911335	0.77	0.06	1.39	0.1	0.08	0.62	0.04	<0.02	<0.1	0.12	0.43	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	2.31	-
Off-base	SW228	4/04/2019	Duplicate	0906_QC101_190408	ES1911335	0.81	0.06	1.41	0.1	0.09	0.6	0.04	<0.02	<0.1	0.11	0.43	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.28	-
Off-base	SW228	4/04/2019	Split	0906_QC201_190408	650878	0.6	0.05	1.16	0.05	0.06	0.56	0.03	<0.01	<0.05	0.07	0.24	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.7	0.00121
Off-base	SW228	27/03/2020	Normal	0906_SW228_20200327	ES2011453	0.73	0.05	1.25	0.05	0.06	0.52	0.03	<0.02	<0.1	0.07	0.25	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.79	-
Off-base	SW228	27/03/2020	Duplicate	0906_QC102_20200327	ES2011453	0.77	0.05	1.31	0.04	0.06	0.54	0.03	<0.02	<0.1	0.08	0.26	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.85	-
Off-base	SW228	27/03/2020	Split	0906_QC202_20200327	712445	0.63	0.03	1.04	0.04	0.05	0.41	0.02	<0.01	<0.05	0.05	0.16	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.43	0.00107
Off-base	SW228	1/10/2020	Normal	0906_SW228_20201001	ES2034866	2.15	0.09	3.32	0.11	0.14	1.17	0.08	<0.02	<0.1	0.1	0.4	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.28	-
Off-base	SW228	27/04/2021	Normal	0906_SW228_20210427	ES2116333	1.1	0.06	2.19	0.19	0.1	1.09	0.06	<0.02	<0.1	0.1	0.48	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.22	-
Off-base	SW228	21/10/2021	Normal	0906_SW228_20211021	ES2139237	1.41	0.06	2.13	0.1	0.09	0.72	0.06	<0.02	<0.1	0.09	0.32	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.88	-
Off-base	SW234	11/12/2017	Normal	0906_SW234_171211	ES1731989	0.22	0.03	0.3	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.41	-
Off-base	SW234	18/06/2018	Normal	0906_SW234_180618	ES1818232	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.08	-
Off-base	SW234	27/03/2020	Normal	0906_SW234_20200327	ES2011453	<0.01	0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	<0.05	<0.05	0.25	-
Off-base	SW234	29/09/2020	Normal	0906_SW234_20200929	ES2034866	0.28	0.02	0.39	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.11	<0.05	<0.05	0.6	-
Off-base	SW234	20/04/2021	Normal	0906_SW234_20210420	ES2116333	0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.34	<0.05	<0.05	0.42	-
Off-base	SW234	19/10/2021	Normal	0906_SW234_20211019	ES2139237	0.04	<0.01	0.04	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
Off-base	SW236	15/12/2017	Normal	0906_SW236_171215	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW236	2/10/2020	Normal	0906_SW236_20201002	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW236	22/04/2021	Normal	0906_SW236_20210422	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW236	22/10/2021	Normal	0906_SW236_20211022	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW240	20/12/2017	Normal	0906_SW240_171220	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW240	20/12/2017	Duplicate	0906_QC101_171220	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW240	20/12/2017	Duplicate	0906_QC201_171220	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW240	20/12/2017	Split	0906_QC201_171220	580967	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
Off-base	SW240	2/10/2020	Normal	0906_SW240_20201002	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW240	22/04/2021	Normal	0906_SW240_20210422	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW240	22/10/2021	Normal	0906_SW240_20211022	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW261	16/01/2018	Normal	0906_SW261_180116	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW261	3/04/2018	Normal	0906_SW261_180403	ES1810698	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW261	18/06/2018	Normal	0906_SW261_180618	ES1818232	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW261	15/08/2019	Normal	0906_SW261_190815	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW261	27/03/2020	Normal	0906_SW261_20200327	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW261	28/09/2020	Normal	0906_SW261_20200928	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

						Perfluorocarbons																														
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**																												
PFAS NEMP 2.0 Table 5 Freshwater 95%						*0.13*	*220*																													
PFAS NEMP 2.0 Table 1 Health Recreational Water							10	2																												
Location Type	**Location Code**	**Sampled Date Time**	**Sample Type**	**Field ID**	**Lab Report Number**																															
Off-base	SW261	20/04/2021	Normal	0906_SW261_20210420	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW261	19/10/2021	Normal	0906_SW261_20211019	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW261	19/10/2021	Duplicate	0906_QC103_20211019	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW261	19/10/2021	Split	0906_QC203_20211019	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
Off-base	SW262	16/01/2018	Normal	0906_SW262_180116	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW262	18/06/2018	Normal	0906_SW262_180618	ES1818232	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.08	-
Off-base	SW262	27/03/2020	Normal	0906_SW262_20200327	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW262	28/09/2020	Normal	0906_SW262_20200928	ES2034866	0.05	<0.01	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
Off-base	SW262	20/04/2021	Normal	0906_SW262_20210420	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW262	19/10/2021	Normal	0906_SW262_20211019	ES2139237	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
Off-base	SW286	8/04/2018	Normal	0906_SW286_180408	ES1810698	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW286	15/08/2019	Normal	0906_SW286_190815	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW286	27/03/2020	Normal	0906_SW286_20200327	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW286	2/10/2020	Normal	0906_SW286_20201002	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW286	22/04/2021	Normal	0906_SW286_20210422	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW286	22/10/2021	Normal	0906_SW286_20211022	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW288	12/04/2018	Normal	0906_SW288_180412	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW288	15/08/2018	Normal	0906_SW288_180815	ES1824412	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW288	16/08/2018	Normal	0906_SW288_180816	ES1824412	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW288	16/08/2018	Duplicate	0906_QC101_180816	ES1824412	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW288	16/08/2018	Split	0906_QC201_180816	613110	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
Off-base	SW288	4/04/2019	Normal	0906_SW288_190408	ES1911335	<0.01	<0.01	<0.01	<0.02	<0.02	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
Off-base	SW288	27/03/2020	Normal	0906_SW288_20200327	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW288	1/10/2020	Normal	0906_SW288_20201001	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW288	27/04/2021	Normal	0906_SW288_20210427	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW288	21/10/2021	Normal	0906_SW288_20211021	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW289	12/04/2018	Normal	0906_SW289_180412	EM1806331	0.2	0.03	0.4	<0.02	<0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-
Off-base	SW289	12/04/2018	Duplicate	0906_QC101_180412	EM1806331	0.21	0.03	0.43	<0.02	0.02	0.22	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.55	-
Off-base	SW289	12/04/2018	Split	0906_QC201_180412	594506	0.18	0.03	0.37	0.02	0.02	0.19	0.01	<0.01	<0.05	0.02	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.54	-
Off-base	SW289	4/04/2019	Normal	0906_SW289_190408	ES1911335	0.42	0.03	0.74	0.05	0.04	0.32	0.02	<0.02	<0.1	0.06	0.18	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	-
Off-base	SW289	27/03/2020	Normal	0906_SW289_20200327	ES2011453	0.79	0.03	1.24	0.03	0.04	0.45	0.02	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.48	-
Off-base	SW289	1/10/2020	Normal	0906_SW289_20201001	ES2034866	0.05	0.01	0.34	0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66	-
Off-base	SW289	27/04/2021	Normal	0906_SW289_20210427	ES2116333	0.24	0.02	0.58	<0.02	<0.02	0.34	<0.02	<0.02	<0.1	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.7	-
Off-base	SW289	21/10/2021	Normal	0906_SW289_20211021	ES2139237	1.15	0.04	1.84	0.11	0.07	0.69	0.06	<0.02	<0.1	0.06	0.22	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.42	-
Off-base	SW294	18/06/2018	Normal	0906_SW294_180618	ES1818232	0.01	0.07	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
Off-base	SW294	15/08/2019	Normal	0906_SW294_190815	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW294	27/03/2020	Normal	0906_SW294_20200327	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW294	28/09/2020	Normal	0906_SW294_20200928	ES2034866	0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
Off-base	SW294	20/04/2021	Normal	0906_SW294_20210420	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
Off-base	SW294	19/10/2021	Normal	0906_SW294_20211019	ES2139237	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
Off-base	SW309	15/08/2019	Normal	0906_SW309_190815	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW309	27/03/2020	Normal	0906_SW309_20200327	ES2011459	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW309	28/09/2020	Normal	0906_SW309_20200928	ES2034885	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW309	20/04/2021	Normal	0906_SW309_20210420	ES2116324	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW309	19/10/2021	Normal	0906_SW309_20211019	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
Off-base	SW310	27/03/2020	Normal	0906_SW310_20200327	ES2011453	0.58	0.02	0.82	0.02	0.02	0.24	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.92	-
Off-base	SW310	29/09/2020	Normal	0906_SW310_20200929	ES2034866	1.6	0.05	2.11	0.07	0.05	0.51	0.03	<0.02	<0.1	0.06	0.16	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.56	-
Off-base	SW310	21/04/2021	Normal	0906_SW310_20210421	ES2116333	0.85	0.02	1.23	0.1	0.03	0.38	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.46	-
Off-base	SW310	21/04/2021	Duplicate	0906_QC104_20210421	ES2116333	0.92	0.03	1.35	0.06	0.03	0.43	<0.02	<0.02	<0.1	0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.57	-
Off-base	SW310	21/04/2021	Split	0906_QC204_20210421	792774	1	0.03	1.36	0.05	0.02	0.36	0.02	<0.01	<0.05	0.04	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.63	0.00139
Off-base	SW310	19/10/2021	Normal	0906_SW310_20211019	ES2139237	1.21	0.02	1.47	0.04	0.02	0.26	0.02	<0.02	<0.1	0.03	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.67	-

	Lab Report Number	ES2139237	ES2139231		ES2139237	ES2139231		ES2139237	ES2139231		ES2139303	ES2139231		ES2139228	ES2139231	
	Field ID	0906_MW254_20211019	0906_QC101_20211019	RPD	0906_MW253_20211019	0906_QC102_20211019	RPD	0906_SW261_20211019	0906_QC103_20211019	RPD	0906_MW213_20211020	0906_QC104_20211020	RPD	0906_SW104_20211020	0906_QC105_20211020	RPD
	Sampled Date/Time	19/10/2021 15:00	19/10/2021 15:00		19/10/2021 15:00	19/10/2021 15:00		19/10/2021 15:00	19/10/2021 15:00		20/10/2021 10:58	20/10/2021 10:58		21/10/2021 15:00	21/10/2021 15:00	
	Sample Type	Normal	Duplicate		Normal	Duplicate		Normal	Duplicate		Normal	Duplicate		Normal	Duplicate	
ChemName	**Units**	**LOR**														
Perfluorocarbons																
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	0	0.02	0.01	67	<0.01	<0.01	0	<0.01	<0.01	0	0.41	0.4	2
Perfluorooctanoate (PFOA)	µg/L	0.01	0.08	0.12	40	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	0.01	0.01	0
Sum of PFHxS and PFOS	µg/L	0.01	0.13	0.14	7	0.05	0.03	50	<0.01	<0.01	0	<0.01	<0.01	0	0.63	0.65	3
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.02	0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	0.05	0.04	22
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.02	0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	0.04	0.03	29
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.13	0.14	7	0.03	0.02	40	<0.01	<0.01	0	<0.01	<0.01	0	0.22	0.25	13
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02 : 0.01 (Interlab)	0.02	0.03	40	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.05	22	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	0.07	0.06	15
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.05	22	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	5e-005	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	0.08	<0.05	46	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Sum of WA DWER PFAS (n=10)*	µg/L	0.01 : 0.05 (Interlab)	0.41	0.41	0	0.05	0.03	50	<0.01	<0.01	0	<0.01	<0.01	0	0.78	0.76	3
Sum of PFAS	µg/L	0.01 : 0.1 (Interlab)	0.43	0.43	0	0.05	0.03	50	<0.01	<0.01	0	<0.01	<0.01	0	0.82	0.79	4

*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 80 (1-10 x LOR); 50 (10-30 x LOR); 30 (> 30 x LOR))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.
Any methods in the row header relate to those used in the primary laboratory

	Lab Report Number	ES2139228	ES2139231		ES2139228	ES2139231		ES2139237	837704		ES2139237	837704		ES2139237	837704	
	Field ID	0906_MW300_20211020	0906_QC106_20211020	RPD	0906_MW302_20211020	0906_QC107_20211020	RPD	0906_MW254_20211019	0906_QC201_20211019	RPD	0906_MW253_20211019	0906_QC202_20211019	RPD	0906_SW261_20211019	0906_QC203_20211019	RPD
	Sampled Date/Time	20/10/2021 15:00	20/10/2021 15:00		20/10/2021 15:00	20/10/2021 15:00		19/10/2021 15:00	19/10/2021 15:00		19/10/2021 15:00	19/10/2021 15:00		19/10/2021 15:00	19/10/2021 15:00	
	Sample Type	Normal	Duplicate		Normal	Duplicate		Normal	Split		Normal	Split		Normal	Split	
ChemName	**Units**	**LOR**														
Perfluorocarbons																
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	0.02	0.02	0	<0.01	<0.01	0
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	0.08	0.13	48	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	0.01	0.05	0.05	0	<0.01	<0.01	0	0.13	0.14	7	0.05	0.06	18	<0.01	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.04	0	<0.02	<0.02	0	0.02	0.02	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.02	0.02	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.05	0.05	0	<0.01	<0.01	0	0.13	0.14	7	0.03	0.04	29	<0.01	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.02	0.03	40	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.03	0.03	0	<0.02	<0.02	0	0.04	0.05	22	<0.02	<0.01	0	<0.02	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.04	0.05	22	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	5e-005	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	0.06	<0.05	18	<0.05	<0.05	0	0.08	<0.05	46	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
Sum of WA DWER PFAS (n=10)*	µg/L	0.01 : 0.05 (Interlab)	0.18	0.12	40	<0.01	<0.01	0	0.41	0.42	2	0.05	0.06	18	<0.01	<0.05	0
Sum of PFAS	µg/L	0.01 : 0.1 (Interlab)	0.18	0.12	40	<0.01	<0.01	0	0.43	0.44	2	0.05	<0.1	0	<0.01	<0.1	0

*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 80 (1-10 x LOR); 50 (10-30 x LOR); 30 (> 30 x LOR))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.
Any methods in the row header relate to those used in the primary laboratory

	Lab Report Number	ES2139303	837704		ES2139228	837704		ES2139228	837704		ES2139228	837704	
	Field ID	0906_MW213_20211020	0906_QC204_20211020	RPD	0906_SW104_20211020	0906_QC205_20211020	RPD	0906_MW300_20211020	0906_QC206_20211020	RPD	0906_MW302_20211020	0906_QC207_20211020	RPD
	Sampled Date/Time	20/10/2021 10:58	20/10/2021 10:58		21/10/2021 15:00	21/10/2021 15:00		20/10/2021 15:00	20/10/2021 15:00		20/10/2021 15:00	20/10/2021 15:00	
	Sample Type	Normal	Split		Normal	Split		Normal	Split		Normal	Split	
ChemName	**Units**	**LOR**											
Perfluorocarbons													
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	0	**0.41**	**0.61**	**39**	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	0	0.01	0.02	67	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	0	**0.63**	**0.91**	**36**	0.05	0.07	33	<0.01	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.05	0.04	22	0.04	0.04	0	<0.02	<0.01	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.04	0.03	29	<0.02	0.02	0	<0.02	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	0	0.22	0.3	31	0.05	0.07	33	<0.01	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	0.02	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.02	0.02	0	<0.02	0.01	0	<0.02	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.07	0.07	0	0.03	0.03	0	<0.02	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	5e-005	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	0.06	<0.05	18	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
Sum of WA DWER PFAS (n=10)*	µg/L	0.01 : 0.05 (Interlab)	<0.01	<0.05	0	**0.78**	**1.07**	**31**	0.18	0.15	18	<0.01	<0.05	0
Sum of PFAS	µg/L	0.01 : 0.1 (Interlab)	<0.01	<0.1	0	**0.82**	**1.14**	**33**	0.18	0.17	6	<0.01	<0.1	0

*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 80 (1-10 x LOR); 50 (10-30 x LOR); 30 (> 30 x LOR))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Lab Report Number	ES2139231	ES2139231	ES2139231	ES2139231	ES2139231	ES2139231	ES2139231	ES2139231	ES2139231
Field ID	0906_QC301_20211019	0906_QC303_20211020	0906_QC306_20211021	0906_QC308_20211022	0906_QC501_20211019	0906_QC502_20211020	0906_QC503_20211021	0906_QC504_20211022	0906_QC505_20211024
Sampled Date/Time	19/10/2021 15:00	20/10/2021 15:00	21/10/2021 15:00	22/10/2021 15:00	19/10/2021 15:00	20/10/2021 15:00	21/10/2021 15:00	22/10/2021 15:00	24/10/2021 15:00
Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank

ChemName	**Units**	**LOR**									
Perfluorocarbons											
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	0.00005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<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	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<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	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<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	<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	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<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	<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	<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	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<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	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<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	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of WA DWER PFAS (n=10)*	ug/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

APPENDIX C

LABORATORY CERTIFICATES

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2139300**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2020LANECON0001 (EN/024/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO1		
Sampler	:		

Dates

Date Samples Received	: 29-Oct-2021 16:10	Issue Date	: 30-Oct-2021
Client Requested Due Date	: 05-Nov-2021	Scheduled Reporting Date	: **05-Nov-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 6.3 - 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: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2139300-001	21-Oct-2021 00:00	0906_MW200_20211021	✓
ES2139300-002	21-Oct-2021 00:00	0906_MW204_20211021	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- A4 - AU Tax Invoice (INV) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email

ESDAT LSPECS

- EDI Format - ESDAT (ESDAT) — Email
- Electronic SRN for ESdat (ESRN_ESDAT) — Email

[redacted]

Cardno

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]

Phone: [redacted]

Address: [redacted]

PM Email: [redacted]

Project Number: NSW_0906_PFASOMP Site: PO1

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD			Please amend Sample IDs as follows	Please send to Eurofins
0906_MW200_20211021 1		2 x 20ml plastic	21/10/2021			1							1					
0906_MW204_20211021 2		2 x 20ml plastic	21/10/2021			1							1					

Sample Matrix | Sample preservation | Analysis | Comments

Environmental Division
Sydney
Work Order Reference
ES2139300

Telephone [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. Sampler name: Jake Ludlow / Callum Laker Date 29/10/21 1015

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days)

rec'd Fri 29/10/21 4:12

Please circle

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2139300**	Page	: 1 of 5
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021 16:10
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 04-Nov-2021 11:19
Sampler	: ----		
Site	: PO1		
Quote number	: EN/024/20		
No. of samples received	: 2		
No. of samples analysed	: 2		

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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	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW200_20211021	0906_MW204_20211021	----	----	----
				Sampling date / time	21-Oct-2021 00:00	21-Oct-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2139300-001	ES2139300-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.10**	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.10**	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.55**	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.03**	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.31**	<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		**0.15**	<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		**0.02**	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW200_20211021	0906_MW204_20211021	----	----	----
				Sampling date / time	21-Oct-2021 00:00	21-Oct-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2139300-001	ES2139300-002	--------	--------	--------
					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		**1.29**	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.86**	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.16**	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**110**	**105**	----	----	----
13C8-PFOA	----	0.02	%		**108**	**109**	----	----	----

Surrogate Control Limits

Sub-Matrix: **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	: **ES2139300**	Page	: 1 of 7
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 04-Nov-2021
Sampler	: ----		
Site	: PO1		
Quote number	: EN/024/20		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 3990579)									
ES2139237-017	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.24	0.22	7.4	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.27	0.27	0.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2139237-023	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3990579)									
ES2139237-017	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	0.06	0.06	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

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: 3990579) - continued									
ES2139237-023	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: 3990579)									
ES2139237-017	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
ES2139237-023	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: 3990579)									
ES2139237-017	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: 3990579) - continued									
ES2139237-017	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
ES2139237-023	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: 3990579)									
ES2139237-017	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.66	0.63	4.7	0% - 20%
ES2139237-023	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.01	0.01	0.0	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3990579)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	78.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	85.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	90.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	98.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3990579)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	82.2	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	83.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	85.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.8	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	85.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990579)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	79.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	77.1	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	87.9	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	84.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	74.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	92.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	92.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990579)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	96.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	84.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	95.0	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: 3990579) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	92.8	71.4	144

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3990579)							
ES2139237-017	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	88.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	69.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	108	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3990579)							
ES2139237-017	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	77.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	94.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	86.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	94.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	96.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	98.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	91.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	91.2	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	103	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.0	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	107	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990579)							
ES2139237-017	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	87.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	79.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	95.9	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.0	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	87.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	97.0	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: 3990579) - continued							
ES2139237-017	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	96.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990579)							
ES2139237-017	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	89.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	95.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	105	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	95.4	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2139300**	Page	: 1 of 4
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Site	: PO1	Issue Date	: 04-Nov-2021
Sampler	: ----	No. of samples received	: 2
Order number	: ----	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

- **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)							
0906_MW200_20211021, 0906_MW204_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW200_20211021, 0906_MW204_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW200_20211021, 0906_MW204_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW200_20211021, 0906_MW204_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW200_20211021, 0906_MW204_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2139301**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2020LANECON0001 (EN/024/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO2		
Sampler	:		

Dates

Date Samples Received	: 29-Oct-2021 16:20	Issue Date	: 30-Oct-2021
Client Requested Due Date	: 05-Nov-2021	Scheduled Reporting Date	: **05-Nov-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 6.3 - 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
- **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)
ES2139301-001	21-Oct-2021 00:00	0906_MW209_20211021	✓
ES2139301-002	22-Oct-2021 00:00	0906_MW231_20211022	✓
ES2139301-003	21-Oct-2021 00:00	0906_MW238_20211021	✓
ES2139301-004	21-Oct-2021 00:00	0906_MW239_20211021	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- A4 - AU Tax Invoice (INV) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

ESDAT LSPECS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

Cardno

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]

Phone: [redacted]

Address: [redacted]

PM Email: [redacted]

Project Number: NSW_0906_PFASOMP Site: PO2

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD			Please amend Sample IDs as follows	Please send to Eurofins
0906_MW209_20211021 1		2 x 20ml plastic	21/10/2021			1			1				1					
0906_MW231_20211022 2		2 x 20ml plastic	22/10/2021			1			1				1					
0906_MW238_20211021 3		2 x 20ml plastic	21/10/2021			1			1				1					
0906_MW239_20211021 4		2 x 20ml plastic	21/10/2021			1			1				1					

Environmental Division
Sydney
Work Order Reference
ES2139301

Telephone : [redacted]

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: Jake Ludlow / Callum Laker

Date: 29/10/21 1015

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days)

ree: FAN 29/10/21 4pm

Please circle

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2139301**	Page	: 1 of 5
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021 16:20
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 04-Nov-2021 11:19
Sampler	: ----		
Site	: PO2		
Quote number	: EN/024/20		
No. of samples received	: 4		
No. of samples analysed	: 4		

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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	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW209_20211021	0906_MW231_20211022	0906_MW238_20211021	0906_MW239_20211021	----
				Sampling date / time	21-Oct-2021 00:00	22-Oct-2021 00:00	21-Oct-2021 00:00	21-Oct-2021 00:00	----
Compound	CAS Number	LOR	Unit		ES2139301-001	ES2139301-002	ES2139301-003	ES2139301-004	--------
					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: WATER (Matrix: WATER)				Sample ID	0906_MW209_20211021	0906_MW231_20211022	0906_MW238_20211021	0906_MW239_20211021	----
				Sampling date / time	21-Oct-2021 00:00	22-Oct-2021 00:00	21-Oct-2021 00:00	21-Oct-2021 00:00	----
Compound	CAS Number	LOR	Unit		ES2139301-001	ES2139301-002	ES2139301-003	ES2139301-004	--------
					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	%		**106**	**109**	**112**	**116**	----
13C8-PFOA	----	0.02	%		**110**	**108**	**114**	**109**	----

Surrogate Control Limits

Sub-Matrix: **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	: **ES2139301**	Page	: 1 of 7
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 04-Nov-2021
Sampler	: ----		
Site	: PO2		
Quote number	: EN/024/20		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 3990579)									
ES2139237-017	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.24	0.22	7.4	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.27	0.27	0.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2139237-023	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3990579)									
ES2139237-017	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	0.06	0.06	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

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: 3990579) - continued									
ES2139237-023	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: 3990579)									
ES2139237-017	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
ES2139237-023	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: 3990579)									
ES2139237-017	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: 3990579) - continued									
ES2139237-017	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
ES2139237-023	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: 3990579)									
ES2139237-017	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.66	0.63	4.7	0% - 20%
ES2139237-023	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.01	0.01	0.0	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3990579)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	78.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	85.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	90.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	98.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3990579)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	82.2	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	83.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	85.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.8	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	85.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990579)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	79.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	77.1	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	87.9	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	84.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	74.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	92.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	92.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990579)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	96.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	84.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	95.0	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: 3990579) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	92.8	71.4	144

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3990579)							
ES2139237-017	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	88.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	69.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	108	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3990579)							
ES2139237-017	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	77.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	94.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	86.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	94.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	96.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	98.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	91.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	91.2	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	103	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.0	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	107	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990579)							
ES2139237-017	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	87.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	79.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	95.9	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.0	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	87.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	97.0	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: 3990579) - continued							
ES2139237-017	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	96.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990579)							
ES2139237-017	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	89.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	95.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	105	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	95.4	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2139301**	Page	: 1 of 4
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Site	: PO2	Issue Date	: 04-Nov-2021
Sampler	: ----	No. of samples received	: 4
Order number	: ----	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: **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) 0906_MW209_20211021, 0906_MW238_20211021, 0906_MW239_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW231_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW209_20211021, 0906_MW238_20211021, 0906_MW239_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW231_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW209_20211021, 0906_MW238_20211021, 0906_MW239_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW231_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW209_20211021, 0906_MW238_20211021, 0906_MW239_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW231_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW209_20211021, 0906_MW238_20211021, 0906_MW239_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW231_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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 : **ES2139302**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2020LANECON0001 (EN/024/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO3		
Sampler	:		

Dates

Date Samples Received	: 29-Oct-2021 16:10	Issue Date	: 30-Oct-2021
Client Requested Due Date	: 05-Nov-2021	Scheduled Reporting Date	: **05-Nov-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 6.3 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- 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)
ES2139302-001	21-Oct-2021 00:00	0906_MW210_20211021	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- A4 - AU Tax Invoice (INV) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

ESDAT LSPECS

- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

Cardno

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]

Phone: [redacted]

Address: [redacted]

PM Email: [redacted]

Project Number: NSW_0906_PFASOMP Site: PO3

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD			Please amend Sample IDs as follows	Please send to Eurofins
0906_MW210_20211021		2 x 20ml plastic	21/10/2021			1			1				1					

Sample Matrix | Sample preservation | Analysis | Comments

Environmental Division
Sydney
Work Order Reference
ES2139302

Telephone : [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: Jake Ludlow / Callum Laker Date: 20/10/21 1015

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days)

Please circle

rec: FAX 20/10/21 4:47

Revision 1
Approved 23 May 2013

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2139302**	Page	: 1 of 5
Amendment	: **1**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021 16:10
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 15-Nov-2021 10:21
Sampler	: ----		
Site	: PO3		
Quote number	: EN/024/20		
No. of samples received	: 1		
No. of samples analysed	: 1		

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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	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (15/11/2021): This report has been amended following a change to the EP231X PFOS result reported for sample 0906_MW210_20211021,ES2139302-001.
- Amendment 15/11/2021: This report has been amended following a change to theEP231X result reported for sample #001 due to a result re-test. All details are recorded in client query 21SYCC560.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW210_20211021	----	----	----	----
				Sampling date / time	21-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2139302-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW210_20211021	----	----	----	----
				Sampling date / time	21-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2139302-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
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	%		**114**	----	----	----	----
13C8-PFOA	----	0.02	%		**115**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **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	: **ES2139302**	Page	: 1 of 6
Amendment	: **1**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 15-Nov-2021
Sampler	: ----		
Site	: PO3		
Quote number	: EN/024/20		
No. of samples received	: 1		
No. of samples analysed	: 1		

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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	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 3990845)									
EP2113033-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.07	1.17	8.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.46	2.78	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	0.04	0.04	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.10	0.11	10.6	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: 3990845)									
EP2113033-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	0.09	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	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		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: 3990845)									
EP2113033-001	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

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: 3990845) - continued									
EP2113033-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3990845)									
EP2113033-001	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: 3990845)									
EP2113033-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	3.81	4.26	11.2	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: 3990845)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	97.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	81.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	86.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	86.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	87.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3990845)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	79.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.0	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.2	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	90.8	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	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	120	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	105	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990845)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	92.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	108	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	93.0	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990845)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.4	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	92.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	104	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: 3990845) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	90.4	71.4	144

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3990845)							
EP2113033-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	80.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	94.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	82.0	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	90.2	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: 3990845)							
EP2113033-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.3	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	# Not Determined	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	93.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	105	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	110	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	105	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990845)							
EP2113033-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	83.8	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	87.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	98.6	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.4	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: 3990845) - continued							
EP2113033-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	75.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.2	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	88.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990845)							
EP2113033-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	77.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	# Not Determined	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	111	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	90.4	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2139302**	Page	: 1 of 5
Amendment	: **1**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Site	: PO3	Issue Date	: 15-Nov-2021
Sampler	: ----	No. of samples received	: 1
Order number	: ----	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluoroheptanoic acid (PFHpA)**	375-85-9	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2113033--002	Anonymous	**6:2 Fluorotelomer sulfonic acid (6:2 FTS)**	27619-97-2	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 / 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

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* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW210_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW210_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW210_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW210_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW210_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	1	15	**6.67**	**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
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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES2139303**		
Amendment	: **1**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2020LANECON0001 (EN/024/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO4		
Sampler	:		

Dates

Date Samples Received	: 29-Oct-2021 16:20	Issue Date	: 17-Nov-2021
Client Requested Due Date	: 18-Nov-2021	Scheduled Reporting Date	: **18-Nov-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 6.3 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 5 / 5

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 1/11/21 15:29: This is an updated SRN which indicates the transfer of Sample #5 to a new work order (ES2139399) as per clients request.
- **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)
ES2139303-001	20-Oct-2021 00:00	0906_MW211_20211020	✓
ES2139303-002	20-Oct-2021 00:00	0906_MW212_20211020	✓
ES2139303-003	20-Oct-2021 00:00	0906_MW213_20211020	✓
ES2139303-004	19-Oct-2021 00:00	0906_SW309_20211019	✓
ES2139303-005	20-Oct-2021 00:00	0906_QC104_20211020	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- A4 - AU Tax Invoice (INV) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

ESDAT LSPECS

- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

Cardno

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]

Phone: [redacted]

Address: [redacted]

PM Email: [redacted]

Project Number: NSW_0906_PFASOMP Site: PO4

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks	EP231X - PFAS Standard	HOLD	Please amend Sample IDs as follows	Please send to Eurofins
0906_MW211_20211020 1		2 x 20ml plastic	20/10/2021			1			1	1			
0906_MW212_20211020 2		2 x 20ml plastic	20/10/2021			1			1	1			
0906_MW213_20211020 3		2 x 20ml plastic	20/10/2021			1			1	1			
0906_SW309_20211019 4		2 x 20ml plastic	19/10/2021				1		1	1			
Extra: 0906_MW312_20211021		"	21/10/2021										

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: Jake Ludlow / Callum Laker Date: 29/10/21 1015

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Environmental Division
Sydney
Work Order Reference
ES2139303

Telephone : [redacted]

Please supply results electronically in spreadsheet and ESDAT files

Turn around time: (24 hour/48 hour/3 days/5 days)

Please circle

rec: [redacted] 29/10/21 4:42

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2139303**	Page	: 1 of 5
Amendment	: **1**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021 16:20
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 18-Nov-2021 09:41
Sampler	: ----		
Site	: PO4		
Quote number	: EN/024/20		
No. of samples received	: 5		
No. of samples analysed	: 5		

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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	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (17/11/2021): This report has been amended and re-released to allow the reporting of additional analytical data.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW211_20211020	0906_MW212_20211020	0906_MW213_20211020	0906_SW309_20211019	0906_QC104_20211020
				Sampling date / time	20-Oct-2021 00:00	20-Oct-2021 00:00	20-Oct-2021 00:00	19-Oct-2021 00:00	20-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139303-001	ES2139303-002	ES2139303-003	ES2139303-004	ES2139303-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.01	<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: WATER (Matrix: WATER)				Sample ID	0906_MW211_20211020	0906_MW212_20211020	0906_MW213_20211020	0906_SW309_20211019	0906_QC104_20211020
				Sampling date / time	20-Oct-2021 00:00	20-Oct-2021 00:00	20-Oct-2021 00:00	19-Oct-2021 00:00	20-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139303-001	ES2139303-002	ES2139303-003	ES2139303-004	ES2139303-005
					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	<0.01	<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	%		**104**	**95.4**	**114**	**106**	**99.0**
13C8-PFOA	----	0.02	%		**110**	**101**	**111**	**110**	**106**

Surrogate Control Limits

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2139303**	Page	: 1 of 6
Amendment	: **1**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 18-Nov-2021
Sampler	: ----		
Site	: PO4		
Quote number	: EN/024/20		
No. of samples received	: 5		
No. of samples analysed	: 5		

ilac-MRA NATA
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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	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 3990845)									
EP2113033-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.07	1.17	8.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.46	2.78	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	0.04	0.04	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.10	0.11	10.6	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: 3990845)									
EP2113033-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	0.09	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	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		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: 3990845)									
EP2113033-001	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

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: 3990845) - continued									
EP2113033-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3990845)									
EP2113033-001	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: 3990845)									
EP2113033-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	3.81	4.26	11.2	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: 3990845)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	97.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	81.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	86.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	86.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	87.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3990845)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	79.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.0	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.2	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	90.8	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	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	120	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	105	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990845)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	92.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	108	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	93.0	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990845)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.4	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	92.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	104	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: 3990845) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	90.4	71.4	144

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3990845)							
EP2113033-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	80.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	94.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	82.0	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	90.2	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: 3990845)							
EP2113033-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.3	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	# Not Determined	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	93.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	105	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	110	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	105	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990845)							
EP2113033-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	83.8	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	87.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	98.6	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.4	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: 3990845) - continued							
EP2113033-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	75.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.2	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	88.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990845)							
EP2113033-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	77.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	# Not Determined	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	111	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	90.4	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2139303**	Page	: 1 of 5
Amendment	: **1**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Site	: PO4	Issue Date	: 18-Nov-2021
Sampler	: ----	No. of samples received	: 5
Order number	: ----	No. of samples analysed	: 5

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluoroheptanoic acid (PFHpA)**	375-85-9	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2113033--002	Anonymous	**6:2 Fluorotelomer sulfonic acid (6:2 FTS)**	27619-97-2	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	19	5.26	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / ***Container*** / Client Sample ID(s)	***Sample Date***	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*

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) 0906_SW309_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW211_20211020, 0906_MW212_20211020, 0906_MW213_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC104_20211020	**20-Oct-2021**	**18-Nov-2021**	18-Apr-2022	✓	**18-Nov-2021**	18-Apr-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_SW309_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW211_20211020, 0906_MW212_20211020, 0906_MW213_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC104_20211020	**20-Oct-2021**	**18-Nov-2021**	18-Apr-2022	✓	**18-Nov-2021**	18-Apr-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_SW309_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW211_20211020, 0906_MW212_20211020, 0906_MW213_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC104_20211020	**20-Oct-2021**	**18-Nov-2021**	18-Apr-2022	✓	**18-Nov-2021**	18-Apr-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_SW309_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW211_20211020, 0906_MW212_20211020, 0906_MW213_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC104_20211020	**20-Oct-2021**	**18-Nov-2021**	18-Apr-2022	✓	**18-Nov-2021**	18-Apr-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_SW309_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW211_20211020, 0906_MW212_20211020, 0906_MW213_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC104_20211020	**20-Oct-2021**	**18-Nov-2021**	18-Apr-2022	✓	**18-Nov-2021**	18-Apr-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	19	**5.26**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2139304**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2020LANECON0001 (EN/024/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO5		
Sampler	:		

Dates

Date Samples Received	: 29-Oct-2021 16:10	Issue Date	: 30-Oct-2021
Client Requested Due Date	: 05-Nov-2021	Scheduled Reporting Date	: **05-Nov-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 6.3 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- 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)
ES2139304-001	19-Oct-2021 00:00	0906_MW233_20211019	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- A4 - AU Tax Invoice (INV) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email

ESDAT LSPECS

- EDI Format - ESDAT (ESDAT) — Email
- Electronic SRN for ESdat (ESRN_ESDAT) — Email

[redacted]

Cardno

Chain of Custody

Sheet) of

PM Name: [redacted]

Phone [redacted]

Address [redacted]

PM Email: [redacted]

Project Number: NSW_0906_PFASOMP Site: PO5

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	QC	Sample preservation: Ice/ Ice Bricks				Analysis: EP231X - PFAS Standard	HOLD			Comments: Please amend Sample IDs as follows	Please send to Eurofins
0906_MW233_20211019		2 x 20ml plastic	19/10/2021			1			1				1					

Environmental Division
Sydney
Work Order Reference
ES2139304

Telephone [redacted]

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: Jake Ludlow / Callum Laker

Date: 29/10/21 1015

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days)

Please circle

rec Fadi 29/10/21 4:45p

Revision 1
Approved 23 May 2013

DEF19008_E4_GWM-SWM_PO5_Homestead.xls

Printed 29/10/2021

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2139304**	Page	: 1 of 5
Client	: **CARDNO VICTORIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021 16:10
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 04-Nov-2021 11:19
Sampler	: ----		
Site	: PO5		
Quote number	: EN/024/20		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This 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	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW233_20211019	----	----	----	----
				Sampling date / time	19-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2139304-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.03**	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.04**	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.24**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.28**	----	----	----	----
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		**0.05**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW233_20211019	----	----	----	----
				Sampling date / time	19-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2139304-001	--------	--------	--------	--------
					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		**0.64**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.52**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.60**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**108**	----	----	----	----
13C8-PFOA	----	0.02	%		**110**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **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	: **ES2139304**	Page	: 1 of 6
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 04-Nov-2021
Sampler	: ----		
Site	: PO5		
Quote number	: EN/024/20		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 3990845)									
EP2113033-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.07	1.17	8.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.46	2.78	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	0.04	0.04	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.10	0.11	10.6	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: 3990845)									
EP2113033-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	0.09	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	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		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: 3990845)									
EP2113033-001	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

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: 3990845) - continued									
EP2113033-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3990845)									
EP2113033-001	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: 3990845)									
EP2113033-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	3.81	4.26	11.2	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: 3990845)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	97.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	81.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	86.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	86.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	87.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3990845)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	79.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.0	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.2	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	90.8	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	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	120	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	105	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990845)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	92.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	108	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	93.0	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990845)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.4	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	92.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	104	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: 3990845) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	90.4	71.4	144

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3990845)							
EP2113033-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	80.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	94.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	82.0	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	90.2	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: 3990845)							
EP2113033-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.3	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	# Not Determined	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	93.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	105	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	110	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	105	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990845)							
EP2113033-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	83.8	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	87.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	98.6	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.4	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: 3990845) - continued							
EP2113033-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	75.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.2	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	88.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990845)							
EP2113033-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	77.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	# Not Determined	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	111	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	90.4	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2139304**	Page	: 1 of 5
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Site	: PO5	Issue Date	: 04-Nov-2021
Sampler	: ----	No. of samples received	: 1
Order number	: ----	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluoroheptanoic acid (PFHpA)**	375-85-9	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2113033--002	Anonymous	**6:2 Fluorotelomer sulfonic acid (6:2 FTS)**	27619-97-2	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 / 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

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* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW233_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW233_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW233_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW233_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW233_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	1	15	**6.67**	**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
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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2139305**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted] 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2020LANECON0001 (EN/024/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO6		
Sampler	:		

Dates

Date Samples Received	: 29-Oct-2021 16:10	Issue Date	: 30-Oct-2021
Client Requested Due Date	: 05-Nov-2021	Scheduled Reporting Date	: **05-Nov-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 6.3 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- 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)
ES2139305-001	20-Oct-2021 00:00	0906_MW235_20211020	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- A4 - AU Tax Invoice (INV) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email

ESDAT LSPECS

- EDI Format - ESDAT (ESDAT) — Email
- Electronic SRN for ESdat (ESRN_ESDAT) — Email

[redacted]

Cardno

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_0906_PFASOMP Site: PO6
Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD			Please amend Sample IDs as follows	Please send to Eurofins
0906_MW235_20211020		2 x 20ml plastic	20/10/2021			1			1				1					

Sample Matrix | Sample preservation | Analysis | Comments

Environmental Division
Sydney
Work Order Reference
ES2139305

Telephone : [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.
Sampler name: Jake Ludlow / Callum Laker
Date: 29/10/21 10:15

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.
Turn around time: (24 hour/48 hour/3 days/5 days) Please circle
rec'd FAST 29/10/21 4:10pm

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2139305**	Page	: 1 of 5
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021 16:10
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 04-Nov-2021 11:20
Sampler	: ----		
Site	: PO6		
Quote number	: EN/024/20		
No. of samples received	: 1		
No. of samples analysed	: 1		

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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	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW235_20211020	----	----	----	----
				Sampling date / time	20-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2139305-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW235_20211020	----	----	----	----
				Sampling date / time	20-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2139305-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**102**	----	----	----	----
13C8-PFOA	----	0.02	%		**109**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **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	: **ES2139305**	Page	: 1 of 6
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 04-Nov-2021
Sampler	: ----		
Site	: PO6		
Quote number	: EN/024/20		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 3990845)									
EP2113033-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.07	1.17	8.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.46	2.78	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	0.04	0.04	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.10	0.11	10.6	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: 3990845)									
EP2113033-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	0.09	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	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		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: 3990845)									
EP2113033-001	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

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: 3990845) - continued									
EP2113033-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3990845)									
EP2113033-001	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: 3990845)									
EP2113033-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	3.81	4.26	11.2	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: 3990845)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	97.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	81.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	86.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	86.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	87.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3990845)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	79.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.0	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.2	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	90.8	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	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	120	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	105	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990845)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	92.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	108	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	93.0	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990845)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.4	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	92.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	104	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: 3990845) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	90.4	71.4	144

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3990845)							
EP2113033-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	80.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	94.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	82.0	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	90.2	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: 3990845)							
EP2113033-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.3	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	# Not Determined	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	93.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	105	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	110	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	105	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990845)							
EP2113033-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	83.8	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	87.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	98.6	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.4	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: 3990845) - continued							
EP2113033-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	75.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.2	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	88.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990845)							
EP2113033-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	77.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	# Not Determined	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	111	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	90.4	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2139305**	Page	: 1 of 5
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Site	: PO6	Issue Date	: 04-Nov-2021
Sampler	: ----	No. of samples received	: 1
Order number	: ----	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluoroheptanoic acid (PFHpA)**	375-85-9	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EP2113033--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2113033--002	Anonymous	**6:2 Fluorotelomer sulfonic acid (6:2 FTS)**	27619-97-2	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 / 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

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* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW235_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW235_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW235_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW235_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW235_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	1	15	**6.67**	**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
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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES2139237**		
Amendment	: **1**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 3
Order number	: ----	Quote number	: EP2020LANECON0001 (EN/024/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO7		
Sampler	:		

Dates

Date Samples Received	: 29-Oct-2021 16:20	Issue Date	: 08-Nov-2021
Client Requested Due Date	: 05-Nov-2021	Scheduled Reporting Date	: **05-Nov-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 6.3 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 28 / 28

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: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2139237-001	19-Oct-2021 00:00	0906_MW240_20211019	✓
ES2139237-002	19-Oct-2021 00:00	0906_MW244_20211019	✓
ES2139237-003	19-Oct-2021 00:00	0906_MW245_20211019	✓
ES2139237-004	20-Oct-2021 00:00	0906_MW246_20211020	✓
ES2139237-005	20-Oct-2021 00:00	0906_MW248_20211020	✓
ES2139237-006	21-Oct-2021 00:00	0906_MW247_20211021	✓
ES2139237-007	21-Oct-2021 00:00	0906_MW249_20211021	✓
ES2139237-008	19-Oct-2021 00:00	0906_MW250_20211019	✓
ES2139237-009	21-Oct-2021 00:00	0906_MW251_20211021	✓
ES2139237-010	19-Oct-2021 00:00	0906_MW252_20211019	✓
ES2139237-011	19-Oct-2021 00:00	0906_MW253_20211019	✓
ES2139237-012	19-Oct-2021 00:00	0906_MW254_20211019	✓
ES2139237-013	19-Oct-2021 00:00	0906_MW255_20211019	✓
ES2139237-014	19-Oct-2021 00:00	0906_MW256_20211019	✓
ES2139237-015	21-Oct-2021 00:00	0906_SW206_20211021	✓
ES2139237-016	19-Oct-2021 00:00	0906_SW212_20211019	✓
ES2139237-017	21-Oct-2021 00:00	0906_SW218_20211021	✓
ES2139237-018	21-Oct-2021 00:00	0906_SW228_20211021	✓
ES2139237-019	19-Oct-2021 00:00	0906_SW234_20211019	✓
ES2139237-020	22-Oct-2021 00:00	0906_SW236_20211022	✓
ES2139237-021	22-Oct-2021 00:00	0906_SW240_20211022	✓
ES2139237-022	19-Oct-2021 00:00	0906_SW261_20211019	✓
ES2139237-023	19-Oct-2021 00:00	0906_SW262_20211019	✓
ES2139237-024	22-Oct-2021 00:00	0906_SW286_20211022	✓
ES2139237-025	21-Oct-2021 00:00	0906_SW288_20211021	✓
ES2139237-026	21-Oct-2021 00:00	0906_SW289_20211021	✓
ES2139237-027	19-Oct-2021 00:00	0906_SW294_20211019	✓
ES2139237-028	19-Oct-2021 00:00	0906_SW310_20211019	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	[redacted]
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- A4 - AU Tax Invoice (INV)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	

ESDAT LSPECS

- EDI Format - ESDAT (ESDAT)	Email	
- Electronic SRN for ESdat (ESRN_ESDAT)	Email	

Cardno

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_0906_PFASOMP Site: PO7
Laboratory (name, phone, & contact person):
ALS

Sample ID		Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD	Forward to Eurofins		Please amend Sample IDs as follows	Please send to Eurofins
						Sample Matrix				Sample preservation				Analysis				Comments	
0906_MW240_20211019	1		2 x 20ml	19/10/2021			1			1				1					
0906_MW244_20211019	2		2 x 20ml	19/10/2021			1			1				1					
0906_MW245_20211019	3		2 x 20ml	19/10/2021			1			1				1					
0906_MW246_20211020	4		2 x 20ml	20/10/2021			1			1				1					
0906_MW247_20211020	5		2 x 20ml	20/10/2021			1			1				1					
0906_MW248_20211021	6		2 x 20ml	21/10/2021			1			1				1					
0906_MW249_20211021	7		2 x 20ml	21/10/2021			1			1				1					
0906_MW250_20211019	8		2 x 20ml	19/10/2021			1			1				1					
0906_MW251_20211021	9		2 x 20ml	21/10/2021			1			1				1					
0906_MW252_20211019	10		2 x 20ml	19/10/2021			1			1				1					
0906_MW253_20211019	11		6 x 20ml	19/10/2021			1			1				1					
0906_MW254_20211019	12		6 x 20ml	19/10/2021			1			1				1					
0906_MW255_20211019	13		2 x 20ml	19/10/2021			1			1				1					
0906_MW256_20211019	14		2 x 20ml	19/10/2021			1			1				1					
0906_SW206_20211021	15		2 x 20ml	21/10/2021				1		1				1					
0906_SW212_20211019	16		2 x 20ml	19/10/2021				1		1				1					
0906_SW218_20211021	17		2 x 20ml	21/10/2021				1		1				1					
0906_SW228_20211021	18		2 x 20ml	21/10/2021				1		1				1					
0906_SW234_20211019	19		2 x 20ml	19/10/2021				1		1				1					
0906_SW236_20211022	20		2 x 20ml	20/10/2021				1		1				1					
0906_SW240_20211022	21		2 x 20ml	22/10/2021				1		1				1					
0906_SW281_20211019	22		2 x 20ml	19/10/2021				1		1				1					
0906_SW282_20211019	23		2 x 20ml	19/10/2021				1		1				1					
0906_SW286_20211022	24		2 x 20ml	22/10/2021				1		1				1					
0906_SW288_20211021	25		2 x 20ml	21/10/2021				1		1				1					
0906_SW289_20211021	26		2 x 20ml	21/10/2021				1		1				1					
0906_SW294_20211019	27		2 x 20ml	19/10/2021				1		1				1					
0906_SW310_20211019	28		2 x 20ml	19/10/2021				1		1				1					

Environmental Division
Sydney
Work Order Reference
ES2139237

Telephone : [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: Jake Tudlow / Callum Laker

Date: 29/10/21 1015

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days)

Please circle

rec'd Fax 29/10/21 4:47

Page of

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2139237**	Page	: 1 of 17
Amendment	: **2**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021 16:20
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 18-Nov-2021 09:40
Sampler	: ----		
Site	: PO7		
Quote number	: EN/024/20		
No. of samples received	: 31		
No. of samples analysed	: 31		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: PFAS results for sample #008, #011, #013, #014, #015 confirmed by re-extraction and re-analysis.
- Amendment (17/11/2021): This report has been amended and re-released to allow the reporting of additional analytical data.
- Amendment (08/11/2021): This report has been amended to alter the Sample ID for Sample #005 and #006. 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: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW240_20211019	0906_MW244_20211019	0906_MW245_20211019	0906_MW246_20211020	0906_MW248_20211020
				Sampling date / time	19-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00	20-Oct-2021 00:00	20-Oct-2021 00:00
					ES2139237-001	ES2139237-002	ES2139237-003	ES2139237-004	ES2139237-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.02**	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.02**	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.15**	<0.01	<0.01	<0.01	**0.06**
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		**0.04**	<0.01	<0.01	<0.01	**0.08**
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	**0.03**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.05**	<0.02	<0.02	<0.02	**0.03**
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	**0.03**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW240_20211019	0906_MW244_20211019	0906_MW245_20211019	0906_MW246_20211020	0906_MW248_20211020
				Sampling date / time	19-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00	20-Oct-2021 00:00	20-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139237-001	ES2139237-002	ES2139237-003	ES2139237-004	ES2139237-005
					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		**0.28**	<0.01	<0.01	<0.01	**0.24**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.19**	<0.01	<0.01	<0.01	**0.14**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.26**	<0.01	<0.01	<0.01	**0.21**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**99.8**	**102**	**99.7**	**104**	**97.9**
13C8-PFOA	----	0.02	%		**109**	**113**	**108**	**115**	**110**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW247_20211021	0906_MW249_20211021	0906_MW250_20211019	0906_MW251_20211021	0906_MW252_20211019
				Sampling date / time	21-Oct-2021 00:00	21-Oct-2021 00:00	19-Oct-2021 00:00	21-Oct-2021 00:00	19-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139237-006	ES2139237-007	ES2139237-008	ES2139237-009	ES2139237-010
					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		<0.01	<0.01	**0.02**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<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: WATER (Matrix: WATER)				Sample ID	0906_MW247_20211021	0906_MW249_20211021	0906_MW250_20211019	0906_MW251_20211021	0906_MW252_20211019
				Sampling date / time	21-Oct-2021 00:00	21-Oct-2021 00:00	19-Oct-2021 00:00	21-Oct-2021 00:00	19-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139237-006	ES2139237-007	ES2139237-008	ES2139237-009	ES2139237-010
					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	<0.05	<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	**0.04**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.02**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**0.04**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**100**	**99.1**	**98.7**	**95.3**	**102**
13C8-PFOA	----	0.02	%		**111**	**110**	**113**	**117**	**113**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW253_20211019	0906_MW254_20211019	0906_MW255_20211019	0906_MW256_20211019	0906_SW206_20211021
				Sampling date / time	19-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00	21-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139237-011	ES2139237-012	ES2139237-013	ES2139237-014	ES2139237-015
					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		**0.03**	**0.13**	**0.04**	**0.09**	**0.02**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.02**	<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	**0.04**	<0.02	**0.02**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**0.04**	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.08**	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW253_20211019	0906_MW254_20211019	0906_MW255_20211019	0906_MW256_20211019	0906_SW206_20211021
				Sampling date / time	19-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00	21-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139237-011	ES2139237-012	ES2139237-013	ES2139237-014	ES2139237-015
					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	**0.08**	<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		**0.05**	**0.43**	**0.05**	**0.12**	**0.03**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.05**	**0.13**	**0.05**	**0.10**	**0.03**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.05**	**0.41**	**0.05**	**0.12**	**0.03**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**101**	**103**	**104**	**100**	**108**
13C8-PFOA	----	0.02	%		**110**	**113**	**115**	**113**	**113**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW212_20211019	0906_SW218_20211021	0906_SW228_20211021	0906_SW234_20211019	0906_SW236_20211022
				Sampling date / time	19-Oct-2021 00:00	21-Oct-2021 00:00	21-Oct-2021 00:00	19-Oct-2021 00:00	22-Oct-2021 00:00
					ES2139237-016	ES2139237-017	ES2139237-018	ES2139237-019	ES2139237-020
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.04**	**0.10**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.04**	**0.09**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.24**	**0.72**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	**0.06**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	**0.27**	**1.41**	**0.04**	<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	**0.09**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.06**	**0.32**	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	**0.03**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.01**	**0.06**	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_SW212_20211019	0906_SW218_20211021	0906_SW228_20211021	0906_SW234_20211019	0906_SW236_20211022
				Sampling date / time	19-Oct-2021 00:00	21-Oct-2021 00:00	21-Oct-2021 00:00	19-Oct-2021 00:00	22-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139237-016	ES2139237-017	ES2139237-018	ES2139237-019	ES2139237-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<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	**0.66**	**2.88**	**0.04**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.51**	**2.13**	**0.04**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.62**	**2.73**	**0.04**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**101**	**111**	**109**	**106**	**104**
13C8-PFOA	----	0.02	%		**113**	**110**	**112**	**106**	**103**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW240_20211022	0906_SW261_20211019	0906_SW262_20211019	0906_SW286_20211022	0906_SW288_20211021
				Sampling date / time	22-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00	22-Oct-2021 00:00	21-Oct-2021 00:00
					ES2139237-021	ES2139237-022	ES2139237-023	ES2139237-024	ES2139237-025
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	**0.01**	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_SW240_20211022	0906_SW261_20211019	0906_SW262_20211019	0906_SW286_20211022	0906_SW288_20211021
				Sampling date / time	22-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00	22-Oct-2021 00:00	21-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139237-021	ES2139237-022	ES2139237-023	ES2139237-024	ES2139237-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<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	%		**102**	**106**	**106**	**106**	**107**
13C8-PFOA	----	0.02	%		**102**	**107**	**104**	**112**	**98.1**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_SW289_20211021	0906_SW294_20211019	0906_SW310_20211019	0906_QC101_20211019	0906_QC102_20211019
				Sampling date / time	21-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139237-026	ES2139237-027	ES2139237-028	ES2139237-029	ES2139237-030
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.11**	<0.02	**0.04**	**0.02**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.07**	<0.02	**0.02**	**0.02**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.69**	<0.01	**0.26**	**0.14**	**0.02**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.06**	<0.02	**0.02**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**1.15**	**0.01**	**1.21**	<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		**0.06**	<0.02	**0.03**	**0.03**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.22**	<0.02	**0.07**	**0.05**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.02**	<0.02	<0.02	**0.05**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.04**	<0.01	**0.02**	**0.12**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_SW289_20211021	0906_SW294_20211019	0906_SW310_20211019	0906_QC101_20211019	0906_QC102_20211019
				Sampling date / time	21-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00	19-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139237-026	ES2139237-027	ES2139237-028	ES2139237-029	ES2139237-030
					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		**2.42**	**0.01**	**1.67**	**0.43**	**0.03**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**1.84**	**0.01**	**1.47**	**0.14**	**0.03**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**2.29**	**0.01**	**1.63**	**0.41**	**0.03**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**110**	**107**	**110**	**94.9**	**104**
13C8-PFOA	----	0.02	%		**100**	**106**	**108**	**101**	**106**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_QC103_20211019	----	----	----	----
				Sampling date / time	19-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2139237-031	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_QC103_20211019	----	----	----	----
				Sampling date / time	19-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2139237-031	--------	--------	--------	--------
					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	%		**93.8**	----	----	----	----
13C8-PFOA	----	0.02	%		**108**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **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	: **ES2139237**	Page	: 1 of 11
Amendment	: **2**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Order number	: ----	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 18-Nov-2021
Sampler	: ----		
Site	: PO7		
Quote number	: EN/024/20		
No. of samples received	: 31		
No. of samples analysed	: 31		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 3989511)									
ES2139237-011	0906_MW253_20211019	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2139237-012	0906_MW254_20211019	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.13	0.12	0.0	0% - 50%
		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: 3990579)									
ES2139237-017	0906_SW218_20211021	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.24	0.22	7.4	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.27	0.27	0.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2139237-023	0906_SW262_20211019	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

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: 3990579) - continued									
ES2139237-023	0906_SW262_20211019	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: 3989511)									
ES2139237-011	0906_MW253_20211019	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
ES2139237-012	0906_MW254_20211019	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	0.08	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	0.04	0.04	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3990579)									
ES2139237-017	0906_SW218_20211021	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	0.06	0.06	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
ES2139237-023	0906_SW262_20211019	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

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: 3990579) - continued									
ES2139237-023	0906_SW262_20211019	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: 3989511)									
ES2139237-011	0906_MW253_20211019	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
ES2139237-012	0906_MW254_20211019	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: 3990579)									
ES2139237-017	0906_SW218_20211021	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3990579) - continued									
ES2139237-017	0906_SW218_20211021	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
ES2139237-023	0906_SW262_20211019	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: 3989511)									
ES2139237-011	0906_MW253_20211019	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
ES2139237-012	0906_MW254_20211019	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	0.08	0.08	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: 3990579)									
ES2139237-017	0906_SW218_20211021	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: 3990579) - continued									
ES2139237-017	0906_SW218_20211021	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
ES2139237-023	0906_SW262_20211019	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: 3989511)									
ES2139237-011	0906_MW253_20211019	EP231X: Sum of PFAS	----	0.01	µg/L	0.05	0.05	0.0	No Limit
ES2139237-012	0906_MW254_20211019	EP231X: Sum of PFAS	----	0.01	µg/L	0.43	0.42	2.4	0% - 20%
EP231P: PFAS Sums (QC Lot: 3990579)									
ES2139237-017	0906_SW218_20211021	EP231X: Sum of PFAS	----	0.01	µg/L	0.66	0.63	4.7	0% - 20%
ES2139237-023	0906_SW262_20211019	EP231X: Sum of PFAS	----	0.01	µg/L	0.01	0.01	0.0	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3989511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	77.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	86.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	89.8	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	86.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	86.0	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3990579)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	78.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	85.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	90.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	98.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3989511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	81.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	79.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	79.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	79.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	81.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	80.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	82.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	93.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	80.2	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3990579)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	82.2	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	83.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	85.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.8	69.0	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: 3990579) - continued								
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	85.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3989511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	95.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	107	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	85.7	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	109	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	91.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	88.4	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990579)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	79.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	77.1	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	87.9	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	84.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	74.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	92.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	92.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3989511)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	88.8	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	90.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	87.4	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	82.8	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990579)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	96.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	84.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	95.0	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	92.8	71.4	144

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

				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: 3989511)							
ES2139237-011	0906_MW253_20211019	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	83.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	93.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	84.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	84.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	86.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	83.2	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3990579)							
ES2139237-017	0906_SW218_20211021	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	88.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	69.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	108	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3989511)							
ES2139237-011	0906_MW253_20211019	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	84.2	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	82.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	82.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	84.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	81.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	87.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	91.2	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	109	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	107	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	86.1	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3990579)							
ES2139237-017	0906_SW218_20211021	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	77.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	94.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	86.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	94.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	96.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	98.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	91.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	91.2	69.0	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: 3990579) - continued							
ES2139237-017	0906_SW218_20211021	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	103	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.0	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	107	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3989511)							
ES2139237-011	0906_MW253_20211019	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	99.0	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	105	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	95.1	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	83.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	95.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	81.6	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3990579)							
ES2139237-017	0906_SW218_20211021	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	87.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	79.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	95.9	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.0	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	87.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	97.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	96.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3989511)							
ES2139237-011	0906_MW253_20211019	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	93.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	78.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.4	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	87.2	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990579)							
ES2139237-017	0906_SW218_20211021	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	89.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	95.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	105	67.0	138

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3990579) - continued							
ES2139237-017	0906_SW218_20211021	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	95.4	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2139237**	Page	: 1 of 8
Amendment	: **2**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Site	: PO7	Issue Date	: 18-Nov-2021
Sampler	: ----	No. of samples received	: 31
Order number	: ----	No. of samples analysed	: 31

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, 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	4	42	9.52	10.00	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	2	42	4.76	5.00	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	2	42	4.76	5.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	2	42	4.76	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container* / Client Sample ID(s)		*Sample Date*	*Extraction / Preparation* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW240_20211019,	0906_MW244_20211019,	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
0906_MW245_20211019,	0906_MW250_20211019,							
0906_MW252_20211019,	0906_MW253_20211019,							
0906_MW254_20211019,	0906_MW255_20211019,							
0906_MW256_20211019,	0906_SW212_20211019,							
0906_SW234_20211019,	0906_SW261_20211019,							
0906_SW262_20211019,	0906_SW294_20211019,							
0906_SW310_20211019								
HDPE (no PTFE) (EP231X)								
0906_QC101_20211019,	0906_QC102_20211019,	**19-Oct-2021**	**18-Nov-2021**	17-Apr-2022	✓	**18-Nov-2021**	17-Apr-2022	✓
0906_QC103_20211019								
HDPE (no PTFE) (EP231X)								
0906_MW246_20211020,	0906_MW248_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X)								
0906_MW247_20211021,	0906_MW249_20211021,	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
0906_MW251_20211021,	0906_SW206_20211021,							
0906_SW218_20211021,	0906_SW228_20211021,							
0906_SW288_20211021,	0906_SW289_20211021							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids - Continued							
HDPE (no PTFE) (EP231X) 0906_SW236_20211022, 0906_SW240_20211022, 0906_SW286_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW240_20211019, 0906_MW244_20211019, 0906_MW245_20211019, 0906_MW250_20211019, 0906_MW252_20211019, 0906_MW253_20211019, 0906_MW254_20211019, 0906_MW255_20211019, 0906_MW256_20211019, 0906_SW212_20211019, 0906_SW234_20211019, 0906_SW261_20211019, 0906_SW262_20211019, 0906_SW294_20211019, 0906_SW310_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC101_20211019, 0906_QC102_20211019, 0906_QC103_20211019	**19-Oct-2021**	**18-Nov-2021**	17-Apr-2022	✓	**18-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW246_20211020, 0906_MW248_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW247_20211021, 0906_MW249_20211021, 0906_MW251_20211021, 0906_SW206_20211021, 0906_SW218_20211021, 0906_SW228_20211021, 0906_SW288_20211021, 0906_SW289_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_SW236_20211022, 0906_SW240_20211022, 0906_SW286_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW240_20211019, 0906_MW244_20211019, 0906_MW245_20211019, 0906_MW250_20211019, 0906_MW252_20211019, 0906_MW253_20211019, 0906_MW254_20211019, 0906_MW255_20211019, 0906_MW256_20211019, 0906_SW212_20211019, 0906_SW234_20211019, 0906_SW261_20211019, 0906_SW262_20211019, 0906_SW294_20211019, 0906_SW310_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC101_20211019, 0906_QC102_20211019, 0906_QC103_20211019	**19-Oct-2021**	**18-Nov-2021**	17-Apr-2022	✓	**18-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW246_20211020, 0906_MW248_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW247_20211021, 0906_MW249_20211021, 0906_MW251_20211021, 0906_SW206_20211021, 0906_SW218_20211021, 0906_SW228_20211021, 0906_SW288_20211021, 0906_SW289_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_SW236_20211022, 0906_SW240_20211022, 0906_SW286_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW240_20211019, 0906_MW244_20211019, 0906_MW245_20211019, 0906_MW250_20211019, 0906_MW252_20211019, 0906_MW253_20211019, 0906_MW254_20211019, 0906_MW255_20211019, 0906_MW256_20211019, 0906_SW212_20211019, 0906_SW234_20211019, 0906_SW261_20211019, 0906_SW262_20211019, 0906_SW294_20211019, 0906_SW310_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X)							
0906_QC101_20211019, 0906_QC102_20211019, 0906_QC103_20211019	**19-Oct-2021**	**18-Nov-2021**	17-Apr-2022	✓	**18-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X)							
0906_MW246_20211020, 0906_MW248_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X)							
0906_MW247_20211021, 0906_MW249_20211021, 0906_MW251_20211021, 0906_SW206_20211021, 0906_SW218_20211021, 0906_SW228_20211021, 0906_SW288_20211021, 0906_SW289_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X)							
0906_SW236_20211022, 0906_SW240_20211022, 0906_SW286_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW240_20211019, 0906_MW244_20211019, 0906_MW245_20211019, 0906_MW250_20211019, 0906_MW252_20211019, 0906_MW253_20211019, 0906_MW254_20211019, 0906_MW255_20211019, 0906_MW256_20211019, 0906_SW212_20211019, 0906_SW234_20211019, 0906_SW261_20211019, 0906_SW262_20211019, 0906_SW294_20211019, 0906_SW310_20211019	**19-Oct-2021**	**03-Nov-2021**	17-Apr-2022	✓	**03-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC101_20211019, 0906_QC102_20211019, 0906_QC103_20211019	**19-Oct-2021**	**18-Nov-2021**	17-Apr-2022	✓	**18-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW246_20211020, 0906_MW248_20211020	**20-Oct-2021**	**03-Nov-2021**	18-Apr-2022	✓	**03-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW247_20211021, 0906_MW249_20211021, 0906_MW251_20211021, 0906_SW206_20211021, 0906_SW218_20211021, 0906_SW228_20211021, 0906_SW288_20211021, 0906_SW289_20211021	**21-Oct-2021**	**03-Nov-2021**	19-Apr-2022	✓	**03-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_SW236_20211022, 0906_SW240_20211022, 0906_SW286_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	42	**9.52**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	42	**4.76**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	42	**4.76**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	42	**4.76**	**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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2139236**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: PO8	Quote number	: EP2020LANECON0001 (EN/024/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	:		
Sampler	:		

Dates

Date Samples Received	: 29-Oct-2021 16:10	Issue Date	: 30-Oct-2021
Client Requested Due Date	: 05-Nov-2021	Scheduled Reporting Date	: **05-Nov-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 6.3 - 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: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2139236-001	24-Oct-2021 00:00	0906_MW241_20211024	✓
ES2139236-002	22-Oct-2021 00:00	0906_MW242_20211022	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- A4 - AU Tax Invoice (INV) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

ESDAT LSPECS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

Cardno

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]

Phone: [redacted]

Address: [redacted]

PM Email: [redacted]

Project Number: NSW_0906_PFASOMP Site: PO8

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks	EP231X - PFAS Standard	HOLD	Please amend Sample IDs as follows	Please send to Eurofins
0906_MW241_20211024 1		2 x 20ml plastic	24/10/2021			1				1			
0906_MW242_20210422 2		2 x 20ml plastic	22/10/2021			1				1			

Sample Matrix | Sample preservation | Analysis | Comments

Environmental Division
Sydney
Work Order Reference
ES2139236

Telephone : +[redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: Jake Ludlow / Callum Laker Date: 24/10/21 1015

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days)

Please circle

rec: Tom 4pm 24/10/21

Revision 1
Approved 23 May 2013

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2139236**	Page	: 1 of 5
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021 16:10
Order number	: PO8	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 05-Nov-2021 12:17
Sampler	: ----		
Site	:		
Quote number	: EN/024/20		
No. of samples received	: 2		
No. of samples analysed	: 2		

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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	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW241_20211024	0906_MW242_20211022	----	----	----
				Sampling date / time	24-Oct-2021 00:00	22-Oct-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2139236-001	ES2139236-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW241_20211024	0906_MW242_20211022	----	----	----
				Sampling date / time	24-Oct-2021 00:00	22-Oct-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2139236-001	ES2139236-002	--------	--------	--------
					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		<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**98.2**	**119**	----	----	----
13C8-PFOA	----	0.02	%		**112**	**115**	----	----	----

Surrogate Control Limits

Sub-Matrix: **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	: **ES2139236**	Page	: 1 of 7
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Order number	: PO8	Date Analysis Commenced	: 03-Nov-2021
C-O-C number	: ----	Issue Date	: 05-Nov-2021
Sampler	: ----		
Site	:		
Quote number	: EN/024/20		
No. of samples received	: 2		
No. of samples analysed	: 2		

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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: 3989511)									
ES2139237-011	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2139237-012	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.13	0.12	0.0	0% - 50%
		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: 3989511)									
ES2139237-011	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

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: 3989511) - continued									
ES2139237-012	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	0.08	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	0.04	0.04	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3989511)									
ES2139237-011	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
ES2139237-012	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: 3989511)									
ES2139237-011	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: 3989511) - continued									
ES2139237-011	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
ES2139237-012	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	0.08	0.08	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: 3989511)									
ES2139237-011	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.05	0.05	0.0	No Limit
ES2139237-012	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.43	0.42	2.4	0% - 20%

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3989511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	77.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	86.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	89.8	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	86.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	86.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3989511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	81.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	79.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	79.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	79.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	81.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	80.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	82.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	93.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	80.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3989511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	95.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	107	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	85.7	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	109	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	91.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	88.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3989511)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	88.8	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	90.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	87.4	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: 3989511) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	82.8	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: 3989511)							
ES2139237-011	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	83.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	93.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	84.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	84.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	86.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	83.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3989511)							
ES2139237-011	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	84.2	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	82.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	82.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	84.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	81.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	87.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	91.2	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	109	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	107	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	86.1	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3989511)							
ES2139237-011	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	99.0	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	105	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	95.1	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	83.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	95.0	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: 3989511) - continued							
ES2139237-011	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	81.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3989511)							
ES2139237-011	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	93.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	78.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.4	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	87.2	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2139236**	Page	: 1 of 4
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Site	:	Issue Date	: 05-Nov-2021
Sampler	: ----	No. of samples received	: 2
Order number	: PO8	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

- **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) 0906_MW242_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW241_20211024	**24-Oct-2021**	**03-Nov-2021**	22-Apr-2022	✓	**03-Nov-2021**	22-Apr-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW242_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW241_20211024	**24-Oct-2021**	**03-Nov-2021**	22-Apr-2022	✓	**03-Nov-2021**	22-Apr-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW242_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW241_20211024	**24-Oct-2021**	**03-Nov-2021**	22-Apr-2022	✓	**03-Nov-2021**	22-Apr-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW242_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW241_20211024	**24-Oct-2021**	**03-Nov-2021**	22-Apr-2022	✓	**03-Nov-2021**	22-Apr-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW242_20211022	**22-Oct-2021**	**03-Nov-2021**	20-Apr-2022	✓	**03-Nov-2021**	20-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW241_20211024	**24-Oct-2021**	**03-Nov-2021**	22-Apr-2022	✓	**03-Nov-2021**	22-Apr-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2139399**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2020LANECON0001 (EN/024/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	:		
Sampler	:		

Dates

Date Samples Received	: 29-Oct-2021 16:20	Issue Date	: 01-Nov-2021
Client Requested Due Date	: 08-Nov-2021	Scheduled Reporting Date	: **08-Nov-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 6.3 - 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
- **Sample #1 is from work order ES2139303.**
- **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)
ES2139399-001	21-Oct-2021 00:00	0906_MW312_20211021	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- A4 - AU Tax Invoice (INV) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email

ESDAT LSPECS

- EDI Format - ESDAT (ESDAT) — Email
- Electronic SRN for ESdat (ESRN_ESDAT) — Email

[redacted]

Lucas RosasNavratil

From: [redacted]
Sent: Monday, 1 November 2021 1:25 PM
To: [redacted]
Cc: [redacted]
Subject: FW: [EXTERNAL] - RE: ALS Workorder ES2139229, ES2139235 and ES2139303
Attachments: ES2139229_0_SRN_211030131409.pdf; ES2139229_COC.pdf; ES2139230_0_SRN_211030115419.pdf; ES2139230_COC.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi [redacted]

Can you please organise for the below:

For ES2139235:

- Please analyse sample 0315_MW601_20211027 for EP231X PFAS

ES2139399

For ES2139303:

- Please transfer sample 0315_MW312_20211021 to a new work order and analyse for EP231X PFAS.

0906

Hi [redacted]

For the below Megan actually committed this work order, can we please fix it and ensure all samples have analysis?

For ES2139229:

- Please keep the extra sample on HOLD for now.
- Please schedule analysis for all the water samples in accordance with the COC – I notice that they have all been put on HOLD in the SRN.

Thanks heaps!

Kind Regards,

[redacted]
Client Services Officer, Environmental
Sydney
Please note that I am working remotely and can be contacted directly on [redacted]

ALS [redacted]

Environmental Division
Sydney
Work Order Reference
ES2139399

Telephone : [redacted]

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EnviroMail™ 131 - Important Changes to the Australian Standard Leaching Procedures AS4439.2 & AS4439.3

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From: [redacted]
Sent: Monday, 1 November 2021 12:36 PM
To: [redacted]
Cc: [redacted]
Subject: [EXTERNAL] - RE: ALS Workorder ES2139229, ES2139235 and ES2139303

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 [redacted]

Thanks for your email.

For ES2139229:

- Please keep the extra sample on HOLD for now.
- Please schedule analysis for all the water samples in accordance with the COC – I notice that they have all been put on HOLD in the SRN.

For ES2139235:

- Please analyse sample 0315_MW601_20211027 for EP231X PFAS

For ES2139303:

- Please transfer sample 0315_MW312_20211021 to a new work order and analyse for EP231X PFAS

Also for ES2139230:

- Can we please request that sample "0315_QC308_20211027" ID is updated to "0315_QC308_20211028" and the sampling date updated to 28 October 2021?

Cheers,

[redacted]
SENIOR ENVIRONMENTAL SCIENTIST
[redacted]

Cardno

[redacted]

Email [redacted] Web [redacted]

CONNECT WITH CARDNO

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more.

Cardno's management systems are certified to ISO9001 (quality) and AS4801/OHSAS18001 (occupational health and safety)

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From: [redacted]
Sent: Monday, 1 November 2021 10:35 AM
To: [redacted]
Subject: ALS Workorder ES2139229, ES2139235 and ES2139303

Hi [redacted]

We have received the attached samples, can you please kindly check the below?

For ES2139229:

- We have received a PFAS soil jar labelled 0315_SW136_20211026. Can you please confirm if analysis is required?

For ES2139235:

- Sample #005 (0315_MW601_20211027 has been received as an extra sample? Can you please confirm if analysis is required?

For ES2139303:

- Sample #005 (0315_MW312_20211021 has been received as an extra sample? Can you please confirm if analysis is required?

Thanks!

Kind Regards,

[redacted]
Client Services Officer, Environmental
Sydney
Please note that I am working remotely and can be contacted directly on (02) 8784 8511.

D [redacted]
E [redacted]
[redacted]

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ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2139399**	Page	: 1 of 5
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021 16:20
Order number	: ----	Date Analysis Commenced	: 02-Nov-2021
C-O-C number	: ----	Issue Date	: 05-Nov-2021 12:18
Sampler	: ----		
Site	:		
Quote number	: EN/024/20		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This 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	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW312_20211021	----	----	----	----
				Sampling date / time	21-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2139399-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.02**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.01**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW312_20211021	----	----	----	----
				Sampling date / time	21-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2139399-001	--------	--------	--------	--------
					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		**0.03**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.03**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.03**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**91.3**	----	----	----	----
13C8-PFOA	----	0.02	%		**89.4**	----	----	----	----

Surrogate Control Limits

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2139399**	Page	: 1 of 6
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Order number	: ----	Date Analysis Commenced	: 02-Nov-2021
C-O-C number	: ----	Issue Date	: 05-Nov-2021
Sampler	: ----		
Site	:		
Quote number	: EN/024/20		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 3992888)									
ES2139439-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.14	0.14	0.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3992888)									
ES2139439-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3992888)									
ES2139439-001	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

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: 3992888) - continued									
ES2139439-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3992888)									
ES2139439-001	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	0.08	0.08	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: 3992888)									
ES2139439-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.23	0.23	0.0	0% - 20%

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3992888)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	79.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	85.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	92.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	91.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3992888)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	88.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	109	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	124	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	118	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3992888)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	73.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	77.2	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	117	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	88.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	108	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3992888)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	94.6	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	96.0	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	109	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: 3992888) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	103	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: 3992888)							
EP2113102-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	82.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	101	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	82.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	89.2	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	83.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	90.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3992888)							
EP2113102-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	93.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	109	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	101	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	103	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	109	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	107	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	102	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	107	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	103	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	114	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	116	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3992888)							
EP2113102-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	84.8	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	83.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	115	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	101	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	105	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: 3992888) - continued							
EP2113102-001	Anonymous	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: 3992888)							
EP2113102-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	94.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	98.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	98.2	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	99.4	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2139399**	Page	: 1 of 4
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Site	:	Issue Date	: 05-Nov-2021
Sampler	: ----	No. of samples received	: 1
Order number	: ----	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

- **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	18	5.56	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / ***Container*** / Client Sample ID(s)	***Sample Date***	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW312_20211021	**21-Oct-2021**	**04-Nov-2021**	19-Apr-2022	✓	**04-Nov-2021**	19-Apr-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW312_20211021	**21-Oct-2021**	**04-Nov-2021**	19-Apr-2022	✓	**04-Nov-2021**	19-Apr-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW312_20211021	**21-Oct-2021**	**04-Nov-2021**	19-Apr-2022	✓	**04-Nov-2021**	19-Apr-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW312_20211021	**21-Oct-2021**	**04-Nov-2021**	19-Apr-2022	✓	**04-Nov-2021**	19-Apr-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW312_20211021	**21-Oct-2021**	**04-Nov-2021**	19-Apr-2022	✓	**04-Nov-2021**	19-Apr-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	18	**5.56**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES2139231**		
Amendment	: **1**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 3
Order number	: ----	Quote number	: EP2020LANECON0001 (EN/024/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	:		
Sampler	:		

Dates

Date Samples Received	: 29-Oct-2021 16:20	Issue Date	: 17-Nov-2021
Client Requested Due Date	: 17-Nov-2021	Scheduled Reporting Date	: **17-Nov-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 6.3 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 21 / 12

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample QC201, QC202, QC203, QC204, QC205, QC206 & QC207 will be sent Eurofins for analysis.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- 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	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2139231-001	19-Oct-2021 00:00	0906_QC101_20211019		✓
ES2139231-002	19-Oct-2021 00:00	0906_QC102_20211019		✓
ES2139231-003	19-Oct-2021 00:00	0906_QC103_20211019		✓
ES2139231-004	20-Oct-2021 00:00	0906_QC104_20211020		✓
ES2139231-005	20-Oct-2021 00:00	0906_QC105_20211020		✓
ES2139231-006	20-Oct-2021 00:00	0906_QC106_20211020		✓
ES2139231-007	20-Oct-2021 00:00	0906_QC107_20211020		✓
ES2139231-008	19-Oct-2021 00:00	0906_QC301_20211019		✓
ES2139231-009	19-Oct-2021 00:00	0906_QC302_20211019	✓	
ES2139231-010	20-Oct-2021 00:00	0906_QC303_20211020		✓
ES2139231-011	20-Oct-2021 00:00	0906_QC304_20211020	✓	
ES2139231-012	21-Oct-2021 00:00	0906_QC305_20211021	✓	
ES2139231-013	21-Oct-2021 00:00	0906_QC306_20211021		✓
ES2139231-014	22-Oct-2021 00:00	0906_QC307_20211022	✓	
ES2139231-015	22-Oct-2021 00:00	0906_QC308_20211022		✓
ES2139231-016	24-Oct-2021 00:00	0906_QC309_20211024	✓	
ES2139231-017	19-Oct-2021 00:00	0906_QC501_20211019		✓
ES2139231-018	20-Oct-2021 00:00	0906_QC502_20211020		✓
ES2139231-019	21-Oct-2021 00:00	0906_QC503_20211021		✓
ES2139231-020	22-Oct-2021 00:00	0906_QC504_20211022		✓
ES2139231-021	24-Oct-2021 00:00	0906_QC505_20211024		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	[redacted]
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- A4 - AU Tax Invoice (INV)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	

ESDAT LSPECS

- EDI Format - ESDAT (ESDAT)	Email	
- Electronic SRN for ESdat (ESRN_ESDAT)	Email	

Cardno

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]

Phone: [redacted]

Address: [redacted]

PM Email: [redacted]

Project Number: NSW_0906_PFASOMP

Laboratory (name, phone, & contact person):
ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD			Please amend Sample IDs as follows	Please send to Eurofins
0906_QC101_20211019	1	6 x 20ml	19/10/2021			1			1				1					
0906_QC201_20211019	X	6 x 20ml	19/10/2021			1			1									Send to Eurofins
0906_QC102_20211019	2	6 x 20ml	19/10/2021			1			1				1					
0906_QC202_20211019	X	6 x 20ml	19/10/2021			1			1									Send to Eurofins
0906_QC103_20211019	3	2 x 20ml	19/10/2021				1		1				1					
0906_QC203_20211019	X	2 x 20ml	19/10/2021				1		1									Send to Eurofins
0906_QC104_20211020	4	6 x 20ml	20/10/2021			1			1				1					
0906_QC204_20211020	X	6 x 20ml	20/10/2021			1			1									Send to Eurofins
0906_QC105_20211020	5	2 x 20ml	20/10/2021				1		1				1					
0906_QC205_20211020	X	2 x 20ml	20/10/2021				1		1									Send to Eurofins
0906_QC106_20211020	6	6 x 20ml	20/10/2021			1			1				1					
0906_QC206_20211020	X	6 x 20ml	20/10/2021			1			1									Send to Eurofins
0906_QC107_20211020	7	6 x 20ml	20/10/2021			1			1				1					
0906_QC207_20211020	X	6 x 20ml	20/10/2021			1			1									Send to Eurofins
0906_QC301_20211019	8	2 x 20ml	19/10/2021					1	1				1					
0906_QC302_20211019	9	2 x 20ml	19/10/2021					1	1									
0906_QC303_20211020	10	2 x 20ml	20/10/2021					1	1				1					
0906_QC304_20211020	11	2 x 20ml	20/10/2021					1	1									
0906_QC305_20211021	12	2 x 20ml	21/10/2021					1	1									
0906_QC306_20211021	13	2 x 20ml	21/10/2021					1	1				1					
0906_QC307_20211022	14	2 x 20ml	22/10/2021					1	1									
0906_QC308_20211022	15	2 x 20ml	22/10/2021					1	1				1					
0906_QC309_20211024	16	2 x 20ml	24/10/2021					1	1									
0906_QC501_20211019	17	2 x 20ml	19/10/2021					1	1				1					
0906_QC502_20211020	18	2 x 20ml	20/10/2021					1	1				1					
0906_QC503_20211021	19	2 x 20ml	21/10/2021					1	1				1					
0906_QC504_20211022	20	2 x 20ml	22/10/2021					1	1				1					
0906_QC505_20211024	21	2 x 20ml	24/10/2021					1	1				1					

Environmental Division
Sydney
Work Order Reference
ES2139231

Telephone : [redacted]

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: Jake Ludlow / Callum Laker

Date: 29/10/21 10:15

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days)

Please circle

rec. FA: 29/10/21 4:45

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2139231**	Page	: 1 of 9
Amendment	: **1**		
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: +6138549 9609
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021 16:20
Order number	: ----	Date Analysis Commenced	: 02-Nov-2021
C-O-C number	: ----	Issue Date	: 17-Nov-2021 15:24
Sampler	: ----		
Site	:		
Quote number	: EN/024/20		
No. of samples received	: 21		
No. of samples analysed	: 12		

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	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (17/11/2021):This report has been amended following the request to report samples QC101-104 into ES2139237 and ES2139303.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_QC105_20211020	0906_QC106_20211020	0906_QC107_20211020	0906_QC301_20211019	0906_QC303_20211020
				Sampling date / time	20-Oct-2021 00:00	20-Oct-2021 00:00	20-Oct-2021 00:00	19-Oct-2021 00:00	20-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139231-005	ES2139231-006	ES2139231-007	ES2139231-008	ES2139231-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.04**	**0.04**	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.03**	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.25**	**0.05**	<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		**0.40**	<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		**0.06**	**0.03**	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.01**	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_QC105_20211020	0906_QC106_20211020	0906_QC107_20211020	0906_QC301_20211019	0906_QC303_20211020
				Sampling date / time	20-Oct-2021 00:00	20-Oct-2021 00:00	20-Oct-2021 00:00	19-Oct-2021 00:00	20-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139231-005	ES2139231-006	ES2139231-007	ES2139231-008	ES2139231-010
					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	<0.05	<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		**0.79**	**0.12**	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.65**	**0.05**	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.76**	**0.12**	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**98.0**	**98.4**	**95.8**	**99.3**	**95.1**
13C8-PFOA	----	0.02	%		**99.2**	**107**	**103**	**99.4**	**101**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_QC306_20211021	0906_QC308_20211022	0906_QC501_20211019	0906_QC502_20211020	0906_QC503_20211021
				Sampling date / time	21-Oct-2021 00:00	22-Oct-2021 00:00	19-Oct-2021 00:00	20-Oct-2021 00:00	21-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139231-013	ES2139231-015	ES2139231-017	ES2139231-018	ES2139231-019
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.01	<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: WATER (Matrix: WATER)				Sample ID	0906_QC306_20211021	0906_QC308_20211022	0906_QC501_20211019	0906_QC502_20211020	0906_QC503_20211021
				Sampling date / time	21-Oct-2021 00:00	22-Oct-2021 00:00	19-Oct-2021 00:00	20-Oct-2021 00:00	21-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139231-013	ES2139231-015	ES2139231-017	ES2139231-018	ES2139231-019
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<0.01	<0.01	<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	%		**103**	**97.7**	**104**	**89.8**	**100**
13C8-PFOA	----	0.02	%		**99.1**	**103**	**101**	**101**	**104**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_QC504_20211022	0906_QC505_20211024	----	----	----
				Sampling date / time	22-Oct-2021 00:00	24-Oct-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2139231-020	ES2139231-021	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_QC504_20211022	0906_QC505_20211024	----	----	----
				Sampling date / time	22-Oct-2021 00:00	24-Oct-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2139231-020	ES2139231-021	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.6**	**99.9**	----	----	----
13C8-PFOA	----	0.02	%		**106**	**101**	----	----	----

Surrogate Control Limits

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2139231**	Page	: 1 of 7
Amendment	: **1**		
Client	: [redacted]	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Order number	: ----	Date Analysis Commenced	: 02-Nov-2021
C-O-C number	: ----	Issue Date	: 17-Nov-2021
Sampler	: ----		
Site	:		
Quote number	: EN/024/20		
No. of samples received	: 21		
No. of samples analysed	: 12		

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	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 3989510)									
ES2139231-001	0906_QC101_20211019	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.14	0.16	8.5	0% - 50%
		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
ES2139231-007	0906_QC107_20211020	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: 3989510)									
ES2139231-001	0906_QC101_20211019	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.12	0.13	9.3	0% - 50%
		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	0.05	0.05	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.05	0.05	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

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: 3989510) - continued									
ES2139231-007	0906_QC107_20211020	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: 3989510)									
ES2139231-001	0906_QC101_20211019	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
ES2139231-007	0906_QC107_20211020	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: 3989510)									
ES2139231-001	0906_QC101_20211019	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: 3989510) - continued									
ES2139231-001	0906_QC101_20211019	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
ES2139231-007	0906_QC107_20211020	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: 3989510)									
ES2139231-001	0906_QC101_20211019	EP231X: Sum of PFAS	----	0.01	µg/L	0.43	0.46	6.7	0% - 20%
ES2139231-007	0906_QC107_20211020	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3989510)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	96.8	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	91.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	119	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3989510)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	99.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	100	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	99.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	98.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	95.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	84.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3989510)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	91.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	76.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	90.2	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	83.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.9	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	91.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3989510)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	112	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	112	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	104	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: 3989510) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	87.6	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: **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: 3989510)							
ES2139231-002	0906_QC102_20211019	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	80.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	87.2	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	66.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	103	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3989510)							
ES2139231-002	0906_QC102_20211019	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	101	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	93.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	95.2	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	84.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	91.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	93.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	82.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	79.4	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	83.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	111	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3989510)							
ES2139231-002	0906_QC102_20211019	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	75.1	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	89.3	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	94.0	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	93.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	95.0	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: 3989510) - continued							
ES2139231-002	0906_QC102_20211019	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	88.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3989510)							
ES2139231-002	0906_QC102_20211019	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	105	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	94.2	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	87.8	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2139231**	Page	: 1 of 5
Amendment	: **1**		
Client	: [redacted]	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Site	:	Issue Date	: 17-Nov-2021
Sampler	: ----	No. of samples received	: 21
Order number	: ----	No. of samples analysed	: 12

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) 0906_QC301_20211019, 0906_QC501_20211019	**19-Oct-2021**	**02-Nov-2021**	17-Apr-2022	✓	**02-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC105_20211020, 0906_QC106_20211020, 0906_QC107_20211020, 0906_QC303_20211020, 0906_QC502_20211020	**20-Oct-2021**	**02-Nov-2021**	18-Apr-2022	✓	**02-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC306_20211021, 0906_QC503_20211021	**21-Oct-2021**	**02-Nov-2021**	19-Apr-2022	✓	**02-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC308_20211022, 0906_QC504_20211022	**22-Oct-2021**	**02-Nov-2021**	20-Apr-2022	✓	**02-Nov-2021**	20-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC505_20211024	**24-Oct-2021**	**02-Nov-2021**	22-Apr-2022	✓	**02-Nov-2021**	22-Apr-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_QC301_20211019, 0906_QC501_20211019	**19-Oct-2021**	**02-Nov-2021**	17-Apr-2022	✓	**02-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC105_20211020, 0906_QC106_20211020, 0906_QC107_20211020, 0906_QC303_20211020, 0906_QC502_20211020	**20-Oct-2021**	**02-Nov-2021**	18-Apr-2022	✓	**02-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC306_20211021, 0906_QC503_20211021	**21-Oct-2021**	**02-Nov-2021**	19-Apr-2022	✓	**02-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC308_20211022, 0906_QC504_20211022	**22-Oct-2021**	**02-Nov-2021**	20-Apr-2022	✓	**02-Nov-2021**	20-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC505_20211024	**24-Oct-2021**	**02-Nov-2021**	22-Apr-2022	✓	**02-Nov-2021**	22-Apr-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_QC301_20211019, 0906_QC501_20211019	**19-Oct-2021**	**02-Nov-2021**	17-Apr-2022	✓	**02-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC105_20211020, 0906_QC106_20211020, 0906_QC107_20211020, 0906_QC303_20211020, 0906_QC502_20211020	**20-Oct-2021**	**02-Nov-2021**	18-Apr-2022	✓	**02-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC306_20211021, 0906_QC503_20211021	**21-Oct-2021**	**02-Nov-2021**	19-Apr-2022	✓	**02-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC308_20211022, 0906_QC504_20211022	**22-Oct-2021**	**02-Nov-2021**	20-Apr-2022	✓	**02-Nov-2021**	20-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC505_20211024	**24-Oct-2021**	**02-Nov-2021**	22-Apr-2022	✓	**02-Nov-2021**	22-Apr-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_QC301_20211019, 0906_QC501_20211019	**19-Oct-2021**	**02-Nov-2021**	17-Apr-2022	✓	**02-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC105_20211020, 0906_QC106_20211020, 0906_QC107_20211020, 0906_QC303_20211020, 0906_QC502_20211020	**20-Oct-2021**	**02-Nov-2021**	18-Apr-2022	✓	**02-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC306_20211021, 0906_QC503_20211021	**21-Oct-2021**	**02-Nov-2021**	19-Apr-2022	✓	**02-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC308_20211022, 0906_QC504_20211022	**22-Oct-2021**	**02-Nov-2021**	20-Apr-2022	✓	**02-Nov-2021**	20-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC505_20211024	**24-Oct-2021**	**02-Nov-2021**	22-Apr-2022	✓	**02-Nov-2021**	22-Apr-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_QC301_20211019, 0906_QC501_20211019	**19-Oct-2021**	**02-Nov-2021**	17-Apr-2022	✓	**02-Nov-2021**	17-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC105_20211020, 0906_QC106_20211020, 0906_QC107_20211020, 0906_QC303_20211020, 0906_QC502_20211020	**20-Oct-2021**	**02-Nov-2021**	18-Apr-2022	✓	**02-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC306_20211021, 0906_QC503_20211021	**21-Oct-2021**	**02-Nov-2021**	19-Apr-2022	✓	**02-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC308_20211022, 0906_QC504_20211022	**22-Oct-2021**	**02-Nov-2021**	20-Apr-2022	✓	**02-Nov-2021**	20-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC505_20211024	**24-Oct-2021**	**02-Nov-2021**	22-Apr-2022	✓	**02-Nov-2021**	22-Apr-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	15	**13.33**	**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	1	15	**6.67**	**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
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 : **ES2139228**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2020LANECON0001 (EN/024/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	:		
Sampler	: [redacted]		

Dates

Date Samples Received	: 29-Oct-2021 16:40	Issue Date	: 30-Oct-2021
Client Requested Due Date	: 05-Nov-2021	Scheduled Reporting Date	: **05-Nov-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 6.3 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 9 / 9

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- 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)
ES2139228-001	21-Oct-2021 00:00	0906_MW214_20211021	✓
ES2139228-002	20-Oct-2021 00:00	0906_MW243_20211020	✓
ES2139228-003	20-Oct-2021 00:00	0906_MW300_20211020	✓
ES2139228-004	20-Oct-2021 00:00	0906_MW302_20211020	✓
ES2139228-005	20-Oct-2021 00:00	0906_MW304_20211020	✓
ES2139228-006	22-Oct-2021 00:00	0906_MW306_20211022	✓
ES2139228-007	21-Oct-2021 00:00	0906_MW308_20211021	✓
ES2139228-008	22-Oct-2021 00:00	0906_MW310_20211022	✓
ES2139228-009	21-Oct-2021 00:00	0906_SW104_20211020	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- A4 - AU Tax Invoice (INV) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

ESDAT LSPECS

- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

Cardno

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone, & contact person):
ALS

Sample ID		Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD			Comments: Please amend Sample IDs as follows	Comments: Please send to Eurofins
0906_MW214_20211021	1		2 x 20ml	21/10/2021			1			1				1					
0906_MW243_20211020	2		2 x 20ml	20/10/2021			1			1				1					
0906_MW300_20211020	3		6 x 20ml	20/10/2021			1			1				1					
0906_MW302_20211020	4		6 x 20ml	20/10/2021			1			1				1					
0906_MW304_20211020	5		2 x 20ml	20/10/2021			1			1				1					
0906_MW306_20211022	6		2 x 20ml	22/10/2021						1				1					
0906_MW308_20211021	7		2 x 20ml	21/10/2021			1			1				1					
0906_MW310_20211022	8		2 x 20ml	22/10/2021			1			1				1					
										1				1					
0906_SW101_20211020	9		2 x 20ml	20/10/2021				1		1				1					

Environmental Division
Sydney
Work Order Reference
ES2139228

Telephone [redacted]

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: Jake Ludlow / Callum Lekor

Date: 20/10/21 10:15

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days)

rec: [signature] 29/10/21 4:40

Please circle

Page of

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2139228**	Page	: 1 of 9
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021 16:40
Order number	: ----	Date Analysis Commenced	: 02-Nov-2021
C-O-C number	: ----	Issue Date	: 04-Nov-2021 09:08
Sampler	: [redacted]		
Site	:		
Quote number	: EN/024/20		
No. of samples received	: 9		
No. of samples analysed	: 9		

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

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

This 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	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW214_20211021	0906_MW243_20211020	0906_MW300_20211020	0906_MW302_20211020	0906_MW304_20211020
				Sampling date / time	21-Oct-2021 00:00	20-Oct-2021 00:00	20-Oct-2021 00:00	20-Oct-2021 00:00	20-Oct-2021 00:00
					ES2139228-001	ES2139228-002	ES2139228-003	ES2139228-004	ES2139228-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.04**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	**0.05**	<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	**0.03**	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW214_20211021	0906_MW243_20211020	0906_MW300_20211020	0906_MW302_20211020	0906_MW304_20211020
				Sampling date / time	21-Oct-2021 00:00	20-Oct-2021 00:00	20-Oct-2021 00:00	20-Oct-2021 00:00	20-Oct-2021 00:00
Compound	CAS Number	LOR	Unit		ES2139228-001	ES2139228-002	ES2139228-003	ES2139228-004	ES2139228-005
					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	**0.06**	<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	**0.18**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.05**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**0.18**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**85.0**	**82.6**	**86.4**	**89.8**	**82.6**
13C8-PFOA	----	0.02	%		**87.2**	**91.6**	**86.4**	**86.4**	**85.2**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW306_20211022	0906_MW308_20211021	0906_MW310_20211022	----	----
				Sampling date / time	22-Oct-2021 00:00	21-Oct-2021 00:00	22-Oct-2021 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2139228-006	ES2139228-007	ES2139228-008	--------	--------
					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: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW306_20211022	0906_MW308_20211021	0906_MW310_20211022	----	----
				Sampling date / time	22-Oct-2021 00:00	21-Oct-2021 00:00	22-Oct-2021 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2139228-006	ES2139228-007	ES2139228-008	--------	--------
					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	%		**80.8**	**85.4**	**82.8**	----	----
13C8-PFOA	----	0.02	%		**86.4**	**86.8**	**87.2**	----	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0906_SW104_20211020	----	----	----	----
				Sampling date / time	21-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2139228-009	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.05**	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.04**	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.22**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.41**	----	----	----	----
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		**0.07**	----	----	----	----
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	0906_SW104_20211020	----	----	----	----
				Sampling date / time	21-Oct-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2139228-009	--------	--------	--------	--------
					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		**0.82**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.63**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.78**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**83.8**	----	----	----	----
13C8-PFOA	----	0.02	%		**88.8**	----	----	----	----

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: **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	: **ES2139228**	Page	: 1 of 7
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 29-Oct-2021
Order number	: ----	Date Analysis Commenced	: 02-Nov-2021
C-O-C number	: ----	Issue Date	: 04-Nov-2021
Sampler	: [redacted]		
Site	:		
Quote number	: EN/024/20		
No. of samples received	: 9		
No. of samples analysed	: 9		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 3989111)									
ES2139228-003	0906_MW300_20211020	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	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
ES2139229-004	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3989111)									
ES2139228-003	0906_MW300_20211020	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	0.03	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit

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: 3989111) - continued									
ES2139229-004	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: 3989111)									
ES2139228-003	0906_MW300_20211020	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
ES2139229-004	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: 3989111)									
ES2139228-003	0906_MW300_20211020	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: 3989111) - continued									
ES2139228-003	0906_MW300_20211020	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.06	<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
ES2139229-004	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: 3989111)									
ES2139228-003	0906_MW300_20211020	EP231X: Sum of PFAS	----	0.01	µg/L	0.18	0.12	40.0	0% - 50%
ES2139229-004	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3989111)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	104	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	83.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.0	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	97.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3989111)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	79.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	85.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	81.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	80.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	78.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	85.8	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	89.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3989111)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	75.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	74.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	77.8	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	83.9	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	75.0	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3989111)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	80.2	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	76.0	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	75.0	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: 3989111) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	73.0	71.4	144

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3989111)							
ES2139228-004	0906_MW302_20211020	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	80.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	89.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	74.2	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	82.4	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	73.4	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: 3989111)							
ES2139228-004	0906_MW302_20211020	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	92.2	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	95.6	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	86.2	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	88.0	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	89.6	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	82.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	79.8	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	87.4	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	88.0	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	93.0	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3989111)							
ES2139228-004	0906_MW302_20211020	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	75.2	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	77.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	89.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	91.0	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	78.3	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	77.4	65.0	136

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3989111) - continued							
ES2139228-004	0906_MW302_20211020	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: 3989111)							
ES2139228-004	0906_MW302_20211020	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	77.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	72.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	74.6	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	73.6	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2139228**	Page	: 1 of 5
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: [redacted]	Date Samples Received	: 29-Oct-2021
Site	:	Issue Date	: 04-Nov-2021
Sampler	: [redacted]	No. of samples received	: 9
Order number	: ----	No. of samples analysed	: 9

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, 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)								
0906_MW243_20211020,	0906_MW300_20211020,	**20-Oct-2021**	**02-Nov-2021**	18-Apr-2022	✓	**02-Nov-2021**	18-Apr-2022	✓
0906_MW302_20211020,	0906_MW304_20211020							
HDPE (no PTFE) (EP231X)								
0906_MW214_20211021,	0906_MW308_20211021,	**21-Oct-2021**	**02-Nov-2021**	19-Apr-2022	✓	**02-Nov-2021**	19-Apr-2022	✓
0906_SW104_20211020								
HDPE (no PTFE) (EP231X)								
0906_MW306_20211022,	0906_MW310_20211022	**22-Oct-2021**	**02-Nov-2021**	20-Apr-2022	✓	**02-Nov-2021**	20-Apr-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW243_20211020,	0906_MW300_20211020,	**20-Oct-2021**	**02-Nov-2021**	18-Apr-2022	✓	**02-Nov-2021**	18-Apr-2022	✓
0906_MW302_20211020,	0906_MW304_20211020							
HDPE (no PTFE) (EP231X)								
0906_MW214_20211021,	0906_MW308_20211021,	**21-Oct-2021**	**02-Nov-2021**	19-Apr-2022	✓	**02-Nov-2021**	19-Apr-2022	✓
0906_SW104_20211020								
HDPE (no PTFE) (EP231X)								
0906_MW306_20211022,	0906_MW310_20211022	**22-Oct-2021**	**02-Nov-2021**	20-Apr-2022	✓	**02-Nov-2021**	20-Apr-2022	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0906_MW243_20211020,	0906_MW300_20211020,	**20-Oct-2021**	**02-Nov-2021**	18-Apr-2022	✓	**02-Nov-2021**	18-Apr-2022	✓
0906_MW302_20211020,	0906_MW304_20211020							
HDPE (no PTFE) (EP231X)								
0906_MW214_20211021,	0906_MW308_20211021,	**21-Oct-2021**	**02-Nov-2021**	19-Apr-2022	✓	**02-Nov-2021**	19-Apr-2022	✓
0906_SW104_20211020								
HDPE (no PTFE) (EP231X)								
0906_MW306_20211022,	0906_MW310_20211022	**22-Oct-2021**	**02-Nov-2021**	20-Apr-2022	✓	**02-Nov-2021**	20-Apr-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW243_20211020, 0906_MW300_20211020, 0906_MW302_20211020, 0906_MW304_20211020	**20-Oct-2021**	**02-Nov-2021**	18-Apr-2022	✓	**02-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW214_20211021, 0906_MW308_20211021, 0906_SW104_20211020	**21-Oct-2021**	**02-Nov-2021**	19-Apr-2022	✓	**02-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW306_20211022, 0906_MW310_20211022	**22-Oct-2021**	**02-Nov-2021**	20-Apr-2022	✓	**02-Nov-2021**	20-Apr-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW243_20211020, 0906_MW300_20211020, 0906_MW302_20211020, 0906_MW304_20211020	**20-Oct-2021**	**02-Nov-2021**	18-Apr-2022	✓	**02-Nov-2021**	18-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW214_20211021, 0906_MW308_20211021, 0906_SW104_20211020	**21-Oct-2021**	**02-Nov-2021**	19-Apr-2022	✓	**02-Nov-2021**	19-Apr-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW306_20211022, 0906_MW310_20211022	**22-Oct-2021**	**02-Nov-2021**	20-Apr-2022	✓	**02-Nov-2021**	20-Apr-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

eurofins | Environment Testing

Eurofins Environment Testing Australia Pty Ltd
ABN: [redacted]
[redacted]

[redacted]
Eurofins ARL Pty Ltd
ABN: [redacted]
[redacted]

[redacted]
Eurofins Environment Testing NZ Limited
NZBN: [redacted]
[redacted]

Sample Receipt Advice

Company name:	[redacted]
Contact name:	[redacted]
Project name:	NSW_0906_PFASOMP
Project ID:	NSW_0906_PFASOMP
Turnaround time:	5 Day
Date/Time received	Nov 1, 2021 5:50 PM
Eurofins reference	837704

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Samples received by the laboratory after 5.30pm are deemed to have been received the following working day.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted] **on phone : or by email:** [redacted]

Results will be delivered electronically via email to [redacted] - [redacted].

Note: A copy of these results will also be delivered to the general [redacted] *email address.*

Global Leader - Results you can trust

Cardno

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Project Number: NSW_0908_PFASOM

Laboratory (name, phone, & contact person):
ALS

Sample ID		Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Ice/ Ice Bricks			EP231X - PFAS Standard	HOLD			Please amend Sample IDs as follows	Please send to Eurofins
0906_QC101_20211019	1		6 x 20ml	19/10/2021			1			1			1					
0906_QC201_20211019	X		6 x 20ml	19/10/2021			1			1								Send to Eurofins
0906_QC102_20211019	2		6 x 20ml	19/10/2021			1			1			1					
0906_QC202_20211019	X		6 x 20ml	19/10/2021			1			1								Send to Eurofins
0906_QC103_20211019	3		2 x 20ml	19/10/2021				1		1			1					
0906_QC203_20211019	X		2 x 20ml	19/10/2021				1		1								Send to Eurofins
0906_QC104_20211020	4		6 x 20ml	20/10/2021			1			1			1					
0906_QC204_20211020	X		6 x 20ml	20/10/2021			1			1								Send to Eurofins
0906_QC105_20211020	5		2 x 20ml	20/10/2021				1		1			1					
0906_QC205_20211020	X		2 x 20ml	20/10/2021				1		1								Send to Eurofins
0906_QC106_20211020	6		6 x 20ml	20/10/2021			1			1			1					
0906_QC206_20211020	X		6 x 20ml	20/10/2021			1			1								Send to Eurofins
0906_QC107_20211020	7		6 x 20ml	20/10/2021			1			1			1					
0906_QC207_20211020	X		6 x 20ml	20/10/2021			1			1								Send to Eurofins
0906_QC301_20211019	8		2 x 20ml	19/10/2021					1	1			1					
0906_QC302_20211019	9		2 x 20ml	19/10/2021					1	1								
0906_QC303_20211020	10		2 x 20ml	20/10/2021					1	1			1					
0906_QC304_20211020	11		2 x 20ml	20/10/2021					1	1								
0906_QC305_20211021	12		2 x 20ml	21/10/2021					1	1								
0906_QC306_20211021	13		2 x 20ml	21/10/2021					1	1			1					
0906_QC307_20211022	14		2 x 20ml	22/10/2021					1	1								
0906_QC308_20211022	15		2 x 20ml	22/10/2021					1	1			1					
0906_QC309_20211024	16		2 x 20ml	24/10/2021					1	1								
0906_QC501_20211019	17		2 x 20ml	19/10/2021					1	1			1					
0906_QC502_20211020	18		2 x 20ml	20/10/2021					1	1			1					
0906_QC503_20211021	19		2 x 20ml	21/10/2021					1	1			1					
0906_QC504_20211022	20		2 x 20ml	22/10/2021					1	1			1					
0906_QC505_20211024	21		2 x 20ml	24/10/2021					1	1			1					

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples. Sampler name: Jake Ludlow / Callum Lake Date: 29/10/21 10:5

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days)

Please circle

Revision 1
Approved 23 May 2013

DEF19008_E4_GWM-SWM_QC.xls

Page of

Printed 29/10/2021

Subcon / Forward Lab / Split WO: Eurofins / # QC201, QC207, QC203,
Lab / Analysis:
Organised By / Date: QC204, QC205, QC206, QC207
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES2139231

Telephone [redacted]

837704

14.2°C

Gel, Std, 1/11/21 5:50PM

rec: FA: 29/10/21 4:45

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Eurofins Environment Testing Australia Pty Ltd
ABN: [redacted]
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Eurofins ARL Pty Ltd
ABN: [redacted]
[redacted]

Eurofins Environment Testing NZ Limited
NZBN: [redacted]
[redacted]

Company Name: [redacted]
Address: [redacted]

Order No.:
Report #: 837704
Phone: 8415 7777
Fax: 8415 7788

Received: Nov 1, 2021 5:50 PM
Due: Nov 8, 2021
Priority: 5 Day
Contact Name: [redacted]

Project Name: NSW_0906_PFASOMP
Project ID: NSW_0906_PFASOMP

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						
Sydney Laboratory - NATA # 1261 Site # 18217						X
Brisbane Laboratory - NATA # 1261 Site # 20794						
Mayfield Laboratory - NATA # 1261 Site # 25079						
Perth Laboratory - NATA # 2377 Site # 2370						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC201_20211019	Oct 19, 2021		Water	S21-No08323	X
2	0906_QC202_20211019	Oct 19, 2021		Water	S21-No08324	X
3	0906_QC203_20211019	Oct 19, 2021		Water	S21-No08325	X
4	0906_QC204_20211020	Oct 20, 2021		Water	S21-No08326	X
5	0906_QC205_20211020	Oct 20, 2021		Water	S21-No08327	X
6	0906_QC206_	Oct 20, 2021		Water	S21-No08328	X

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Eurofins Environment Testing Australia Pty Ltd
ABN: [redacted]
[redacted]

Eurofins ARL Pty Ltd
ABN: [redacted]
[redacted]

Eurofins Environment Testing NZ Limited
NZBN: [redacted]
[redacted]

Company Name: [redacted]
Address: [redacted]

Project Name: NSW_0906_PFASOMP
Project ID: NSW_0906_PFASOMP

Order No.:
Report #: 837704
Phone: 8415 7777
Fax: 8415 7788

Received: Nov 1, 2021 5:50 PM
Due: Nov 8, 2021
Priority: 5 Day
Contact Name: Bobby Wang

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						
Sydney Laboratory - NATA # 1261 Site # 18217						X
Brisbane Laboratory - NATA # 1261 Site # 20794						
Mayfield Laboratory - NATA # 1261 Site # 25079						
Perth Laboratory - NATA # 2377 Site # 2370						
External Laboratory						
	20211020					
7	0906_QC207_20211020	Oct 20, 2021		Water	S21-No08329	X
Test Counts						7

[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **837704-W-V2**
Project name NSW_0906_PFASOMP
Project ID NSW_0906_PFASOMP
Received Date Nov 01, 2021

Client Sample ID			**0906_QC205_20211020**	**0906_QC206_20211020**	**0906_QC207_20211020**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins Sample No.			**S21-No08327**	**S21-No08328**	**S21-No08329**
Date Sampled			**Oct 20, 2021**	**Oct 20, 2021**	**Oct 20, 2021**
Test/Reference	LOR	Unit			
Perfluoroalkyl carboxylic acids (PFCAs)					
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	0.02	0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.07	0.03	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	0.01	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	0.02	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	100	102	99
13C5-PFPeA (surr.)	1	%	113	116	119
13C5-PFHxA (surr.)	1	%	128	129	134
13C4-PFHpA (surr.)	1	%	115	115	114
13C8-PFOA (surr.)	1	%	115	121	119
13C5-PFNA (surr.)	1	%	120	117	113
13C6-PFDA (surr.)	1	%	107	111	117
13C2-PFUnDA (surr.)	1	%	108	114	121
13C2-PFDoDA (surr.)	1	%	108	123	127
13C2-PFTeDA (surr.)	1	%	84	96	84
Perfluoroalkyl sulfonamido substances					
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	111	110	112
D3-N-MeFOSA (surr.)	1	%	70	75	82

Client Sample ID			0906_QC205_20211020	0906_QC206_20211020	0906_QC207_20211020
Sample Matrix			Water	Water	Water
Eurofins Sample No.			S21-No08327	S21-No08328	S21-No08329
Date Sampled			Oct 20, 2021	Oct 20, 2021	Oct 20, 2021
Test/Reference	LOR	Unit			
Perfluoroalkyl sulfonamido substances					
D5-N-EtFOSA (surr.)	1	%	68	82	81
D7-N-MeFOSE (surr.)	1	%	75	93	87
D9-N-EtFOSE (surr.)	1	%	73	88	86
D5-N-EtFOSAA (surr.)	1	%	121	113	129
D3-N-MeFOSAA (surr.)	1	%	95	86	110
Perfluoroalkyl sulfonic acids (PFSAs)					
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	0.04	0.04	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	0.02	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	0.03	0.02	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	0.30	0.07	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	0.02	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	0.61	< 0.01	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	125	126	133
18O2-PFHxS (surr.)	1	%	115	127	123
13C8-PFOS (surr.)	1	%	101	114	111
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	92	106	104
13C2-6:2 FTSA (surr.)	1	%	96	103	102
13C2-8:2 FTSA (surr.)	1	%	108	108	118
13C2-10:2 FTSA (surr.)	1	%	137	139	146
PFASs Summations					
Sum (PFHxS + PFOS)*	0.01	ug/L	0.91	0.07	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	0.63	< 0.01	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	0.93	0.07	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	1.07	0.15	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	1.14	0.17	< 0.1

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Sydney	Nov 04, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Sydney	Nov 04, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Sydney	Nov 04, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Sydney	Nov 04, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Sydney	Nov 04, 2021	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Eurofins ARL Pty Ltd
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Eurofins Environment Testing NZ Limited
NZBN: [redacted]
[redacted]

web: [redacted]
email: [redacted]

Company Name: [redacted]
Address: [redacted]

Order No.:
Report #: 837704
Phone: 8415 7777
Fax: 8415 7788

Received: Nov 1, 2021 5:50 PM
Due: Nov 8, 2021
Priority: 5 Day
Contact Name: [redacted]

Project Name: NSW_0906_PFASOMP
Project ID: NSW_0906_PFASOMP

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						
Sydney Laboratory - NATA # 1261 Site # 18217						X
Brisbane Laboratory - NATA # 1261 Site # 20794						
Mayfield Laboratory - NATA # 1261 Site # 25079						
Perth Laboratory - NATA # 2377 Site # 2370						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC201_20211019	Oct 19, 2021		Water	S21-No08323	X
2	0906_QC202_20211019	Oct 19, 2021		Water	S21-No08324	X
3	0906_QC203_20211019	Oct 19, 2021		Water	S21-No08325	X
4	0906_QC204_20211020	Oct 20, 2021		Water	S21-No08326	X
5	0906_QC205_20211020	Oct 20, 2021		Water	S21-No08327	X
6	0906_QC206_	Oct 20, 2021		Water	S21-No08328	X

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Eurofins Environment Testing Australia Pty Ltd
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Eurofins Environment Testing NZ Limited
NZBN [redacted]
[redacted]

Company Name: [redacted]
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Order No.:
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Phone: 8415 7777
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Received: Nov 1, 2021 5:50 PM
Due: Nov 8, 2021
Priority: 5 Day
Contact Name: [redacted]

Project Name: NSW_0906_PFASOMP
Project ID: NSW_0906_PFASOMP

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						
Sydney Laboratory - NATA # 1261 Site # 18217						X
Brisbane Laboratory - NATA # 1261 Site # 20794						
Mayfield Laboratory - NATA # 1261 Site # 25079						
Perth Laboratory - NATA # 2377 Site # 2370						
External Laboratory						
	20211020					
7	0906_QC207_20211020	Oct 20, 2021		Water	S21-No08329	X
Test Counts						7

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

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

Terms

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

QC - Acceptance Criteria

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

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

Results <10 times the LOR : No Limit

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

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

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

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

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

.

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	100			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	117			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	101			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	102			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	110			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	111			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	106			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	108			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	104			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	102			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	108			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	97			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	95			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	97			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	94			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	99			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	103			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	100			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	90			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	100			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	83			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	80			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	94			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	108			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	101			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	103			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	102			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	96			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	107			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	S21-No10130	NCP	%	108			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S21-No14046	NCP	%	85			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S21-No14046	NCP	%	89			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S21-No10130	NCP	%	130			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S21-No10130	NCP	%	139			50-150	Pass	
Perfluorononanoic acid (PFNA)	S21-No10130	NCP	%	124			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S21-No10130	NCP	%	111			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S21-No10130	NCP	%	105			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S21-No10130	NCP	%	111			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S21-No10130	NCP	%	56			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S21-No10130	NCP	%	112			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S21-No10130	NCP	%	96			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S21-No10130	NCP	%	108			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S21-No10130	NCP	%	102			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S21-No10130	NCP	%	101			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S21-No10130	NCP	%	106			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S21-No10130	NCP	%	96			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S21-No10130	NCP	%	108			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S21-No10130	NCP	%	95			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S21-No10130	NCP	%	114			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S21-No10130	NCP	%	95			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S21-No10130	NCP	%	98			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S21-No10130	NCP	%	85			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S21-No10130	NCP	%	132			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S21-No14046	NCP	%	92			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S21-No10130	NCP	%	72			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S21-No10130	NCP	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S21-No14046	NCP	%	82			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S21-No10130	NCP	%	90			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S21-No10130	NCP	%	100			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	S21-No08323	NCP	ug/L	0.03	0.03	6.0	30%	Pass	
Perfluorohexanoic acid (PFHxA)	S21-No08323	NCP	ug/L	0.05	0.05	9.0	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	S21-No08323	NCP	ug/L	0.05	0.05	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S21-No08323	NCP	ug/L	0.13	0.14	8.0	30%	Pass	
Perfluorononanoic acid (PFNA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	S21-No08323	NCP	ug/L	0.02	0.02	9.0	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S21-No08323	NCP	ug/L	0.02	0.02	9.0	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S21-No08323	NCP	ug/L	0.14	0.16	11	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

V2: This report has been amended with samples migrated to reports 842903 and 842910 as requested by BW

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

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

Authorised by:

[redacted] Analytical Services Manager

[redacted] Senior Analyst-PFAS (NSW)

[redacted]

General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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

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Eurofins Environment Testing Australia Pty Ltd
ABN: [redacted]
[redacted]

[redacted]
Eurofins ARL Pty Ltd
ABN: [redacted]
[redacted]

[redacted]
Eurofins Environment Testing NZ Limited
NZBN: [redacted]
[redacted]

Sample Receipt Advice

Company name:	[redacted]
Contact name:	[redacted]
Project name:	NSW_0906_PFASOMP
Project ID:	NSW_0906_PFASOMP
Turnaround time:	5 Day
Date/Time received	Nov 1, 2021 5:50 PM
Eurofins reference	842903

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Samples received by the laboratory after 5.30pm are deemed to have been received the following working day.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted] **on phone :** [redacted] **or by email:** [redacted]

Results will be delivered electronically via email to [redacted]

Note: A copy of these results will also be delivered to the general [redacted] *email address.*

Global Leader - Results you can trust

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Eurofins Environment Testing Australia Pty Ltd
ABN: [redacted]
[redacted]

Eurofins ARL Pty Ltd
ABN: [redacted]

Eurofins Environment Testing NZ Limited
NZBN: [redacted]

web: [redacted]
email: [redacted]

Company Name: [redacted]
Address: [redacted]

Order No.:
Report #: 842903
Phone: 8415 7777
Fax: 8415 7788

Received: Nov 1, 2021 5:50 PM
Due: Nov 8, 2021
Priority: 5 Day
Contact Name: [redacted]

Project Name: NSW_0906_PFASOMP
Project ID: NSW_0906_PFASOMP

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						
Sydney Laboratory - NATA # 1261 Site # 18217						X
Brisbane Laboratory - NATA # 1261 Site # 20794						
Mayfield Laboratory - NATA # 1261 Site # 25079						
Perth Laboratory - NATA # 2377 Site # 2370						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC201_20211019	Oct 19, 2021		Water	S21-No08323	X
2	0906_QC202_20211019	Oct 19, 2021		Water	S21-No08324	X
3	0906_QC203_20211019	Oct 19, 2021		Water	S21-No08325	X
Test Counts						3

[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **842903-W**
Project name NSW_0906_PFASOMP
Project ID NSW_0906_PFASOMP
Received Date Nov 01, 2021

Client Sample ID			**0906_QC201_20211019**	**0906_QC202_20211019**	**0906_QC203_20211019**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins Sample No.			**S21-No08323**	**S21-No08324**	**S21-No08325**
Date Sampled			**Oct 19, 2021**	**Oct 19, 2021**	**Oct 19, 2021**
Test/Reference	LOR	Unit			
Perfluoroalkyl carboxylic acids (PFCAs)					
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	0.03	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.05	< 0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	0.05	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	0.13	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	108	98	96
13C5-PFPeA (surr.)	1	%	122	110	106
13C5-PFHxA (surr.)	1	%	144	126	126
13C4-PFHpA (surr.)	1	%	119	112	113
13C8-PFOA (surr.)	1	%	134	118	118
13C5-PFNA (surr.)	1	%	134	115	117
13C6-PFDA (surr.)	1	%	144	119	110
13C2-PFUnDA (surr.)	1	%	130	115	91
13C2-PFDoDA (surr.)	1	%	135	119	67
13C2-PFTeDA (surr.)	1	%	95	91	43
Perfluoroalkyl sulfonamido substances					
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	121	104	104
D3-N-MeFOSA (surr.)	1	%	85	68	41

Client Sample ID			0906_QC201_20211019	0906_QC202_20211019	0906_QC203_20211019
Sample Matrix			Water	Water	Water
Eurofins Sample No.			S21-No08323	S21-No08324	S21-No08325
Date Sampled			Oct 19, 2021	Oct 19, 2021	Oct 19, 2021
Test/Reference	LOR	Unit			
Perfluoroalkyl sulfonamido substances					
D5-N-EtFOSA (surr.)	1	%	83	72	37
D7-N-MeFOSE (surr.)	1	%	91	88	40
D9-N-EtFOSE (surr.)	1	%	94	87	38
D5-N-EtFOSAA (surr.)	1	%	149	126	77
D3-N-MeFOSAA (surr.)	1	%	115	103	82
Perfluoroalkyl sulfonic acids (PFSAs)					
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	0.02	< 0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	0.02	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	0.14	0.04	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01	0.02	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	146	129	129
18O2-PFHxS (surr.)	1	%	132	117	115
13C8-PFOS (surr.)	1	%	126	110	108
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	126	99	119
13C2-6:2 FTSA (surr.)	1	%	116	90	99
13C2-8:2 FTSA (surr.)	1	%	132	101	102
13C2-10:2 FTSA (surr.)	1	%	168	146	72
PFASs Summations					
Sum (PFHxS + PFOS)*	0.01	ug/L	0.14	0.06	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	0.13	0.02	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	0.27	0.06	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	0.42	0.06	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	0.44	< 0.1	< 0.1

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Sydney	Nov 04, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Sydney	Nov 04, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Sydney	Nov 04, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Sydney	Nov 04, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Sydney	Nov 04, 2021	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Eurofins Environment Testing Australia Pty Ltd
ABN: [redacted]
[redacted]

Eurofins ARL Pty Ltd
ABN: [redacted]
[redacted]

Eurofins Environment Testing NZ Limited
NZBN: [redacted]
[redacted]

web: [redacted]
email: [redacted]

Company Name: [redacted]
Address: [redacted]

Order No.:
Report #: 842903
Phone: 8415 7777
Fax: 8415 7788

Received: Nov 1, 2021 5:50 PM
Due: Nov 8, 2021
Priority: 5 Day
Contact Name: [redacted]

Project Name: NSW_0906_PFASOMP
Project ID: NSW_0906_PFASOMP

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						
Sydney Laboratory - NATA # 1261 Site # 18217						X
Brisbane Laboratory - NATA # 1261 Site # 20794						
Mayfield Laboratory - NATA # 1261 Site # 25079						
Perth Laboratory - NATA # 2377 Site # 2370						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC201_20211019	Oct 19, 2021		Water	S21-No08323	X
2	0906_QC202_20211019	Oct 19, 2021		Water	S21-No08324	X
3	0906_QC203_20211019	Oct 19, 2021		Water	S21-No08325	X
Test Counts						3

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

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

Terms

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

QC - Acceptance Criteria

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

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

Results <10 times the LOR : No Limit

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

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

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

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

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

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QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	99			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	100			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	103			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	99			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	105			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	100			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	108			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	104			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	101			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	106			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	103			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	94			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	104			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	100			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	97			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	96			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	97			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	105			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	88			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	101			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	86			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	84			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	92			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	98			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	99			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	100			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	102			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	96			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	97			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	S21-No10130	NCP	%	108			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S21-No14046	NCP	%	85			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S21-No14046	NCP	%	89			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S21-No10130	NCP	%	130			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S21-No10130	NCP	%	139			50-150	Pass	
Perfluorononanoic acid (PFNA)	S21-No10130	NCP	%	124			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S21-No10130	NCP	%	111			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S21-No10130	NCP	%	105			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S21-No10130	NCP	%	111			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S21-No10130	NCP	%	56			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S21-No10130	NCP	%	112			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S21-No10130	NCP	%	96			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S21-No10130	NCP	%	108			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S21-No10130	NCP	%	102			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S21-No10130	NCP	%	101			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S21-No10130	NCP	%	106			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S21-No10130	NCP	%	96			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S21-No10130	NCP	%	108			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S21-No10130	NCP	%	95			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S21-No10130	NCP	%	114			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S21-No10130	NCP	%	95			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S21-No10130	NCP	%	98			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S21-No10130	NCP	%	85			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S21-No10130	NCP	%	132			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S21-No14046	NCP	%	92			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S21-No10130	NCP	%	72			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S21-No10130	NCP	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S21-No14046	NCP	%	82			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S21-No10130	NCP	%	90			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S21-No10130	NCP	%	100			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	S21-No08323	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	S21-No08323	CP	ug/L	0.03	0.03	6.0	30%	Pass	
Perfluorohexanoic acid (PFHxA)	S21-No08323	CP	ug/L	0.05	0.05	9.0	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	S21-No08323	CP	ug/L	0.05	0.05	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S21-No08323	CP	ug/L	0.13	0.14	8.0	30%	Pass	
Perfluorononanoic acid (PFNA)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	S21-No08323	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S21-No08323	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S21-No08323	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S21-No08323	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S21-No08323	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S21-No08323	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S21-No08323	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	S21-No08323	CP	ug/L	0.02	0.02	9.0	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S21-No08323	CP	ug/L	0.02	0.02	9.0	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S21-No08323	CP	ug/L	0.14	0.16	11	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S21-No08323	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S21-No08323	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

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

Authorised by:

[redacted] Analytical Services Manager
[redacted] Senior Analyst-PFAS (NSW)

[redacted]

[redacted]
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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eurofins | Environment Testing

Eurofins Environment Testing Australia Pty Ltd
ABN: [redacted]
[redacted]

[redacted]
Eurofins ARL Pty Ltd
ABN: [redacted]
[redacted]

[redacted]
Eurofins Environment Testing NZ Limited
NZBN: [redacted]
[redacted]

Sample Receipt Advice

Company name:	[redacted]
Contact name:	[redacted]
Project name:	NSW_0906_PFASOMP
Project ID:	NSW_0906_PFASOMP
Turnaround time:	5 Day
Date/Time received	Nov 1, 2021 5:50 PM
Eurofins reference	842910

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Samples received by the laboratory after 5.30pm are deemed to have been received the following working day.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted] **on phone :** [redacted] **or by email:** [redacted]

Results will be delivered electronically via email to [redacted]

Note: A copy of these results will also be delivered to the general [redacted] *email address.*

Global Leader - Results you can trust

eurofins | Environment Testing

Eurofins Environment Testing Australia Pty Ltd [redacted]

Eurofins ARL Pty Ltd [redacted]

Eurofins Environment Testing NZ Limited [redacted]

web: [redacted]
email: [redacted]

Company Name: [redacted]
Address: [redacted]

Order No.:
Report #: 842910
Phone: 8415 7777
Fax: 8415 7788

Received: Nov 1, 2021 5:50 PM
Due: Nov 8, 2021
Priority: 5 Day
Contact Name: [redacted]

Project Name: NSW_0906_PFASOMP
Project ID: NSW_0906_PFASOMP

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						
Sydney Laboratory - NATA # 1261 Site # 18217						X
Brisbane Laboratory - NATA # 1261 Site # 20794						
Mayfield Laboratory - NATA # 1261 Site # 25079						
Perth Laboratory - NATA # 2377 Site # 2370						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC204_20211020	Oct 20, 2021		Water	S21-No08326	X
Test Counts						1

[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **842910-W**
Project name NSW_0906_PFASOMP
Project ID NSW_0906_PFASOMP
Received Date Nov 01, 2021

Client Sample ID			**0906_QC204_20211020**
Sample Matrix			**Water**
Eurofins Sample No.			**S21-No08326**
Date Sampled			**Oct 20, 2021**
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01
13C4-PFBA (surr.)	1	%	99
13C5-PFPeA (surr.)	1	%	112
13C5-PFHxA (surr.)	1	%	123
13C4-PFHpA (surr.)	1	%	112
13C8-PFOA (surr.)	1	%	123
13C5-PFNA (surr.)	1	%	117
13C6-PFDA (surr.)	1	%	114
13C2-PFUnDA (surr.)	1	%	112
13C2-PFDoDA (surr.)	1	%	124
13C2-PFTeDA (surr.)	1	%	93
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.05	ug/L	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.05	ug/L	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05
13C8-FOSA (surr.)	1	%	109
D3-N-MeFOSA (surr.)	1	%	75

Client Sample ID			0906_QC204_20211020
Sample Matrix			**Water**
Eurofins Sample No.			**S21-No08326**
Date Sampled			**Oct 20, 2021**
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
D5-N-EtFOSA (surr.)	1	%	75
D7-N-MeFOSE (surr.)	1	%	90
D9-N-EtFOSE (surr.)	1	%	90
D5-N-EtFOSAA (surr.)	1	%	120
D3-N-MeFOSAA (surr.)	1	%	101
Perfluoroalkyl sulfonic acids (PFSAs)			
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01
13C3-PFBS (surr.)	1	%	133
18O2-PFHxS (surr.)	1	%	117
13C8-PFOS (surr.)	1	%	117
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.05	ug/L	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01
13C2-4:2 FTSA (surr.)	1	%	108
13C2-6:2 FTSA (surr.)	1	%	99
13C2-8:2 FTSA (surr.)	1	%	106
13C2-10:2 FTSA (surr.)	1	%	139
PFASs Summations			
Sum (PFHxS + PFOS)*	0.01	ug/L	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Sydney	Nov 04, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Sydney	Nov 04, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Sydney	Nov 04, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Sydney	Nov 04, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Sydney	Nov 04, 2021	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

eurofins | Environment Testing

web: [redacted]
email: [redacted]

Eurofins Environment Testing Australia Pty Ltd
ABN: [redacted]
[redacted]

Eurofins ARL Pty Ltd
ABN: [redacted]
[redacted]

Eurofins Environment Testing NZ Limited
NZBN: [redacted]
[redacted]

Company Name: [redacted]
Address: [redacted]

Order No.:
Report #: 842910
Phone: 8415 7777
Fax: 8415 7788

Received: Nov 1, 2021 5:50 PM
Due: Nov 8, 2021
Priority: 5 Day
Contact Name: [redacted]

Project Name: NSW_0906_PFASOMP
Project ID: NSW_0906_PFASOMP

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						
Sydney Laboratory - NATA # 1261 Site # 18217						X
Brisbane Laboratory - NATA # 1261 Site # 20794						
Mayfield Laboratory - NATA # 1261 Site # 25079						
Perth Laboratory - NATA # 2377 Site # 2370						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC204_20211020	Oct 20, 2021		Water	S21-No08326	X
Test Counts						1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

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

Terms

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

QC - Acceptance Criteria

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

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

Results <10 times the LOR : No Limit

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

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

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

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

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

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QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	100			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	117			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	101			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	102			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	110			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	111			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	106			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	108			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	104			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	102			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	108			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	97			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	95			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	97			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	94			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	99			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	103			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	100			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	90			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	100			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	83			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	80			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	94			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	108			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	101			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	103			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	102			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	96			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	107			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	S21-No10130	NCP	%	108			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S21-No14046	NCP	%	85			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S21-No14046	NCP	%	89			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S21-No10130	NCP	%	130			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S21-No10130	NCP	%	139			50-150	Pass	
Perfluorononanoic acid (PFNA)	S21-No10130	NCP	%	124			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S21-No10130	NCP	%	111			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S21-No10130	NCP	%	105			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S21-No10130	NCP	%	111			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S21-No10130	NCP	%	56			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S21-No10130	NCP	%	112			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S21-No10130	NCP	%	96			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S21-No10130	NCP	%	108			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S21-No10130	NCP	%	102			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S21-No10130	NCP	%	101			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S21-No10130	NCP	%	106			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S21-No10130	NCP	%	96			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S21-No10130	NCP	%	108			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S21-No10130	NCP	%	95			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S21-No10130	NCP	%	114			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S21-No10130	NCP	%	95			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S21-No10130	NCP	%	98			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S21-No10130	NCP	%	85			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S21-No10130	NCP	%	132			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S21-No14046	NCP	%	92			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S21-No10130	NCP	%	72			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S21-No10130	NCP	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S21-No14046	NCP	%	82			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S21-No10130	NCP	%	90			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S21-No10130	NCP	%	100			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	S21-No08323	NCP	ug/L	0.03	0.03	6.0	30%	Pass	
Perfluorohexanoic acid (PFHxA)	S21-No08323	NCP	ug/L	0.05	0.05	9.0	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	S21-No08323	NCP	ug/L	0.05	0.05	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S21-No08323	NCP	ug/L	0.13	0.14	8.0	30%	Pass	
Perfluorononanoic acid (PFNA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	S21-No08323	NCP	ug/L	0.02	0.02	9.0	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S21-No08323	NCP	ug/L	0.02	0.02	9.0	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S21-No08323	NCP	ug/L	0.14	0.16	11	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S21-No08323	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S21-No08323	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

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

Authorised by:

[redacted]
Analytical Services Manager
[redacted]
Senior Analyst-PFAS (NSW)

[redacted]

[redacted]
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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

APPENDIX

D

FIELD RECORDS & CALIBRATION CERTIFICATES

Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)
MW200	Off-site	540489.09	6111231.75	21/10/2021	-	183.137	-	-	Clear	Low	Sample collected from aquaculture pond fill point.	17.8	2.45	1184	769.6	6.93	124.4
MW204	Off-site	540107.16	6110883.61	21/10/2021	42.1	183.024	15.365	167.659	Cloudy	Medium		18.3	0.5	441.9	287.2	7.46	-134.5
MW208	Off-site	539924.30	6112236.46	-	-	-	-	-	-	-	Not sampled. No access.	-	-	-	-	-	-
MW209	Off-site	542521.77	6114403.23	21/10/2021	100	-	19.93	-	Clear	Low	Well locked in pump shed, sample taken from pipe attached to bore pump.	20.7	1.55	329.7	214.3	6.78	-3
MW210	Off-site	540664.20	6114397.70	21/10/2021	-	-	-	-	Clear	Low	Standing water level not taken, no monitoring well. Sample taken from tap at base of bore.	15.9	7.4	204.1	132.7	6.63	104.5
MW211	On-site	535735.79	6113725.27	20/10/2021	-	181.707	-	-	Clear	Low	Bore pump within locked gate and tap key needed to sample. Sampled from hose connected to bore.	18.9	1.01	273.1	177.5	6.56	64.2
MW212	On-site	535681.87	6113475.53	20/10/2021	-	181.215	-	-	-	-	Stand pipe and tap, unable to gauge water level.	17.3	2.8	418.5	272	6.7	33.5
MW213	On-site	536651.55	6114239.35	20/10/2021	-	180.533	-	-	Clear	Low	Riverina Water East Wagga Bore No. 3 pump house. Not gauged.	16.9	2.04	205.4	133.5	6.61	73.2
MW214	On-site	542678.11	6111434.75	21/10/2021	-	186.043	-	-	Clear	Low	Production pumping bore, run to purge prior to sampling. Sampled.	20	1.22	552	358.8	6.77	26.1
MW215	On-site	542678.11	6111434.75	19/10/2021	48.6	-	14.595	-	-	-	Well only gauged, not sampled as per SAQP, logger present	-	-	-	-	-	-
MW231	On-site	540910.71	6113541.05	22/10/2021	-	-	-	-	Clear	Low	Unable to gauge water levels, as there is no monitoring well, sample taken from irrigation system.	19.6	1.47	446.6	290.3	6.53	88.2
MW233	Off-site	539802.59	6112448.66	19/10/2021	-	-	-	-	Clear	Low	Sampled from hose connected to bore	18.9	1.83	1192	774.8	6.59	163.2
MW235	Off-site	538233.60	6113031.62	20/10/2021	-	-	-	-	Clear	Low	Sample taken from hose connected to bore, no monitoring well present.	16.8	3.63	136.3	88.6	6.55	145.5
MW238	Off-site	540682.06	6112227.81	21/10/2021	71.9	182.88	16.215	166.665	Clear	Low	Logger in well. Sulfur odour.	22.5	0.7	1338	869.7	6.58	-57
MW239	Off-site	540678.34	6112216.01	21/10/2021	20.3	182.8	15.985	166.815	Clear	Low	Logger deployed	16.2	3.74	1787	1162	7.12	67.9
MW240	Off-site	538090.54	6112266.06	19/10/2021	27.5	182.54	16.16	166.38	Cloudy	Medium		18.7	3.08	595	386.8	6.45	50
MW241	Off-site	544118.31	6109524.74	24/10/2021	74.63	200.07	14.011	186.059	Clear	Low		19.3	1.2	1015	659.8	11.77	-100
MW242	Off-site	544118.75	6109538.52	22/10/2021	61.68	199.89	14.065	185.825	Clear	Low	Logger deployed. Black sediment observed in sleeve.	20.1	0.95	1203	782	7.91	-158.8
MW243	On-site	542979.06	6110074.36	20/10/2021	54.02	211.48	39.555	171.925	Cloudy	Medium		21.5	1.62	1296	842.4	6.74	121
MW244	Off-site	536997.10	6113055.36	19/10/2021	60.5	180.37	14.025	166.345	Cloudy	Medium	Logger deployed.	18.9	1.14	234	152.1	6.7	-124.2
MW245	Off-site	537011.85	6113066.50	19/10/2021	21	180.37	15.015	165.355	Cloudy	Medium	Logger deployed.	18.3	2.05	614	399.1	6.29	45
MW246	Off-site	541737.871	6110580.212	20/10/2021	48.85	189.563	19.38	170.183	Cloudy	Medium	Logger deployed.	19.4	2.24	395	256.8	6.73	-84.3
MW247	Off-site	536050.951	6112506.299	21/10/2021	35.35	181.343	14.085	167.258	Cloudy	Medium	Logger deployed.	16.8	1.1	983	639	7.35	-70.2
MW248	Off-site	536049.397	6112509.06	20/10/2021	25.22	181.361	14.175	167.186	Cloudy	Medium	Logger deployed.	16.4	2.75	1875	1219	6.6	139.5
MW249	Off-site	536082.812	6113454.968	21/10/2021	60.8	180.008	17.016	162.992	Clear	Low		18.7	0.87	285.7	185.7	6.57	25.1
MW250	Off-site	536087.341	6113452.451	19/10/2021	26	179.936	16.61	163.326	Cloudy	Medium	Logger deployed.	18.7	3.10	837	544.1	6.57	142
MW251	Off-site	536569.189	6113765.545	21/10/2021	24.15	178.394	13.92	164.474	Cloudy	Medium		18.4	1.17	533	346.5	6.03	2.9
MW252	Off-site	536569.976	6113769.891	19/10/2021	62.5	178.607	14.23	164.377	Clear	Low		18.7	1.30	389	252.9	5.84	84.4
MW253	Off-site	537469.028	6112456.611	19/10/2021	48.95	180.991	15.61	165.381	Clear	Low		17.9	2.33	271.7	176.6	6.55	130
MW254	Off-site	537469.851	6112462.06	19/10/2021	24.5	181.122	15.495	165.627	Cloudy	Medium		18.3	3.65	308	200.2	6.21	112
MW255	Off-site	539219.759	6112296.567	19/10/2021	53.1	182.094	15.58	166.514	Cloudy	Medium		18.8	1.19	706	458.9	6.38	-58
MW256	Off-site	539217.619	6112291.105	19/10/2021	22.2	182.128	15.9	166.228	Brown	Medium		18.7	2.93	1395	906.8	6.57	183.9
MW257	Off-site	538761.456	6111519.667	18/10/2021	15.96	-	15.865	-	-	-	Insufficient water for sampling	-	-	-	-	-	-
MW300	On-site	542277.11	6110129.15	20/10/2021	62	200.538	30.08	170.458	Clear	Low		19.8	3.05	1246	809.9	6.34	100
MW301	On-site	542281.27	6110125.89	18/10/2021	18.88	200.705	-	-	-	-	Dry, not sampled, 20mm pipe in well	-	-	-	-	-	-
MW302	On-site	542356.16	6109473.31	20/10/2021	65.24	209.607	38.99	170.617	Clear	Low		20	2.34	838	544.7	6.40	93
MW303	On-site	542358.37	6109470.43	18/10/2021	20.78	209.568	-	-	-	-	Dry, not sampled	-	-	-	-	-	-
MW304	On-site	541367.48	6108802.00	20/10/2021	69.56	211.767	39.01	172.757	Cloudy	High		20.1	1.27	1732	1126	7.45	1123
MW305	On-site	541363.15	6108795.52	18/10/2021	24.91	211.774	-	-	-	-	Dry, not sampled	-	-	-	-	-	-
MW306	On-site	542799.42	6107013.89	22/10/2021	61.2	233.058	44.88	188.178	Clear	Low		20.8	0.81	1868	1214	7.14	53.2
MW307	On-site	542791.05	6107014.44	22/10/2021	31.2	232.904	-	-	-	-	Dry, not sampled	-	-	-	-	-	-
MW308	On-site	543139.39	6109381.63	21/10/2021	66.86	213.901	41.98	171.921	Cloudy	Medium		20.3	2.76	621	403.7	6.45	47.5
MW309	On-site	543133.57	6109377.71	18/10/2021	24	213.826	-	-	-	-	IP hitting top of sleeve at 24m. No water detected.	-	-	-	-	-	-
MW310	On-site	543564.83	6108980.78	22/10/2021	59	210.274	23.45	186.824	Cloudy	Medium		19	1.99	963	626	7.14	-107
MW311	On-site	543566.06	6108977.08	22/10/2021	22.6	210.651	-	-	-	-	Dry (orange mud at base), not sampled	-	-	-	-	-	-
MW312	Off-site	[redacted]		21/10/2021	61.1	182.97	13.9	169.07	Clear	Low		21.1	1.79	1068	694.2	6.87	19.4

Sample ID	Property	Easting	Northing	Monitoring Date	Sample Depth (m)	Water Body Depth	Flow Rate	Water Colour	Turbidity	Other Observations	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)
SW104	On-site	542263.80	6110131.68	20/10/2021	0.01	0.01	Low	Clear	Low	Very low flow, stormwater drain.	23.2	6.56	64	41.6	8.38	76.1
SW206	Off-site	541675.39	6110527.28	21/10/2021	0.1	0.2	Low	Cloudy	Low	Sampled from culvert, low flow from RAAF base.	16.1	6.17	441.6	287.0	8.44	38.5
SW212	Off-site	539563.37	6114381.22	19/10/2021	0.1	0.3	Medium	Clear to cloudy	Low		16	5.66	145.8	94.8	7.69	110
SW218	Off-site	541679.77	6110529.39	21/10/2021	0.1	0.2	Medium	Clear	Low	Sample taken from Elizabeth Ave culvert, cloudy water downstream.	16.5	6.68	558	362.7	8.59	40.6
SW228	Off-site	543262.03	6112272.39	21/10/2021	0.2	3	Low	Clear to cloudy	Medium		20.3	3.97	836	543.4	8.14	59.3
SW234	Off-site	536166.15	6112334.13	19/10/2021	0.2	0.8	Medium	Clear	Low		22.9	5.16	633	411.5	7.72	133.5
SW236	Off-site	543767.40	6112318.00	22/10/2021	0.1	0.3	Low	Cloudy brown	Medium		16.4	4.67	560	364.0	7.74	108.5
SW240	Off-site	545028.00	6110672.00	22/10/2021	0.1	0.3	Low	Brown	High	Stangant water, highly turbid.	14.7	2.24	231.3	150.3	7.13	118.6
SW261	Off-site	534761.81	6114107.59	19/10/2021	0.1	0.4	High	Cloudy	Low		15.5	5.64	176.8	114.9	7.52	79.5
SW262	Off-site	534970.84	6113903.83	19/10/2021	0.2	0.5	Low	Cloudy	Low	Fallen trees upstream of Marshall's Creek that seem to obstruct flow. Demolition waste evident on the bank.	18.4	5.93	250.1	162.6	7.63	104.7
SW286	Off-site	543605.67	6114255.45	22/10/2021	0.2	1	High	Clear	Low		15.8	5.51	91.9	59.7	7.76	95.7
SW288	Off-site	542930.77	6112004.76	21/10/2021	0.1	0.8	High	Cloudy	Medium	Suspended organic solids associated with municipal sewage observed within water.	19.9	0.29	1057	687.1	8.53	-182.4
SW289	Off-site	543054.42	6112176.56	21/10/2021	0.1	0.5	High	Cloudy	Medium		20.3	1.11	884	574.6	7.85	2
SW294	Off-site	535307.66	6113375.69	19/10/2021	0	0	High	Clear	Low	Water cloudy in Marshall's Creek directly west of culvert.	14	6.92	126.5	82.2	8.73	104.2
SW309	Off-site	535436.96	6113744.17	19/10/2021	0.1	0.4	Medium	Cloudy	Low		15.4	5.80	131.3	85.3	7.55	102.3
SW310	Off-site	538809.34	6111596.73	19/10/2021	0.05	0.1	Low	Brown	High		21.7	4.72	189.2	123.0	7.88	104.8

15/10/2021

Multi Parameter Water Meter

Instrument **YSI Quatro Pro Plus**
Serial No. **18G103121**

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 10.00		pH 10.00		370064	pH 9.70
2. pH 7.00		pH 7.00		372012	pH 6.93
3. pH 4.00		pH 4.00		367234	pH 3.96
4. mV		231.8mV		365451/370891	231.9mV
5. EC		2.76mS		369734	2.74mS
6. D.O		0.00ppm		371864	0.02ppm
7. Temp		20.6°C		MultiTherm	20.2°C

Calibrated by: [redacted]

Calibration date: **15/10/2021**

Next calibration due: **14/11/2021**

14/10/2021

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 18J104328

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor		Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 10.00		pH 10.00		370064	pH 9.96
2. pH 7.00		pH 7.00		372012	pH 7.01
3. pH 4.00		pH 4.00		367234	pH 4.03
4.ORP		234mV		365451/370891	232.8mV
5. EC		2.76mS		369734	2.77mS
6. D.O		0.00ppm		1910294760	0.00ppm
7. Temp		20.2°C		MultiTherm	20.1°C

Calibrated by: [redacted]

Calibration date: 14/10/2021

Next calibration due: 13/11/2021

F3.01 Equipment Calibration Report
YSI ProPlus Water Quality Meter

This YSI ProPlus Water Quality Meter has been performance checked as per the manufacturer's guidelines[1].

Unit Type: YSI ProPlus
Serial Number: 19H102165

The unit has been checked for and comprises of the following items:

Item	Present	Damaged or Absent?
Carry case	☑	
Attached sensors (x4)	☑	
Spare Batteries	☑	
Connector Cable	☑	
Instruction Manual	☑	

The following tests and operational checks have been conducted on the unit:

Item	Test Completed	Test Passed
WQM unit electrodes cleaned and checked	☑	☐
Operations check (screen functions)	☑	☐
Temperature check	☑	☐

Calibration:

Sensor	Cal. Solution	Value	Reading	
pH	pH: Buffer Solution 4.00	4.00	4.04	4.09
pH	pH: Buffer Solution 7.00	7.00	7.03	7.05
pH	pH: Buffer Solution 10.00	10.00	10.04	10.02
Redox	Standard ORP solution	___ mV @ __°c	240@16	242@16
O_2	Ambient Air for 100% Dissolved Oxygen	100%	101	103
O_2	Sodium Sulphite for 0% Dissolved Oxygen	0%	0.04	0.05
Conductivity	Standard Conductivity Solution	___ µS/cm @ __°c	2200 @ 16	2210@16

Checked/ Calibrated by: JC

Signed: [signature]

Date: 19/10/21

Scanned and Saved into Fieldwork Folder (Y/N)

Y

[1] YSI Professional Plus – Calibration Tips; Rev A, December 2010.

F3.01 Equipment Calibration Report
YSI ProPlus Water Quality Meter

This YSI ProPlus Water Quality Meter has been performance checked as per the manufacturer's guidelines[1].

Unit Type: YSI ProPlus
Serial Number: 19H102165

The unit has been checked for and comprises of the following items:

Item	Present	Damaged or Absent?
Carry case	☑	
Attached sensors (x4)	☑	
Spare Batteries	☑	
Connector Cable	☑	
Instruction Manual	☑	

The following tests and operational checks have been conducted on the unit:

Item	Test Completed	Test Passed
WQM unit electrodes cleaned and checked	☑	☐
Operations check (screen functions)	☑	☐
Temperature check	☑	☐

Calibration:

Sensor	Cal. Solution	Value	Reading	
pH	pH: Buffer Solution 4.00	4.00	4.08	4.06
pH	pH: Buffer Solution 7.00	7.00	7.07	7.04
pH	pH: Buffer Solution 10.00	10.00	10.06	10.02
Redox	Standard ORP solution	241 mV @ 16 °c	241 @ 16	242 @ 16
O_2	Ambient Air for 100% Dissolved Oxygen	100%	102	101
O_2	Sodium Sulphite for 0% Dissolved Oxygen	0%	0.08	0.04
Conductivity	Standard Conductivity Solution	2205 µS/cm @ 15 °c		

Checked/ Calibrated by: JL / CL

Signed: [signature]

Date: 20/10/21

Scanned and Saved into Fieldwork Folder (Y/N)

Y

[1] YSI Professional Plus – Calibration Tips; Rev A, December 2010.

F3.01 Equipment Calibration Report
YSI ProPlus Water Quality Meter

This YSI ProPlus Water Quality Meter has been performance checked as per the manufacturer's guidelines[1].

Unit Type: YSI ProPlus
Serial Number: 19H102165

The unit has been checked for and comprises of the following items:

Item	Present	Damaged or Absent?
Carry case	☑	
Attached sensors (x4)	☑	
Spare Batteries	☑	
Connector Cable	☑	
Instruction Manual	☑	

The following tests and operational checks have been conducted on the unit:

Item	Test Completed	Test Passed
WQM unit electrodes cleaned and checked	☑	☐
Operations check (screen functions)	☑	☐
Temperature check	☑	☐

Calibration:

Sensor	Cal. Solution	Value	Reading	
pH	pH: Buffer Solution 4.00	4.00	4.04	4.06
pH	pH: Buffer Solution 7.00	7.00	7.03	7.05
pH	pH: Buffer Solution 10.00	10.00	10.05	10.02
Redox	Standard ORP solution	___ mV @ __°c	242@16	239@16
O_2	Ambient Air for 100% Dissolved Oxygen	100%	101	101
O_2	Sodium Sulphite for 0% Dissolved Oxygen	0%	0.03	0.05
Conductivity	Standard Conductivity Solution	___ µS/cm @ __°c	2209 @16	2205 @16

Checked/ Calibrated by: JL

Signed:

Date: 29/10/21

Scanned and Saved into Fieldwork Folder (Y/N)

Y

[1] YSI Professional Plus – Calibration Tips; Rev A, December 2010.

F3.01 Equipment Calibration Report
YSI ProPlus Water Quality Meter

This YSI ProPlus Water Quality Meter has been performance checked as per the manufacturer's guidelines[1].

Unit Type: YSI ProPlus
Serial Number: 19H102165

The unit has been checked for and comprises of the following items:

Item	Present	Damaged or Absent?
Carry case	☑	
Attached sensors (x4)	☑	
Spare Batteries	☐	
Connector Cable	☐	
Instruction Manual	☑	

The following tests and operational checks have been conducted on the unit:

Item	Test Completed	Test Passed
WQM unit electrodes cleaned and checked	☑	☐
Operations check (screen functions)	☑	☐
Temperature check	☑	☐

24/10

Calibration:

Sensor	Cal. Solution	Value	Reading	
pH	pH: Buffer Solution 4.00	4.00	4.06	4.04
pH	pH: Buffer Solution 7.00	7.00	7.03	7.02
pH	pH: Buffer Solution 10.00	10.00	10.04	10.06
Redox	Standard ORP solution	___ mV @ __°c	241@16	242@16
O_2	Ambient Air for 100% Dissolved Oxygen	100%	103	101
O_2	Sodium Sulphite for 0% Dissolved Oxygen	0%	0.04	0.05
Conductivity	Standard Conductivity Solution	___ µS/cm @ __°c	220 @16	2198@16

4.03
7.02
10.02
239@16
103
0.02
2196@16

Checked/ Calibrated by: JL

Signed: [signature]

Date: 22/10/21 / 24/10/21

Scanned and Saved into Fieldwork Folder (Y/N)

Y

[1] YSI Professional Plus – Calibration Tips; Rev A, December 2010.

APPENDIX

E

DATA QUALITY REVIEW

Data Quality Review
RAAF Base Wagga, NSW, 2650

This Appendix reviews the Quality Assurance (QA) and Quality Control (QC) documentation. Quality assurance encompasses the actions, procedures, checks and decisions undertaken to ensure sample integrity and representativeness, and the reliability and accuracy of analysis results. The QA documentation should also include an indication of the Data Quality Objectives sought in relation to each significant action, test or process involved in the Assessment.

QC activities measure the effectiveness of the QA procedures by undertaking testing, and then comparing results to previously established objectives. QC work will include the internal laboratory testing as well as results of QC samples submitted such as trip blanks and duplicates. The quality of the information and/or data is deemed satisfactory when the QC results demonstrate that agreed objectives have been met.

Cardno undertook a review of its QA/QC as part of the data validation exercise. The findings are summarised below.

QA/QC Aspects	Evidence and Evaluation
	QA Documentation
Sampling and Analysis Quality Plan and Data Quality Objectives	Cardno was engaged by Department of Defence (the client) to carry out the PFAS Ongoing Monitoring Plan (OMP) of RAAF Base Wagga, NSW, 2650 (the site). The monitoring event commenced on 18 October 2021 until 24 October 2021, and is in general accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP) of 18 October 2021 (Our Ref: 20191021_OMP002_Wagga_ SAQP_Rev6). The assessment was carried out in general compliance with the following: ▪ Australian Standard AS 4482-2005 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds. ▪ Department of Defence (2019a), Contamination Management Manual (DCMM), August 2019. ▪ Department of Defence (2019b), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring. ▪ Department of Defence, Department of Energy, 2018, Quality System Manual Schedule B15. ▪ EPA Victoria (2009), Industrial Waste Resources Guidelines, Sampling and Analysis of Waters, Wastewaters, Soils and Wastes, Publication 701. ▪ Heads of Environmental Protection Authority's Australia and New Zealand (HEPA) (2020), PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020. ▪ National Environment Protection Council (NEPC), 1999, National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM). ▪ National Health and Medical Research Council (NHMRC) (2019), Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water, August 2019. ▪ USEPA (2000), Guidance for the Data Quality Objectives Process (EPA QA/G-4).

QA/QC Aspects	Evidence and Evaluation
	A quality control program was implemented during the investigation and the quality assurance procedures used have been reiterated in the report. The investigation was carried out in accordance with the Safe Work method Statements (SWMS) and Occupational Health and Safety (OHS) plan for the site. Detailed work plans were also provided for each phase of investigation and are outlined in the SAQP. The Data Quality Objectives were expressed in terms of the purpose of the assessment and the relevant assessment criteria.
Data Validation Report	This review constitutes a data validation review. This was supported by an Esdat generated "QAQC Checker" excel report, summarised in Tables B3 and B4, Appendix B.
Data Representativeness	
Holding Times	Groundwater and surface water sample analysis holding times were in conformance with EPA Publication IWRG701 2009 *'Sampling and Analysis of Waters, Wastewaters, Soils and Wastes*.
Background Samples	No background samples were collected as part of this assessment.
Equipment Decontamination	The decontamination methodology conducted during this investigation is documented in the body of the report, and was in general conformance with the SAQP and work plans. ▪ All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection.
Data Precision and Accuracy	
QC Testing – Blind Replicates (Primary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 37 ▪ Blind Replicate Samples Analysed: 5 ▪ Blind Replicate Analyte Pairs: 155 ▪ Number of Analyte Pairs Exceeding Criteria: 10 ▪ Percentage of Analyte Pairs Exceeding Criteria: 6.5% The RPD exceedances observed for PFAS compounds were considered to be minor and are due to low reported concentrations of analytes close to the LOR. Since they are generally within the same order of magnitude, it is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 16 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 62 ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances observed for PFAS compounds. RPD results are presented in Table B3, Appendix B.
QC Testing – Field Splits (Secondary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 37 ▪ Blind Replicate Samples Analysed: 5 ▪ Blind Replicate Analyte Pairs: 155 ▪ Number of Analyte Pairs Exceeding Criteria: 5 ▪ Percentage of Analyte Pairs Exceeding Criteria: 3.2%

QA/QC Aspects	Evidence and Evaluation
	The RPD exceedances observed for PFAS compounds were considered to be minor and are due to low reported concentrations of analytes close to the LOR. Since they are generally within the same order of magnitude, it is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 16 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 62 ▪ Number of Analyte Pairs Exceeding Criteria: 6 ▪ Percentage of Analyte Pairs Exceeding Criteria: 9.7% The RPD exceedances associated with PFAS compounds are considered to be minor and likely attributed to low concentrations of analyte pairs. It is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B.
Trip Blanks	Five (5) trip blanks were collected and laboratory tested for PFAS. All analytes were reported below the limit of reporting (LOR). Trip blank results are presented in Table B4, Appendix B.
Laboratory Internal QC	Evidence of the laboratories internal QC testing is present and complete. Both ALS (the primary laboratory) and Eurofins-mgt performed internal QC with adequate testing and mostly satisfactory results for matrix spikes, method blanks and laboratory duplicates. Exceptions include: Reports ES2139302, ES2139303, ES2139304, ES2139305: Matrix Spike EP2113033-002 did not determine a matrix spike recovery as the background level was in excess of spike level for select PFAS compounds.
Laboratory Method Detection Limit	Laboratory reports indicate the method detection limits were lower than the respective assessment criteria.
NATA endorsement of laboratory reports	Laboratory reports were stamped with the NATA endorsement stamp and signature. Laboratory reports are included in Appendix C of this report.
Calibration of Field Equipment	All field equipment used was calibrated by the equipment supplier. Additionally, daily bump tests were performed of the water quality meter throughout the monitoring event. Certificates are included in Appendix D of this report.
Decontamination and Equipment Blanks	All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection. It is noted that a rinsate blank was not collected on one day of sampling (24/11/21). This is considered to have little to no impact on the investigation as only one groundwater sample was collected on this day. There were also no PFAS compounds reported above LOR in any rinsate blank sample, indicating that decontamination was adequate. Rinsate blank samples were tested for PFAS which all reported a concentration below the laboratory LOR. Results are shown in Table B4, Appendix B.
Data Comparability	
Full Review of Data	Once all results have been received, Cardno undertook a full review of the data for any anomalies in consideration of historical data at each location (where available), such as first-time detections or exceedances being reported at locations which have not had detections or exceedances previously. Where potentially anomalous data is identified or suspected, further confirmatory measures were undertaken such as re-extraction and reanalysis of the sample by the laboratory and/or additional data quality review. One sample was requested for re-extraction and reanalysis. Their results are as follows:

QA/QC Aspects	Evidence and Evaluation
	▪ MW210 was submitted for re-extraction and re-analysis as the initial results reported PFOS+PFHxS 0.03 µg/L which was inconsistent with previous results. Repeat results <LOR, consistent with historical results. Original results superseded. The results from SW218 did not appear consistent with historical data. However, the results were confirmed by internal laboratory duplicate results and matrix spike results.
Standard Procedures	Fieldwork procedures are detailed in the report and followed the work methods outlined in the SAQP.
Qualified Personnel	Staff involved in managing and reviewing the project and those involved in fieldwork are qualified personnel.
Volatile Losses	Volatile losses are not applicable to PFAS.
Sample Integrity	Field Chain of Custody forms are included in Appendix C of this report and demonstrate sample integrity.
Data Completeness	
Completeness of Test Program	The scope of work undertaken was generally consistent with that set out in the Sampling and Analysis Quality Plan (SAQP). Variations to the SAQP are detailed in the Factual Report.
Validity of Data Set	The data quality review indicates no significant systematic errors in the data collection process for surface water and groundwater and therefore, the data set used as the basis for the assessment is considered valid and complete.

APPENDIX

F

INFORMATION ABOUT ENVIRONMENTAL REPORTS

About Site Environmental Assessment Reports

1. Introduction

This document explains the Environmental Site Assessment (ESA) process and the context that applies to the use of Environmental Reports issued by Cardno.

2. What is an ESA?

Environmental Site Assessments (ESA) are undertaken for a range of purposes, specific to the brief issued by the client in each case. The scope may include one or a combination of any of the following:

- A factual report of the condition of a portion of the site or one aspect of an entire site.
- Assessment of the contamination levels in soil to be removed from a site – a waste classification assessment.
- Validation of the success of remediation of a site or a portion of a site.
- Provision of a professional opinion about the suitability of a site for one or more uses, in terms of its contamination status.

The scope of any ESA needs to be defined at the outset.

An ESA is not an Environmental Audit. Such audits are undertaken in accordance with the provisions of regulations enacted in various states of Australia, and are referred to as Site Audits in some jurisdictions. Statutory audits provide certification by EPA accredited auditors that a site is suitable for one or more uses. An ESA may provide similar advice but cannot be used in place of an audit if the latter is required by regulation in any instance. However in some circumstances and jurisdictions an ESA is sufficient to provide "environmental sign-off" of a site.

An ESA may be undertaken for due diligence purposes, to establish whether the site has been impacted to the extent that some beneficial uses of the site may be precluded. Due diligence audits in many cases may be completed as non-statutory Audits, although in some jurisdictions they can also be statutory audits, if defined as such at the outset.

3. The ESA Process

The Client generally initiates the ESA process by specifying a brief which identifies the specific objectives of the assessment. If not, it is the consultants' duty to so specify the ESA

In the case of an ESA to provide an opinion about the suitability of the site for use, it would be conducted in accordance with NEPM (Site Assessment). Such ESA would not commence until a thorough site history assessment (Phase 1 Assessment: to identify the potential for significant contamination at a site) is conducted. However, where the history is unclear, a broad screening of chemical parameters can be used to test environmental media. This normally includes a broad range of organic and inorganic compounds and elements, often referred to as an Environmental Screen.

(In the case of an ESA for a purpose other than to provide an opinion about the suitability of the site for use, it is not always necessary to undertake a Phase 1 assessment.)

The ESA requires sampling of soil at representative locations across the site. A NATA accredited laboratory performs the analysis of soil. It is impractical for all of the soil to be assessed. The ESA is often based on a statistical method of grid or random sampling, augmented by targeted sampling at locations known or suspected to be contaminated. Guidance on sampling strategy and density is provided in Australian Standard AS4482.1–2005. However, some considerable degree of judgement is still required in the application of any sampling and testing strategy. For example the blanket application of the "hot spot" method presented in this standard is often inappropriate given its limitations.

The field program also investigates the likelihood of contamination below the site surface. Field investigations must sample and test fill as well as the natural soils. If contamination is found then it is common for further work to be undertaken to characterise, to the extent practical, its vertical and horizontal extent. However, where fill is encountered and testing shows it to be uncontaminated, it must be realised that the heterogeneous nature of the material might mean that not all pockets of contaminated material can be detected using normal sampling regimes.

EPA guidelines for auditors, that may be relevant for an ESA, indicate the need in all cases to consider the potential for groundwater contamination in any site. This does not mean all sites need to be drilled to sample groundwater, but it is most often the case. Most hydrogeological settings and groundwater conditions are complex and vary in space and time. The condition of groundwater is investigated to identify if any beneficial use or environmental value of groundwater is precluded due to contamination.

As previously stated for soil, all groundwater at the site cannot be tested. The environmental investigations are conducted in accordance with industry standards and guidelines (e.g. EPA Vic Pub 668). This provides a level of confidence that a sufficiently comprehensive assessment of the groundwater at the site is achieved.

Where an investigation shows that groundwater is polluted, consideration should be given to assessing the risks and the need for and practicality of any clean up.

4. Environmental Assessment Report

The ESA Report details the findings of the ESA. It provides summary information on the site definition, the reasons for the assessment and other relevant facts. It reviews the scope and quality of the site investigations, laboratory testing and data analyses undertaken. These reports also present a review of the contamination status of the site, the need for any further clean up, and an opinion on the suitability of the site for a range of beneficial uses and land uses such as “residential – low density”, “commercial” etc, as appropriate.

However, as noted above, some ESA have a narrow scope such as for classification of waste soil for removal from site, and do not make conclusions on suitability of site for use.

The ESA Report generally includes copies of other documents and reports, necessary to support the assessment findings, presented as appendices. These can contain more detailed information than the body of the ESA Report. Care should be taken to also read the appended documents and the ESA report in full.

Cardno generally issues reports in electronic form (e-Report) on CD ROM. ESA Reports are issued in this format as Adobe Acrobat™ PDF files. However, a paper copy of the executive summary of the ESA Report is generally issued to the client, and others as required by the brief or by regulation.

5. Limitations of Environmental Assessment Report

The ESA Report is prepared in a manner that can be easily read by a lay person with a legitimate interest in the contamination status of the site, such as the site owner or occupier, EPA and Local Planning Authority. The ESA report is not intended for use by other parties or for other purposes. Anyone who uses the assessment report for purposes other than specified in the report, does so at their own risk.

The site should only be used for one or more of the beneficial uses and land uses identified in the ESA as suitable.

The conditions and qualifications may apply to the suitability of the site for use, and it is the responsibility of the Client to be cognizant of and accept these in accepting the report. Cardno are only responsible for the issuing of the ESA report but accepts no liability for the costs incurred in the implementation of ESA findings.

The ESA provides a “snapshot” of the site conditions at the time of the site investigation. Consequently, the report may not be valid at a later time if there has been any change to the contamination status of the site in that time. Verification of the status of the site may be required in cases where a significant time has elapsed, or site conditions have changed since the assessment and audit.

The ESA is necessarily limited by constraints such as time, cost and available information; although normal professional practice at the time has been applied with all due care to prepare the report. A necessary requirement of this process is the horizontal and vertical interpolation of data from discrete locations. However, site conditions are generally not homogenous and some discrepancies will occur between the actual and predicted results at locations not directly sampled. There is a risk that contamination may occur at the site and not be identified by a competent investigation and assessment. The approach adopted in sampling (a combination of statistically based grid and judgmental sampling) seeks to reduce, but cannot eliminate, this risk.

Where unexpected occurrences of contamination arise, subsequent to the issue of the ESA Report, Cardno should be permitted to make an interpretation of these facts in relation to the ESA Report findings. Consequently, the Client should inform Cardno and seek their opinion. Cardno accepts no liability for costs incurred due to such

unexpected occurrences, given the inherent uncertainties in the assessment process.

Cardno uses information provided by other parties as the basis for the ESA, and reliance on this information is at the discretion of Cardno. However, however Cardno cannot guarantee any of the facts, findings or conclusions presented by other parties. Cardno will not be liable for the use of information, provided by others that is subsequently found to be intentionally misleading.

The ESA Report is not and does not purport to be anything other than a contaminated land ESA. It is not a geotechnical report and bore logs reproduced are for interpretation of the likely distribution of contamination. They are not intended for geotechnical interpretations and may not be adequate for this purpose.

The ESA Report is not intended to be a comprehensive analysis of the presence and associated risk of asbestos in buildings and services. Where asbestos in buildings and services is known or likely, the report may only caution that an appropriately qualified person be engaged to undertake demolition to avoid contamination of the site.

Cardno

13 August 2015

APPENDIX

G

E5 FACTUAL REPORT

Cardno

now

Stantec

PFAS OMP Factual Report

Biannual Sampling Event April/May 2022

RAAF Base Wagga

DEF19008

Prepared for
Department of Defence

25 August 2022

Cardno

now

Stantec

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Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Cardno is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

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List of Abbreviations and Units

Chemical Names

DO	Dissolved Oxygen
PFAS	Per- and Poly-fluoroalkyl Substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Per-fluoro-octanoic Acid
PFOS	Per-fluoro-octane Sulfonate
TDS	Total Dissolved Solids (salinity of water)

Technical Terms

AFFF	Aqueous Film-Forming Foam
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
AS	Australian Standard
BGL	Below Ground Level
COC	Chain of Custody
DSI	Detailed Site Investigation
EC	Electrical Conductivity
EPA	Environment Protection Authority
LOR	Limit of Reporting
N/A	Not Applicable
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environmental Protection Measure
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan

Units

ha	Hectares
mBGL	Metres Below Ground Level
mbTOC	Metres below Top of Casing
mg/kg	Milligram per Kilogram (approximately equivalent to ppm)
mg/L	Milligram per Litre
ppm	Parts per Million
µg/L	Micrograms per Litre
µS/cm	Micro Siemens per Centimetre (Electrical Conductivity - Water)

Site Specific

OMP	Ongoing Monitoring Plan
DCMM	Defence Contamination Management Manual
ESdat	Environmental data management software

1 Introduction

1.1 Background

Cardno was engaged by the Australian Department of Defence (Defence) to carry out the Per- and Poly-Fluoroalkyl Substances (PFAS) Ongoing Monitoring Plan (OMP; Jacobs, 2019b) at RAAF Base Wagga ("the site"). The site is located outside of Wagga Wagga in Forest Hill, New South Wales, as shown in Figure 1, Appendix A.

The OMP was carried out in accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP):

> Cardno, 18 October 2021, Reference: DEF19008, PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP) Rev6, RAAF Base Wagga Wagga.

There was a slight delay in field sampling event (April/May 2022) in respect to the SAQP schedule due to ineluctable circumstances. The delay would not have any impact on the overall OMP program.

For the purposes of this report:

> RAAF Base Wagga is defined as "the Site", which also represents the "On-Site Monitoring Area". The Site is inclusive of the RAAF base as well as an operational airfield, Wagga Wagga City Domestic Airport (WWCDA), which is operated by the Wagga Wagga City Council (Council) (Figure 1, Appendix A).

> The "Off-Site Monitoring Area" comprise areas to the east, north, west and northwest of the Site (Figure 1, Appendix A).

> The "Monitoring Area" (MA) is comprised of the "On-Site Monitoring Area" and the "Off-Site Monitoring Area" (Figure 1, Appendix A).

1.2 Purpose & Objectives

The objective of the OMP is to assess the changes in the nature and extent of PFAS within the environment, specifically where there is an identified potentially elevated risk to a receptor or a potential future risk to a receptor associated with Defence's historical use of Aqueous Film Forming Foam (AFFF).

The purpose of this PFAS OMP factual report is to provide an up-to-date status of the condition of the site as it is currently understood in relation to the most recent sampling event.

The objectives of the report are:

> To provide a succinct summary of the April/May 2022 sampling event and provision of analytical results with supporting tables and figures.

> To provide confirmation of the current understanding of risk.

> To provide supporting data for the assessment of management actions, where relevant.

1.3 Relevant Guidelines

This assessment has been undertaken in general accordance with applicable industry standards for a site investigation for the purpose, objectives and scope identified in this report. These standards are set out in:

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

> Australian Standard AS 4482-2005 *Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds*.

> Department of Defence, Department of Energy, 2018, *Quality System Manual Schedule B15*.

> Heads of Environmental Protection Authority's Australia and New Zealand (HEPA), 2020, *PFAS National Environmental Management Plan (NEMP),* Version 2.0, January 2020.

> National Environment Protection Council (NEPC), 1999, *National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013)* (ASC NEPM).

> National Health and Medical Research Council (NHMRC), 2019, *Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water*.

> Standards Australia, 1998, AS/NZ 5667:1998 *Water quality – sampling*.

> U.S. Environmental Protection Agency (EPA), 2000, '*Guidance for the Data Quality Objectives Process (EPA QA/G-4)*'.

> USEPA, 2002, '*Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8)'.*

2 Scope of Work

Cardno carried out the following tasks in order to satisfy the purpose and objectives of this assessment.

2.1 Review / Revision of the SAQP

Cardno undertook a review of the SAQP (Rev6; Cardno, 2021) prior to commencement of sampling and no revisions were made. The SAQP will be reviewed and further revised as required prior to the next monitoring event scheduled for October 2022.

2.2 Groundwater Monitoring

Sampling of selected groundwater bores was performed in accordance with the SAQP, applying methods set out in Section 3 of this report. The groundwater bores monitored as part of the OMP are presented in Table 2-1, and are shown in Figure 4, Appendix A.

Table 2-1 Groundwater Monitoring Locations

Monitoring Area	Location ID
On-site	MW243, MW300, MW301, MW302, MW303, MW304, MW305, MW306, MW307, MW308, MW309, MW310, MW311.
Gumly Gumly Wetland	MW200, MW204, MW233, MW312, MW313.
Down-gradient of Gumly Gumly Wetland	MW238, MW239, MW240, MW244, MW245, MW247, MW248, MW249, MW250, MW251, MW252, MW253, MW254, MW255, MW256, MW257.
Off-site to the north and north-west of site	MW214[1], MW231, MW235, MW246.
Drinking water supply bores to the north and north-west of site	MW209, MW210, MW211, MW212, MW213.
Property to the east of the site	MW241, MW242.
Notes: 1. MW214 is the current production bore supplying irrigation water to the Base.	

Data loggers previously installed in 13 groundwater monitoring locations to monitor water levels over time were retrieved and the data downloaded: MW215, MW242, MW243, MW304, MW312, MW238, MW239, MW245, MW244, MW247, MW248, MW249 and MW250. The data will be assessed and reported as part of the Annual Interpretive Report (AIR) for 2022.

2.3 Surface Water Monitoring

Sampling of selected surface water locations was performed in accordance with the SAQP, applying methods set out in Section 3 of this report. The surface water locations monitored as part of the OMP are presented in Table 2-2, and are shown in Figure 5, Appendix A.

Table 2-2 Surface Water Monitoring Locations

Monitoring Area	Location ID
Surface Water Inflows – drains discharging from the Site	SW104, SW206.
Surface Water Outflows – drain parallel to Forest Hill Rural Fire Service	SW218.

Monitoring Area	Location ID
Marshalls Creek downstream of Gumly Gumly Wetland	SW234, SW262, SW294, SW310.
Murrumbidgee River	SW212, SW261, SW286, SW309.
Kyeamba Creek	SW236, SW240.
Forest Hill Sewage Treatment Plant	SW228, SW288, SW289.

2.4 Data Management

All the data included in the report have been collected, uploaded to the ESdat database and reviewed according to the data management requirements of the Defence Contamination Management Manual (DCMM) Annex L.

2.5 Deviations from the OMP SAQP

Deviations from the SAQP were attributed to a lack of sampling media or access constraints, as summarised in Table 2-3. On-site and off-site sampling and testing was undertaken at 36 groundwater monitoring wells, and 16 surface water locations. Seven groundwater monitoring wells could not be sampled as the wells were found to be dry or had insufficient water for sampling. One groundwater monitoring well could not be sampled as result of electrical fault as advised by Riverina Water (who own the tap). One groundwater sample was lost – further details are provided below.

Table 2-3 Deviations from the SAQP

Location	Deviation	Comment/Justification	Impact on Existing Dataset
Groundwater			
MW210	Sampled from different tap.	Previous tap not working.	No impact - connected to same bore. Other monitoring wells upgradient. Results consistent with previous sampling events.
MW211	Not Sampled.	Electrical fault.	Low impact – Location last sampled in the October 2021 sampling event. Other monitoring wells upgradient.
MW250	Sample Lost	Sample was collected by Cardno, as evidenced by electronic sampling record and water quality parameters. It is understood that this sample was submitted to the laboratory (ALS) alongside all the other samples, however ALS has come back and said that they cannot find it in their system.	Low impact – Location last sampled in the October 2021 sampling event. Other monitoring wells upgradient and downgradient in same formation were sampled during this event. MW249, which is co-located with MW250 but in the Lachlan Formation, was also sampled during this event.
MW257	Alternate sampling method.	Bailer sample due to insufficient water for HydraSleeve® deployment.	No impact – sample method has been consistent throughout OMP. Results consistent with previous sampling event.
MW301	Not sampled.	Location dry.	No impact – wells historically have been dry throughout the DSI and OMP.
MW303	Not sampled.	Location dry.	No impact – wells historically have been dry throughout the DSI and OMP.
MW305	Not sampled.	Location dry.	No impact – wells historically have been dry throughout the DSI and OMP.
MW307	Not sampled.	Location dry.	No impact – wells historically have

			been dry throughout the DSI and OMP.
MW309	Not sampled.	Location dry.	No impact - no previous data as bore was dry during previous sampling events.
MW311	Not sampled.	Location dry.	No impact – wells historically have been dry throughout the DSI and OMP.
MW313	Not sampled.	Location dry.	No impact – wells historically have been dry throughout the DSI and OMP.
MW200, MW209, MW212, MW213, MW214, MW231, MW233, MW235	Alternate sampling method	Existing pumps inside bores; samples collected from tap on outlet pipe.	No impact - sample method has been consistent throughout OMP.
Surface Water			
SW261	Sampling forms not available	Software malfunction	Minimal impact- Laboratory Analysis Available

Impact on the understanding of the risk profile is considered to be minimal to none for following locations:

- Locations MW211 and SW261: Results were consistent with previous rounds and has minimum impact on the dataset.
- Locations MW200, MW209, MW210, MW212, MW213, MW214, MW231, MW233, MW235 and MW257: Wells have been historically sampled using the alternative method and results were found to be consistent with previous rounds.
- Location MW250: Location upgradient and downgradient of MW250 were sampled during this round and no anomalies were noted in the results.
- Locations MW301, MW303, MW305, MW307, MW309, MW311 and MW313: These locations have been historically dry. The data obtained from the paired water bearing wells installed in the Lachlan formation will provide insight into the vertical migration pathways of PFAS in the groundwater. The lack of data from these wells is not considered to affect the interpretation of the results obtained or the understanding of PFAS migration in the vicinity of the monitoring area.

Overall, the deviations do not represent significant data gaps and therefore the impact on the understanding of the risk profile is negligible.

3 Methodology

3.1 Groundwater Sampling Methodology

Groundwater monitoring was undertaken as detailed in Table 3-1.

Table 3-1 Groundwater Sampling Method

Activity	Details
Dates of Field Activity	28 April to 04 May 2022
Well Gauging	Standing Water Levels (SWL) were gauged using an interface probe. All wells were measured against a specified mark at the top of the well casing.

Activity	Details
Groundwater Field Parameters	Groundwater water quality parameter field measurements (field parameters) were recorded with a water quality meter before sample collection (with the sample in a clean jar). The following field parameters were recorded using a water quality meter: ▪ pH. ▪ electrical conductivity (EC). ▪ oxidation reduction potential (ORP). ▪ Dissolved oxygen (DO). ▪ Temperature. Field parameters measured by the water quality meter were recorded on field data records. All field instruments (e.g. water quality meter) were calibrated by the equipment supplier to optimise the accuracy of the measurements taken. Bump tests were also completed daily by field staff during the monitoring event. Calibration certificates and bump test records are provided in Appendix D.
Deployment of HydraSleeve®	The HydraSleeves® were deployed with attached weights in order for sample collection to begin at the lowest point of the well screen. HydraSleeves® were deployed during the biannual sampling event in October 2021. Any HydraSleeves® that are found to be worn or damaged are replaced with a new HydraSleeve®.
Retrieval of HydraSleeves® (Sample Collection)	At the majority of locations, HydraSleeve® sampling devices were left in wells from the previous sampling event, ensuring the wells were restabilised following the slight disturbance caused by sampler deployment. Where new HydraSleeve® sampling devices were deployed, they were left in wells for a minimum of 4 hours (if there is no top weight) or for a minimum of 24 hours (if there is a top weight) to allow restabilisation of the well following the slight disturbance caused by sampler deployment. Decontaminated bailer was used to clear roots at the bottom of well prior to sampling. Samples were collected via continuous pull method at a rate allowing the water to pass through the check valve into the sample sleeve. Samples were discharged immediately (to minimise changes in chemistry) via a discharge tube. HydraSleeves® were redeployed after sampling in preparation for the next sampling event. Where insufficient water was available for HydraSleeve® sampling, 3 monitoring well volumes were removed by bailer, or the well was purged dry, prior to bailer sample collection.
Decontamination procedure	Dedicated HydraSleeves® were used at each groundwater monitoring well, thus removing the need for decontamination. Where HydraSleeves® could not be used, dedicated bailers were used instead which also did not require decontamination. All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection.
Sample identification, preservation transport and holding times	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Samples were collected directly into appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under Chain of Custody (CoC) documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998 and AS 4482.1 as appropriate).

Activity	Details
Laboratory Testing	All groundwater samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and Chain of Custody documentation are included in Appendix C.
Laboratory Testing – Quality Control	Groundwater quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples (4 samples). ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples (4 samples). ▪ Rinsate blank samples at 1 per day [collected off re-used sampling equipment (e.g. interface probe)] (6 samples total). ▪ Trip blank samples of 1 per shipment included in the chilled sample containers upon transport to the laboratory (7 samples total).

3.2 Surface Water Sampling Methodology

Surface water monitoring was undertaken using a grab method as detailed in Table 3-2.

Table 3-2 Surface Water Sampling Method

Item	Details
Dates of Field Activity	28 April to 04 May 2022
Water Level Gauging	Water depths were measured where relevant with an interface probe, limiting water disturbance.
Field parameters	Surface water field parameters (i.e. pH, electrical conductivity (EC), oxidation reduction potential (ORP), dissolved oxygen (DO), and temperature) were recorded at the time of sampling using a pre-calibrated water quality meter. Field observations such as odours and flow were also recorded on field sampling sheets.
Sampling Method	Where possible, the samples were collected directly into sample containers. The sample bottles were positioned at least 10 cm below the surface water level and above the sediment bed and orientated with the opening facing downwards to avoid the collection of surface films. Where access to surface water samples was difficult, the samples were collected using a long-handled sampling device with a glass container (scoop) that was lowered directly into the water body. Samples were then decanted into the laboratory-supplied sample containers. Samples were collected in accordance with Australian/New Zealand Standards (AS/NZS 5667.1:1998) '*Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*'.
Decontamination	All re-usable sampling equipment (e.g. water scoop) were thoroughly washed using phosphate-free detergent (Liquinox), and subsequently double rinsed with clean water before the sample collection.
Sample identification, preservation, transport and holding times.	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM. Samples were contained in appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under Chain of Custody (COC) documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998 and AS 4482.1 as appropriate).

Item	Details
Laboratory Testing	All surface water samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and Chain of Custody documentation are included in Appendix C.
Laboratory Testing – Quality Control	Surface water quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples (2 samples). ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples (2 samples). ▪ Rinsate blank samples at 1 per day [collected off re-used sampling equipment (e.g. long-handled sampling device)] (6 samples total). ▪ Trip blank samples of 1 per shipment included in the chilled sample containers upon transport to the laboratory (7 samples total).

3.3 Quality Control / Quality Assurance

A critical aspect of site assessments is the demonstration of the quality of the data used as the basis for the assessment. This is achieved through a Data Validation process which includes a review of the following data quality indicators, as described in the SAQP:

- QA documentation.
- Bias.
- Data Representativeness.
- Data Precision & Accuracy.
- Data Comparability.
- Data Set Completeness.

A detailed review of these aspects has been undertaken, the results of which are presented in Appendix E. A summary of the data validation from the QA/QC review is included in Section 4.4 below.

3.4 Assessment Criteria

3.4.1 Groundwater

The adopted assessment criteria for groundwater are detailed in Table 3-3.

Table 3-3 Criteria for Groundwater

Exposure Scenario	Adopted Assessment Criteria		Guidance
	PFHxS / PFOS	PFOA	
	µg/L		
Human Health - Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Ecological	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2019b).

3.4.2 Surface Water

The adopted assessment criteria for surface water are detailed in Table 3-4

Table 3-4 Criteria for Surface Water

Exposure Scenario	Adopted Assessment Criteria	

	PFHxS / PFOS	PFOA	Guidance
	µg/L		
Human Health - Surface Water Recreational	2[2]	10	HEPA 2020
Human Health - Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Ecological	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2019b).

4 Field Observations and Results

4.1 Conditions Impacting the Sampling Event

In the seven days prior to the sampling event, 29.0 mm of rain was recorded at the nearest weather station (072150), located approximately 1 km south of the site. April 2022 rainfall was 66.8 mm, which is higher than that recorded for April 2021 (0.8 mm) and lower than that recorded for April 2020 (98.4 mm)[1].

No on-site activities with the potential to impact sample collection or the results were noted.

4.2 Groundwater

4.2.1 Summary of Field Observations

4.2.1.1 Water quality parameter field measurements

Stabilised water quality parameter field measurements, water colour and turbidity observations recorded during the groundwater sampling program are presented in field sampling record sheets, included in Appendix D. Water quality parameter field measurements were generally consistent with October 2021. Groundwater varied from clear to brown with low to high turbidity and no notable changes were recorded relative to previous monitoring events.

4.2.1.2 Groundwater Elevation and Migration

Groundwater elevation ranges encountered for the two aquifers during this sampling event are as follows:

- Shallow aquifer – from 162.326 mAHD (MW249) to 189. 961 mAHD (MW311) for the Cowra Formation
- Deep aquifer – from 163.809 mAHD (MW252) to 187.208 mAHD (MW306) for the Lachlan Formation

Groundwater flow for both aquifers was interpreted to be in a north-westerly direction, which is consistent with the flow of Kyeamba Creek and Marshalls Creek and with the previous monitoring event.

Groundwater elevation contours and flow directions are shown in Figures 2 and 3 Appendix A. Gauging records are presented in Appendix D.

4.2.2 Groundwater Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, and are presented in Table B1, Appendix B, and summarised in Table 4-1 below. Of the 36 primary samples that were tested, PFOA was reported above the limit of reporting in 2 samples, and Sum of PFHxS and PFOS in nine samples.

[1] http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_startYear=&p_c=&p_stn_num=072150

Table 4-1 Summary of Groundwater Results Exceeding Adopted Criteria

Analytes	Locations Exceeding Criteria	Lowest Criteria (µg/L)	Max Conc. (µg/L)	No. Analytical Results >LOR	No. Results Above Criteria	Significant Concentration Changes[3]
PFOS	MW200, MW233	0.13[2]	0.28	5	2	-
PFOA	None	0.56[1]	0.25	2	0	-
Sum of PFHxS and PFOS	MW200, MW233, MW240, MW248, MW254, MW300	0.07[1]	0.92	9	6	-

1. Drinking water assessment criteria
2. Ecological assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease

Laboratory results have also been compared to available historical data. All concentrations reported during this event were generally consistent with previous sampling events (i.e. no significant concentration changes).

Table 4-2 below provides a summary of locations where a first-time detection of PFOS, Sum of PFHxS and PFOS or PFOA, or a first-time exceedance of guideline values, were reported. The laboratory reports are provided in Appendix C.

Table 4-2 Summary of Groundwater Results with First-time Detections or Exceedances

Deviation Type	Monitoring Well	Sum of PFHxS + PFOS concentration (µg/L)		PFOA concentration (µg/L)		PFOS concentration (µg/L)	
		May 2022	Previous Maximum	May 2022	Previous Maximum	May 2022	Previous Maximum
First-time exceedance of lowest adopted guideline values	MW300	**0.13[1]**	0.07	<0.01	<0.01	<0.01	<0.01

Note:
Location with first-time detection of PFOS + PFHxS, PFOA or PFOS in latest monitoring round
Location with a first-time exceedance of lowest adopted guideline values in latest monitoring round
Bold: Exceedance of lowest adopted guideline values
1. Result recorded on quality control (duplicate or split) sample

Findings are summarised as follows:

> One groundwater sampling location (MW300) reported a first-time exceedance for Sum of PFHxS and PFOS.

4.2.3 Summary of Monitoring Network Condition and Repairs

The monitoring network was observed to be generally in good condition.

MW240 was found to be blocked by potential plant roots within the screened interval. A decontaminated stainless-steel bailer was used to clear the roots and retrieve the HydraSleeve®.

No other changes to the monitoring network condition were noted.

4.3 Surface Water

4.3.1 Summary of Field Observations

4.3.1.1 Water quality parameter field measurements

Stabilised water quality parameter field measurements, water colour and turbidity observations recorded during the surface water sampling program are presented in field sampling record sheets, included in Appendix D. Field measurements were generally consistent with historical observations. Surface water varied from clear to brown with generally low to medium turbidity. In general, water was clearer and slightly high turbid than the previous monitoring round in October 2021.

4.3.2 Surface Water Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, presented in Table B2, Appendix B, and summarised in Table 4-3 below. Of the 16 primary samples that were tested, PFOS was reported above the limit of reporting in six samples, and Sum of PFHxS and PFOS in six samples.

Table 4-3 Summary of Surface Water Results Exceeding Adopted Criteria

Analytes	Locations Exceeding Criteria	Lowest Criteria (µg/L)	Max Conc. (µg/L)	No. Analytical Results >LOR	No. Results Above Criteria	Significant Concentration Changes[3]
PFOS	SW104, SW206, SW218, SW228, SW289, SW310	0.13[2]	0.86	6	5	SW310 (decrease)
PFOA	-	0.56[1]	0.06	4	-	-
Sum of PFHxS and PFOS	SW104, SW206, SW218, SW228, SW289	0.07[1]	39.5	6	5	SW310 (decrease)

1. Drinking water assessment criteria
2. Ecological assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease

Results have also been compared to available historical data. One location has reported a significant change in concentrations for this monitoring event.

> SW310: Sum of PFHxS and PFOS has decreased by one order of magnitude from a previous result of 1.47 µg/L in October 2021 to 0.04 µg/L in this event.

All other concentrations reported during this event were generally consistent with previous sampling events.

No locations reported a first-time detection of PFOS, Sum of PFHxS and PFOS or PFOA or a new exceedance of guideline values.

4.4 Data Validation

The data validation process has concluded that there are no significant systematic errors in the data collection process. Therefore, the data set used as the basis for the surface water and groundwater assessment is considered valid and complete. A detailed Data Quality Review is included in Appendix E.

4.5 Risk Profile

The risk profile for the site is detailed in the latest Annual Interpretative Report provided by Cardno (Reference: DEF19008, *'PFAS OMP Annual Interpretive Report -, April and October 2021, Sampling Events RAAF Base Wagga'*. Please refer to this for a detailed discussion.

5 Summary and Conclusions

Cardno conducted the April/May 2022 biannual groundwater and surface water monitoring event at RAAF Base Wagga as part of the PFAS OMP. On-site and off-site sampling and testing was undertaken at 36 groundwater monitoring wells and 16 surface water locations.

Groundwater levels were gauged in all wells before sampling. Groundwater was interpreted to flow in a north-westerly direction, consistent with local drainage patterns and consistent with previous monitoring events.

The results of the April/May 2022 monitoring event do not indicate any changes in the risk profile associated with Defence's historical use of AFFF since the previous monitoring event in October 2021.

Table 5-1 Summary of Results

Activity	Details
Deviations from OMP SAQP	> Seven groundwater wells were not sampled due to the wells being dry (MW301, MW303, MW305, MW307, MW309, MW311 and MW313). > One groundwater well was not sampled due electrical fault at the time of sampling (MW211). > Ten groundwater locations were sampled using alternative sampling methods (MW200, MW209, MW210, MW212, MW213, MW214, MW231, MW233, MW235 and MW257). > One groundwater sample was lost – the sample was submitted to ALS Laboratory by Cardno, but it was not listed by ALS in their records (MW250).
Groundwater Analytical Results	> 36 groundwater samples were collected in total. > Six samples reported Sum of PFOS and PFHxS concentrations above the adopted human health criteria (MW200, MW233, MW240, MW248, MW254, MW300) > Two samples reported PFOS concentration above the adopted ecological criteria (MW200, MW233) > One groundwater sampling location reported a first-time exceedance for Sum of PFHxS and PFOS (MW300). > All concentrations reported during this event were generally consistent with previous sampling events.
Surface Water Analytical Results	> 16 surface water samples were collected in total. > No samples reported a first-time detection of PFOS, PFOA or Sum of PFHxS and PFOS. > No samples reported a first-time exceedance of any assessment criteria for PFOS, PFOA or Sum of PFHxS and PFOS. > Five samples reported Sum of PFOS and PFHxS concentrations above the adopted human health criteria (SW104, SW206, SW218, SW228, SW289). > Six samples reported PFOS concentrations above the adopted ecological criteria (SW104, SW206, SW218, SW228, SW289, SW310). > One sample reported an order of magnitude decrease in Sum of PFHxS and PFOS results compared to the previous event (SW310). > All other surface water results were generally consistent with the previous monitoring event.
Next Scheduled Monitoring Event	> The next OMP monitoring event is scheduled for October 2022. > SAQP to be reviewed and updated as required prior to the next monitoring event. > MW300 sampling results from the next OMP monitoring event should be closely evaluated against the risk profile.

6 References

General References

1. ANZECC and ARMCANZ (2000) Australian Water Quality Guidelines for Fresh and Marine Water Quality.
2. Department of Defence (2019a), Contamination Management Manual (DCMM), August 2019.
3. Department of Defence (2019b), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring.
4. Defence (2021) Defence OMP Factual Report Preparation Guidance, Revised May 2021.
5. Environmental Protection Agency (United States EPA; 2002) EPA/240/R-02/004 Guidance on Environmental Data Verification and Data Validation, November 2002.
6. The Heads of EPAs Australia and New Zealand (HEPA; 2020) PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020.
7. National Environment Protection Council (NEPC; 1999) National Environmental Protection (Assessment of Site Contamination) Measure (as amended), registered May 2013.
8. National Health and Medical Research Council (2011 – updated 2018) National Water Quality Management Strategy Australian Drinking Water Guidelines, 6 August 2018.
9. Nation Health and Medical Research Council (NHMR; 2019) Guidance on Per and Poly-fluoroalkyl Substances (PFAS) in Recreational Water, August 2019.
10. Standards Australia/Standards New Zealand (1998) AS5667.1:1998 Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.
11. Standards Australia (1999) AS4482.2-1999 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 – Non-volatile and semi-volatile compounds.
12. US EPA (2000) Guidance for the Data Quality Objectives Process (EPA QA/G-4), United States Environmental Protection Agency.
13. US EPA (2002) Guidance on Environmental Data Verification and Data Validation, Reference: EPA/240/R-02/004, United States Environmental Protection Agency, November 2002.

Site Specific References

14. Jacobs (2018a) *Comprehensive Investigation of Per- And Poly- Fluoroalkyl Substances (PFAS) at RAAF Base Wagga. Detailed Site Investigation*, June 2018.
15. Jacobs (2018b) *Human Health and Ecological Risk Assessment for the RAAF Base Wagga PFAS Investigation*, 6 November 2018.
16. Jacobs (2019a) *RAAF Base Wagga; PFAS Management Area Plan*, September 2019.
17. Jacobs (2019b) *PFAS Ongoing Monitoring Plan*, September 2019.
18. Jacobs (2020) *RAAF Base Wagga Comprehensive PFAS Investigation - Ongoing Monitoring Program Groundwater Well Installation Report.* Prepared for Department of Defence, December 2020.
19. Cardno (2021) *PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP),* RAAF Base Wagga. Prepared for Department of Defence, October 2021.

APPENDIX

A

FIGURES

Cardno

now

Stantec

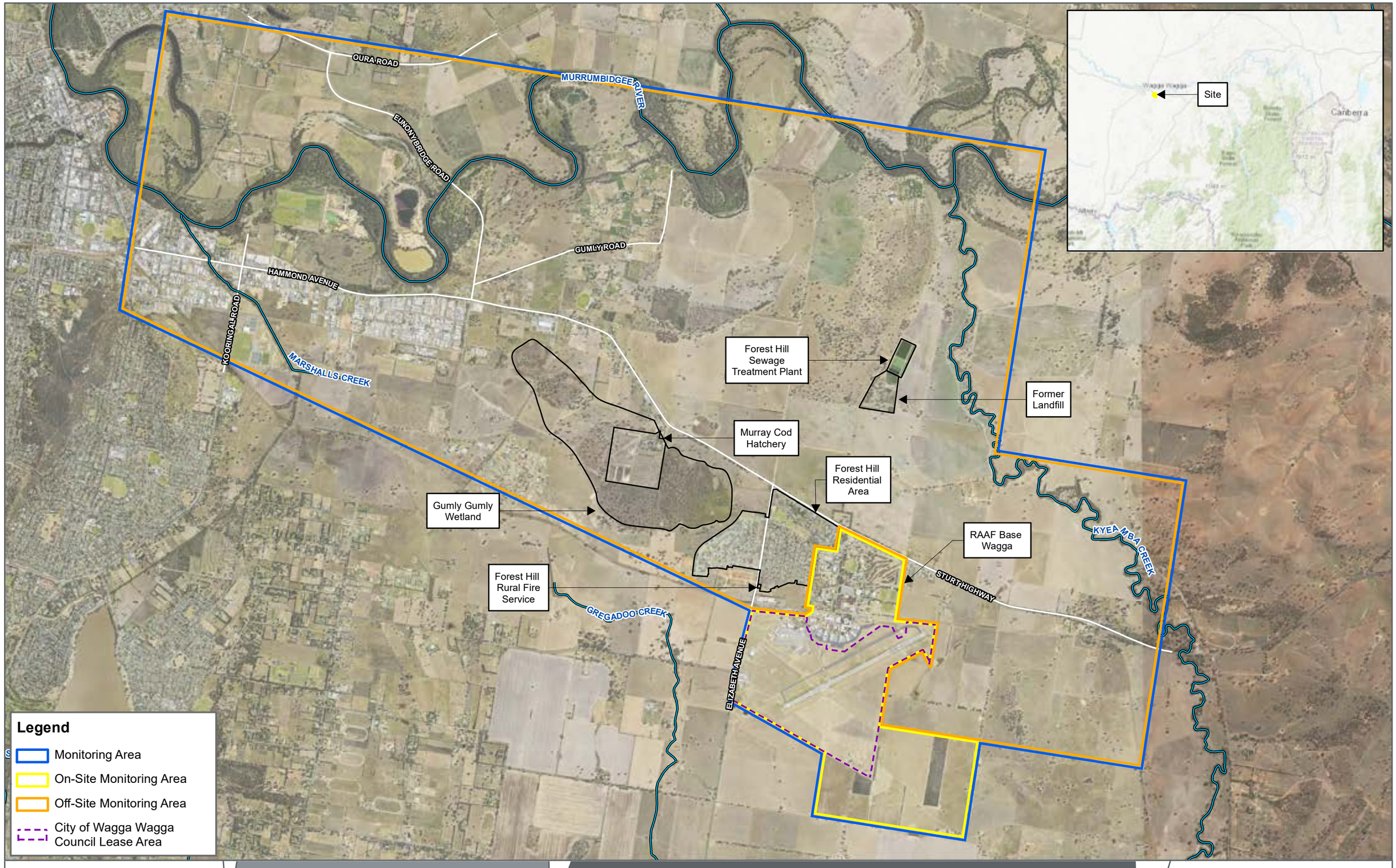

FIGURE 1

1:40,000 Scale at A3

Metres

0 1,000 2,000

Site Locality Plan

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2022-06-07 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-032-SiteLocalityPlan_WW_.mxd 07
Aerial Imagery Supplied by Metromap (February, 2022)

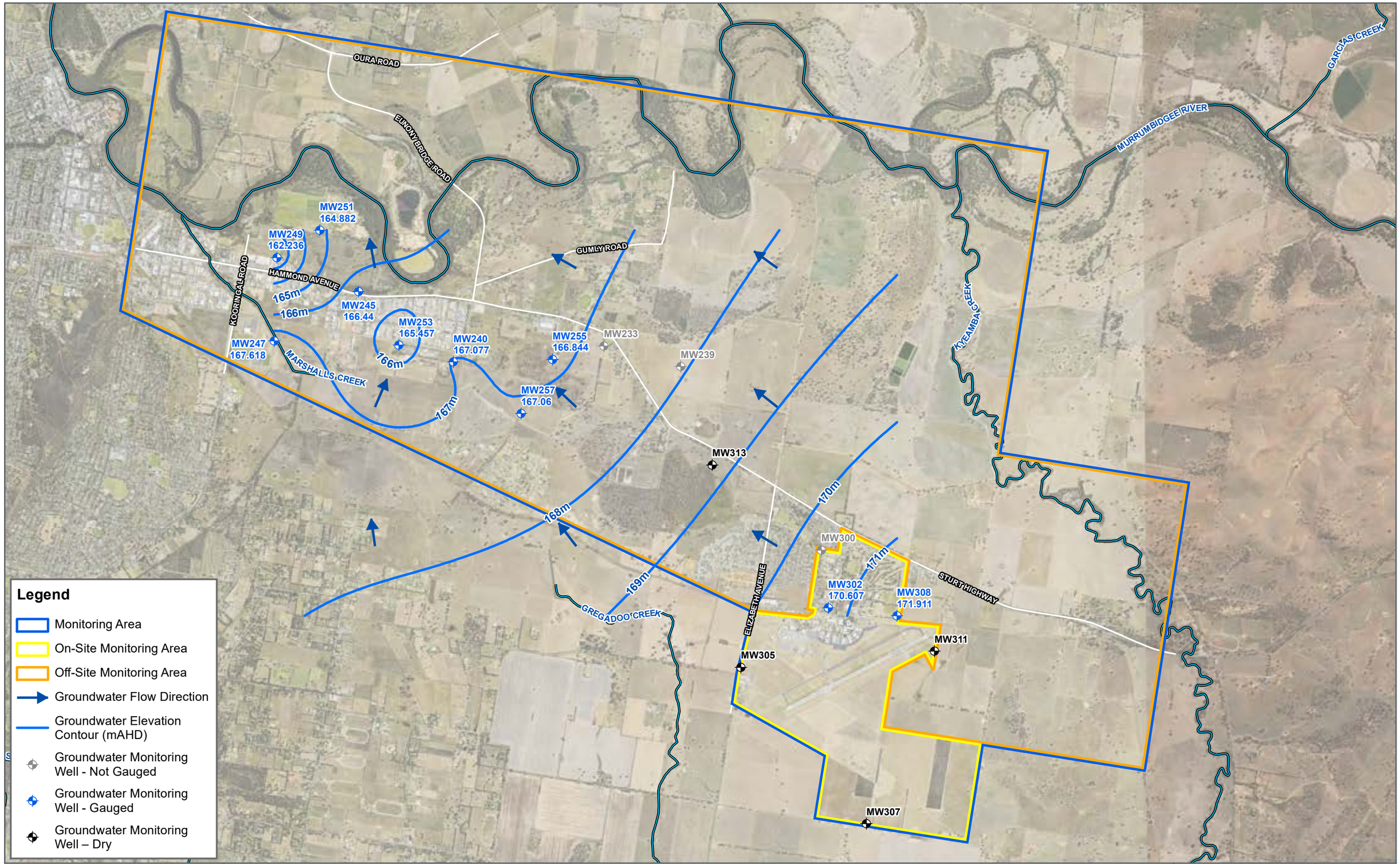

FIGURE 2

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Shallow Aquifer (May, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2022-7 n7-06 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0224-GWContoursSA_CowraE5_WW.mxd 01
Aerial Imagery Supplied by Nearmap (April, 2021)

OURA ROAD
EUNONY/ERIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY
MURRUMBIDGEE RIVER
GARCIAS CREEK
KYEAMBA CREEK

MW213
MW252 163.809
MW211
MW250 164.377
MW212
MW244 166.394
MW254 166.33
MW248 167.711
MW256 166.878
MW210
MW209
MW231
MW238
MW200
MW204 167.769
MW312
MW246 170.263
MW214
MW215
MW301
MW243 171.84
MW303
MW309
MW242 185.77
MW241
MW310
MW304 172.747
MW306 187.208

165m
166m
167m
168m
169m
170m
171m
172m
173m
174m
175m
176m
177m
178m
179m
180m
181m
182m
183m
184m
185m
186m
188m

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Groundwater Flow Direction
- Groundwater Elevation Contour (mAHD)
- Groundwater Monitoring Well - Gauged
- Groundwater Monitoring Well - Not Gauged
- Groundwater Monitoring Well – Dry

FIGURE 3

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Deep Aquifer (May, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2022-07-06 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0225-GWContoursDA_LachlanE5_WW.mxd 02
Aerial Imagery Supplied by Metromap (April, 2021)

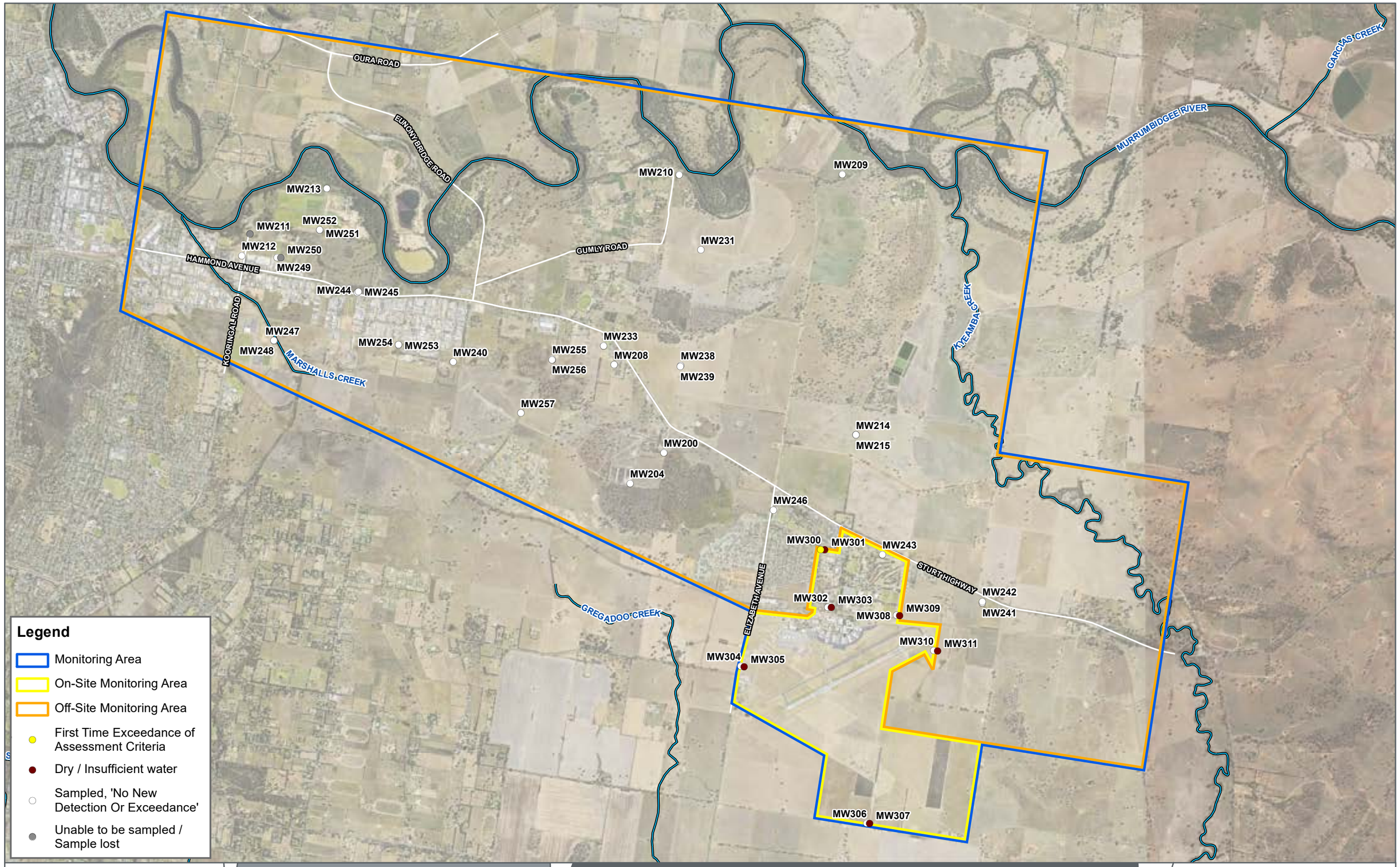

FIGURE 4

1:40,000 Scale at A3

Metres

0 1,000 2,000

PFAS Results Summary - Groundwater (May, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2022-07-06 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0226-GW_PFAS_SummaryE5_WW.mxd 01
Aerial Imagery Supplied by Metromap (November, 2020)

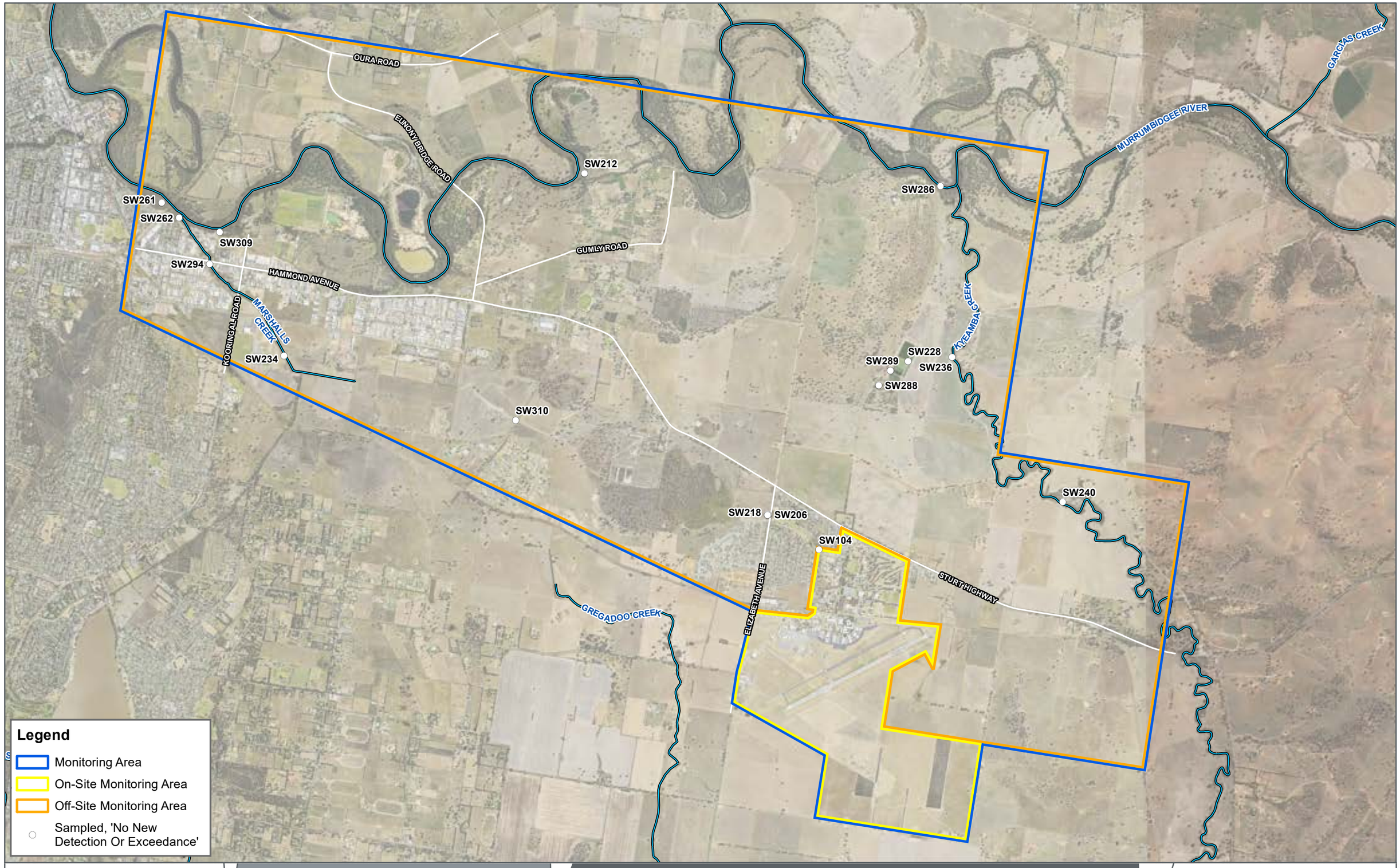

FIGURE 5

1:40,000 Scale at A3

Metres

0 800 1,600

PFAS Results Summary - Surface Water (May, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2022-06-08 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0227-SW_PFAS_SummaryE5_WW.mxd 01
Aerial Imagery Supplied by Nearmap (April, 2021)

APPENDIX

B

DATA ASSESSMENT TABLES

Cardno

now

Stantec

						Perfluorocarbons														
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**												
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220													
Location Code	**Location Type**	**Sampled Date**	**Field ID**	**Sample Type**	**Lab Report Number**															
MW200	Off-base	7/07/2017	0906_GW200_D_07072017	Normal	ES1716876	1.36	0.08	**3.36**	0.34	0.29	2	0.08	<0.02	<0.1	0.1	0.32	0.05	<0.02	<0.02	<0.02
	Off-base	25/03/2020	0906_MW200_20200325	Normal	ES2011455	0.75	0.05	**1.9**	0.18	0.19	1.15	0.04	<0.02	<0.1	0.05	0.26	0.03	<0.02	<0.02	<0.02
	Off-base	30/09/2020	0906_MW200_20200930	Normal	ES2034893	0.6	0.04	**1.56**	0.14	0.18	0.96	0.05	<0.02	<0.1	0.04	0.26	0.03	<0.02	<0.02	<0.02
	Off-base	23/04/2021	0906_MW200_20210423	Normal	ES2116296	0.39	0.04	**1.39**	0.14	0.15	1	<0.02	<0.02	<0.1	0.05	0.24	0.03	<0.02	<0.02	<0.02
	Off-base	21/10/2021	0906_MW200_20211021	Normal	ES2139300	0.31	0.02	**0.86**	0.1	0.1	0.55	0.03	<0.02	<0.1	0.03	0.15	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_MW200_20220503	Normal	EM2208337	0.28	0.03	**0.92**	0.09	0.1	0.64	0.02	<0.02	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02
MW204	Off-base	7/07/2017	0906_GW204_D_07072017	Normal	ES1716876	0.03	<0.01	0.07	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	7/07/2017	0906_QC101_07072017	Field_D	ES1716876	0.04	<0.01	**0.08**	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	7/07/2017	0906_QC201_07072017	Interlab_D	553701	0.02	<0.01	-	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	18/01/2018	0906_MW204_D_180118	Normal	ES1802488	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
	Off-base	18/01/2018	0906_QC101_180118	Field_D	ES1802488	0.02	<0.01	0.04	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	18/01/2018	0906_QC201_180118	Interlab_D	581448	0.01	<0.01	0.04	<0.01	<0.01	0.03	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	20/02/2018	0906_MW204_D_180220	Normal	ES1805693	0.03	<0.01	0.05	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	30/03/2020	0906_MW204_20200330	Normal	ES2011455	<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
	Off-base	1/10/2020	0906_MW204_20201001	Normal	ES2034893	<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
	Off-base	23/04/2021	0906_MW204_20210423	Normal	ES2116296	<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
	Off-base	21/10/2021	0906_MW204_20211021	Normal	ES2139300	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_MW204_20220503	Normal	EM2208337	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW209	Off-base	7/09/2017	0906_GW209_D_170907	Normal	EM1712263	<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
	Off-base	7/09/2017	0906_QC101_170907	Field_D	EM1712263	<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
	Off-base	7/09/2017	0906_QC201_170907	Interlab_D	562566	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	12/01/2018	0906_MW209_D_180112	Normal	ES1801990	<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
	Off-base	31/03/2020	0906_MW209_20200331	Normal	ES2011456	<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
	Off-base	30/09/2020	0906_MW209_20200930	Normal	ES2034898	<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
	Off-base	22/04/2021	0906_MW209_20210422	Normal	ES2116325	<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
	Off-base	21/10/2021	0906_MW209_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_MW209_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW210	Off-base	20/06/2017	0906_0S002_170620	Normal	ES1715329	<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
	Off-base	20/06/2017	0906_QC101_170620	Field_D	ES1715329	<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
	Off-base	20/06/2017	0906_QC201_170620	Interlab_D	551365	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	18/01/2018	0906_MW210_D_180112	Normal	ES1802470	0.03	<0.01	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	21/02/2018	0906_MW210_D_180221	Normal	ES1805664	<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
	Off-base	17/07/2018	0906_MW210_D_180717	Normal	EM1811457	<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
	Off-base	17/07/2018	0906_QC101_180717	Field_D	EM1811457	<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
	Off-base	17/07/2018	0906_QC201_180717	Interlab_D	608455	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	26/03/2020	0906_MW210_20200326	Normal	ES2011461	<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
	Off-base	1/10/2020	0906_MW210_20201001	Normal	ES2034897	<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
	Off-base	23/04/2021	0906_MW210_20210423	Normal	ES2116321	<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
	Off-base	21/10/2021	0906_MW210_20211021	Normal	ES2139302	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_MW210_20220503	Normal	EM2208335	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW211	Off-base	20/06/2017	0906_EWB1_170620	Normal	ES1715334	<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
	Off-base	4/12/2017	0906_EWB1_171204	Normal	ES1731229	<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
	Off-base	27/03/2020	0906_MW211_20200327	Normal	ES2011459	<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
	Off-base	28/09/2020	0906_MW211_20200928	Normal	ES2034885	<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
	Off-base	20/04/2021	0906_MW211_20210420	Normal	ES2116324	<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
	Off-base	20/10/2021	0906_MW211_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW212	Off-base	20/06/2017	0906_EWB2_170620	Normal	ES1715334	<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
	Off-base	4/12/2017	0906_EWB2_171204	Normal	ES1731229	<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
	Off-base	27/03/2020	0906_MW212_20200327	Normal	ES2011459	<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
	Off-base	28/09/2020	0906_MW212_20200928	Normal	ES2034885	<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
	Off-base	20/04/2021	0906_MW212_20210420	Normal	ES2116324	<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
	Off-base	20/10/2021	0906_MW212_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	2/05/2022	0906_MW212_20220502	Normal	EM2208334	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

						Perfluorocarbons														
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**												
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220													
Location Code	**Location Type**	**Sampled Date**	**Field ID**	**Sample Type**	**Lab Report Number**															
MW213	Off-base	20/06/2017	0906_EWB3_170620	Normal	ES1715334	<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
	Off-base	4/12/2017	0906_EWB3_171204	Normal	ES1731229	<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
	Off-base	27/03/2020	0906_MW213_20200327	Normal	ES2011459	<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
	Off-base	27/03/2020	0906_QC101_20200327	Field_D	ES2011459	<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
	Off-base	27/03/2020	0906_QC201_20200327	Interlab_D	712442	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	28/09/2020	0906_MW213_20200928	Normal	ES2034885	<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
	Off-base	28/09/2020	0906_QC101_20200928	Field_D	ES2034862-AA	<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
	Off-base	28/09/2020	0906_QC201_20200928	Interlab_D	749083	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	20/04/2021	0906_MW213_20210420	Normal	ES2116324	<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
	Off-base	20/10/2021	0906_MW213_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	20/10/2021	0906_QC104_20211020	Field_D	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	20/10/2021	0906_QC204_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	2/05/2022	0906_MW213_20220502	Normal	EM2208334	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW214	Off-base	20/06/2017	0906_GW047279_170620	Normal	ES1715334	<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
	Off-base	18/01/2018	0906_MW214_D_180118	Normal	ES1802545	<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
	Off-base	31/03/2020	0906_MW214_20200331	Normal	ES2011568	<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
	Off-base	1/10/2020	0906_MW214_20201001	Normal	ES2034891	<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
	Off-base	27/04/2021	0906_MW214_20210427	Normal	ES2116327	<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
	Off-base	21/10/2021	0906_MW214_20211021	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	4/05/2022	0906_MW214_20220503	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW231	Off-base	12/01/2018	0906_MW231_D_180112	Normal	ES1802473	<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
	Off-base	26/03/2020	0906_MW231_20200326	Normal	ES2011459	<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
	Off-base	26/03/2020	0906_MW231_20200326	Normal	ES2011456	<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
	Off-base	30/09/2020	0906_MW231_20200930	Normal	ES2034898	<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
	Off-base	23/04/2021	0906_MW231_20210423	Normal	ES2116325	<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
	Off-base	22/10/2021	0906_MW231_20211022	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	4/05/2022	0906_MW231_20220504	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW233	Off-base	20/02/2018	0906_MW233_I_180220	Normal	ES1805656	0.08	<0.01	**0.18**	<0.02	<0.02	0.1	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	25/03/2020	0906_MW233_20200325	Normal	ES2011451	0.18	<0.01	**0.37**	<0.02	0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02
	Off-base	30/09/2020	0906_MW233_20200930	Normal	ES2034890	0.25	<0.01	**0.44**	0.02	0.03	0.19	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02
	Off-base	22/04/2021	0906_MW233_20210422	Normal	ES2116319	0.17	<0.01	**0.38**	0.02	0.02	0.21	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02
	Off-base	19/10/2021	0906_MW233_20211019	Normal	ES2139304	0.28	<0.01	**0.52**	0.03	0.04	0.24	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02
	Off-base	2/05/2022	0906_MW233_20220502	Normal	EM2208333	0.2	<0.01	**0.39**	0.02	0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02
MW235	Off-base	11/01/2018	0906_MW235_D_180111	Normal	ES1802460	<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
	Off-base	19/12/2019	0906_MW235_D_191219	Normal	ES1942606-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-
	Off-base	27/03/2020	0906_MW235_20200327	Normal	ES2011450	<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
	Off-base	30/09/2020	0906_MW235_20200930	Normal	ES2034899	<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
	Off-base	20/04/2021	0906_MW235_20210420	Normal	ES2115488	<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
	Off-base	20/10/2021	0906_MW235_20211020	Normal	ES2139305	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	1/05/2022	0906_MW235_20220501	Normal	EM2208341	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW238	Off-base	12/12/2019	0906_MW238_I_191212	Normal	ES1941492-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-
	Off-base	30/03/2020	0906_MW238_20200330	Normal	ES2011456	<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
	Off-base	30/09/2020	0906_MW238_20200930	Normal	ES2034898	<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
	Off-base	23/04/2021	0906_MW238_20210423	Normal	ES2116325	<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
	Off-base	21/10/2021	0906_MW238_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_MW238_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.02
MW239	Off-base	12/12/2019	0906_MW239_S_191212	Normal	ES1941492-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-
	Off-base	30/03/2020	0906_MW239_20200330	Normal	ES2011456	<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
	Off-base	1/10/2020	0906_MW239_20201001	Normal	ES2034898	<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
	Off-base	23/04/2021	0906_MW239_20210423	Normal	ES2116325	<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
	Off-base	21/10/2021	0906_MW239_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_MW239_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW240	Off-base	12/12/2019	0906_MW240_D_191212	Normal	ES1941492-AD	0.05	<0.01	**0.26**	0.04	-	0.21	-	-	<0.1	<0.02	0.06	<0.02	-	-	-
	Off-base	12/12/2019	0906_QC101_191212	Field_D	ES1941492-AD	0.04	<0.01	**0.33**	0.05	-	0.29	-	-	<0.1	<0.02	0.08	<0.02	-	-	-
	Off-base	19/12/2019	0906_MW240_I_191219	Normal	ES1942606-AB	0.02	<0.01	**0.19**	0.03	-	0.17	-	-	<0.1	<0.02	0.04	<0.02	-	-	-
	Off-base	19/12/2019	0906_QC101_191219	Field_D	ES1942606-AB	0.02	<0.01	**0.19**	0.03	-	0.17	-	-	<0.1	<0.02	0.05	<0.02	-	-	-
	Off-base	19/12/2019	0906_QC201_191219	Interlab_D	695221	0.01	<0.01	**0.12**	0.02	0.01	0.11	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01
	Off-base	1/04/2020	0906_MW240_20200330	Normal	ES2011453	0.01	<0.01	**0.11**	<0.02	<0.02	0.1	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02
	Off-base	30/09/2020	0906_MW240_20200930	Normal	ES2034866	0.06	0.02	**0.41**	0.04	0.05	0.35	<0.02	<0.02	<0.1	0.02	0.1	<0.02	<0.02	<0.02	<0.02
	Off-base	20/04/2021	0906_MW240_20210420	Normal	ES2116333	0.04	0.01	**0.27**	0.04	0.03	0.23	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02
	Off-base	19/10/2021	0906_MW240_20211019	Normal	ES2139237	0.04	<0.01	**0.19**	0.02	0.02	0.15	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02
	Off-base	1/05/2022	0906_MW240_20220501	Normal	EM2208150	0.04	<0.01	**0.19**	<0.02	0.02	0.15	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02

					Perfluorocarbons														
					Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water						**0.56**	**0.07**												
PFAS NEMP 2.0 Table 5 Freshwater 95%					0.13	220													
Location Code	**Location Type**	**Sampled Date**	**Field ID**	**Sample Type**	**Lab Report Number**														
MW241	Off-base	18/03/2020	0906_MW241_D_200318	Normal	ES2009949	<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
	Off-base	31/03/2020	0906_MW241_20200331	Normal	ES2011462	<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
	Off-base	1/10/2020	0906_MW241_20201001	Normal	ES2034889	<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
	Off-base	22/04/2021	0906_MW241_20210422	Normal	ES2116320	<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
	Off-base	24/10/2021	0906_MW241_20211024	Normal	ES2139236	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	2/05/2022	0906_MW241_20220502	Normal	EM2208340	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW242	Off-base	12/03/2020	0906_MW242_I_200312	Normal	ES2008845	<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
	Off-base	31/03/2020	0906_MW242_20200331	Normal	ES2011462	<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
	Off-base	1/10/2020	0906_MW242_20201001	Normal	ES2034889	<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
	Off-base	22/04/2021	0906_MW242_20210422	Normal	ES2116320	<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
	Off-base	22/10/2021	0906_MW242_20211022	Normal	ES2139236	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	2/05/2022	0906_MW242_20220502	Normal	EM2208340	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW243	On-base	10/03/2020	0906_MW243_I_200310	Normal	ES2008845	<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
	On-base	10/03/2020	0906_QC201_200310	Interlab_D	707955	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	On-base	30/03/2020	0906_MW243_20200330	Normal	ES2011457	<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
	On-base	1/10/2020	0906_MW243_20201001	Normal	ES2034862-AB	<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
	On-base	23/04/2021	0906_MW243_20210423	Normal	ES2116327	<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
	On-base	23/04/2021	0906_QC106_20210423	Field_D	ES2116327	<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
	On-base	23/04/2021	0906_QC206_20210423	Interlab_D	792771	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	On-base	20/10/2021	0906_MW243_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	2/05/2022	0906_MW243_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW244	Off-base	13/03/2020	0906_MW244_I_200313	Normal	ES2009442	<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
	Off-base	1/04/2020	0906_MW244_20200401	Normal	ES2011562	<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
	Off-base	1/10/2020	0906_MW244_20201001	Normal	ES2034866	<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
	Off-base	20/04/2021	0906_MW244_20210420	Normal	ES2116333	<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
	Off-base	19/10/2021	0906_MW244_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_MW244_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW245	Off-base	13/03/2020	0906_MW245_S_200313	Normal	ES2009442	<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
	Off-base	1/04/2020	0906_MW245_20200401	Normal	ES2011562	<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
	Off-base	1/10/2020	0906_MW245_20201001	Normal	ES2034866	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	20/04/2021	0906_MW245_20210420	Normal	ES2116333	<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
	Off-base	19/10/2021	0906_MW245_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	30/04/2022	0906_MW245_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW246	Off-base	22/06/2020	0906_MW246_I_200622	Normal	ES2021594	<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
	Off-base	30/07/2020	0906_QC202_200730	Normal	735782	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	30/07/2020	0906_MW246_I_200730	Normal	ES2026752	<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
	Off-base	20/04/2021	0906_MW246_20210420	Normal	ES2116333	<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
	Off-base	20/10/2021	0906_MW246_20211020	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	1/05/2022	0906_MW246_20220501	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW247	Off-base	30/07/2020	0906_MW247_I_200730	Normal	ES2026752	<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
	Off-base	27/04/2021	0906_MW247_20210427	Normal	ES2116333	<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
	Off-base	21/10/2021	0906_MW247_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	2/05/2022	0906_MW247_20220502	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW248	Off-base	30/07/2020	0906_MW248_S_200730	Normal	ES2026752	0.09	0.01	**0.15**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.04	0.04	0.02	0.02	<0.02	<0.02
	Off-base	27/04/2021	0906_MW248_20210427	Normal	ES2116333	0.07	<0.01	**0.12**	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	20/10/2021	0906_MW248_20211020	Normal	ES2139237	0.08	0.01	**0.14**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.03	0.03	<0.02	0.03	<0.02	<0.02
	Off-base	2/05/2022	0906_MW248_20220502	Normal	EM2208150	0.06	<0.01	**0.1**	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW249	Off-base	30/07/2020	0906_MW249_I_200730	Normal	ES2026752	<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
	Off-base	28/04/2021	0906_MW249_20210428	Normal	ES2116333	<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
	Off-base	21/10/2021	0906_MW249_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	30/04/2022	0906_MW249_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW250	Off-base	30/07/2020	0906_MW250_S_200730	Normal	ES2026752	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.03	0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	2/09/2020	0906_MW250_S_200902	Normal	ES2031377	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.02	0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	2/09/2020	0906_QC202_200902	Interlab_D	742937	0.06	<0.01	**0.1**	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01
	Off-base	28/04/2021	0906_MW250_20210428	Normal	ES2116333	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.03	0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	28/04/2021	0906_QC107_20210428	Field_D	ES2116333	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.03	0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	28/04/2021	0906_QC207_20210428	Interlab_D	792804	<0.01	<0.01	0.02	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01
	Off-base	19/10/2021	0906_MW250_20211019	Normal	ES2139237	<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
MW251	Off-base	30/07/2020	0906_QC201_200730	Normal	735782	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	30/07/2020	0906_MW251_S_200730	Normal	ES2026752	<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
	Off-base	22/04/2021	0906_MW251_20210422	Normal	ES2118542	<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
	Off-base	21/10/2021	0906_MW251_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	30/04/2022	0906_MW251_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW252	Off-base	30/07/2020	0906_MW252_I_200730	Normal	ES2026752	<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
	Off-base	22/04/2021	0906_MW252_20210422	Normal	ES2118542	<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
	Off-base	19/10/2021	0906_MW252_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	30/04/2022	0906_MW252_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

						Perfluorocarbons														
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**												
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220													
Location Code	**Location Type**	**Sampled Date**	**Field ID**	**Sample Type**	**Lab Report Number**															
MW253	Off-base	30/07/2020	0906_MW253_I_200730	Normal	ES2026752	0.01	<0.01	0.03	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	20/04/2021	0906_MW253_20210420	Normal	ES2116333	<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	19/10/2021	0906_MW253_20211019	Normal	ES2139237	0.02	<0.01	0.05	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	19/10/2021	0906_QC102_20211019	Field_D	ES2139231	0.01	<0.01	0.03	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	19/10/2021	0906_QC202_20211019	Interlab_D	837704	0.02	<0.01	0.06	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	30/04/2022	0906_MW253_20220430	Normal	EM2208150	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW254	Off-base	30/07/2020	0906_MW254_S_200730	Normal	ES2026752	<0.01	0.14	**0.15**	0.02	0.03	0.15	<0.02	<0.02	<0.1	0.04	0.07	0.06	<0.02	<0.02	<0.02
	Off-base	20/04/2021	0906_MW254_20210420	Normal	ES2116333	<0.01	0.14	**0.19**	0.04	0.03	0.19	<0.02	<0.02	<0.1	0.03	0.06	0.05	<0.02	<0.02	<0.02
	Off-base	19/10/2021	0906_MW254_20211019	Normal	ES2139237	<0.01	0.08	**0.13**	0.02	0.02	0.13	<0.02	<0.02	<0.1	0.02	0.04	0.04	<0.02	<0.02	<0.02
	Off-base	19/10/2021	0906_QC101_20211019	Field_D	ES2139231	<0.01	0.12	**0.14**	0.02	0.02	0.14	<0.02	<0.02	<0.1	0.03	0.05	0.05	<0.02	<0.02	<0.02
	Off-base	19/10/2021	0906_QC201_20211019	Interlab_D	837704	<0.01	0.13	**0.14**	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.03	0.05	0.05	<0.01	<0.01	<0.01
	Off-base	30/04/2022	0906_MW254_20220430	Normal	EM2208150	0.13	0.25	**0.33**	0.03	0.03	0.2	<0.02	<0.02	<0.1	0.08	0.09	0.08	<0.02	<0.02	<0.02
MW255	Off-base	30/07/2020	0906_MW255_I_200730	Normal	ES2026752	<0.01	0.02	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	22/04/2021	0906_MW255_20210422	Normal	ES2116333	0.04	<0.01	**0.14**	0.02	<0.02	0.1	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	2/07/2021	0906_MW255_02072021	Normal	ES2124834	0.04	<0.01	**0.12**	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	2/07/2021	0906_QC101_02072021	Field_D	ES2124834	0.03	<0.01	**0.11**	<0.02	-	0.08	-	-	<0.1	<0.02	0.02	<0.02	-	-	-
	Off-base	2/07/2021	0906_QC201_210702	Interlab_D	808916	0.04	<0.01	**0.13**	-	-	0.09	-	-	-	-	-	-	-	-	-
	Off-base	19/10/2021	0906_MW255_20211019	Normal	ES2139237	0.01	<0.01	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	30/04/2022	0906_MW255_20220430	Normal	EM2208150	<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
MW256	Off-base	10/09/2020	0906_MW256_S_200910	Normal	ES2032277	0.04	<0.01	**0.32**	0.05	0.05	0.28	<0.02	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02
	Off-base	10/09/2020	0906_QC101_200910	Field_D	ES2032277	0.02	<0.01	**0.32**	0.06	-	0.3	-	-	<0.1	<0.02	0.1	<0.02	-	-	-
	Off-base	10/09/2020	0906_QC201_200910	Interlab_D	744316	<0.01	<0.01	**0.21**	-	-	0.21	-	-	-	-	-	-	-	-	-
	Off-base	22/04/2021	0906_MW256_20210422	Normal	ES2116333	0.07	<0.01	**0.3**	0.07	0.04	0.23	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02
	Off-base	19/10/2021	0906_MW256_20211019	Normal	ES2139237	0.01	<0.01	**0.1**	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	2/05/2022	0906_MW256_20220502	Normal	EM2208150	<0.01	<0.01	0.06	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW257	Off-base	10/09/2020	0906_MW257_S_200910	Normal	ES2032277	<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
	Off-base	2/05/2022	0906_MW257_20220502	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW300	On-base	12/01/2018	0906_MW300_D_180112	Normal	ES1802545	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	13/04/2018	0906_MW300_D_180413	Normal	EM1806331	<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
	On-base	30/03/2020	0906_MW300_20200330	Normal	ES2011457	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	29/09/2020	0906_MW300_20200929	Normal	ES2034862-AB	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	22/04/2021	0906_MW300_20210422	Normal	ES2116327	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	22/04/2021	0906_QC105_20210422	Field_D	ES2116327	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	22/04/2021	0906_QC205_20210422	Interlab_D	792803	<0.01	<0.01	0.02	0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
	On-base	20/10/2021	0906_MW300_20211020	Normal	ES2139228	<0.01	<0.01	0.05	0.04	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02
	On-base	20/10/2021	0906_QC106_20211020	Field_D	ES2139231	<0.01	<0.01	0.05	0.04	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02
	On-base	20/10/2021	0906_QC206_20211020	Interlab_D	837704	<0.01	<0.01	0.07	0.04	0.02	0.07	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01
	On-base	1/05/2022	0906_MW300_20220501	Normal	EM2208338	<0.01	<0.01	**0.1**	0.05	0.03	0.1	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02
	On-base	1/05/2022	0906_QC102_20220501	Field_D	EM2208338	<0.01	<0.01	**0.1**	0.06	0.03	0.1	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02
	On-base	1/05/2022	0906_QC202_20220501	Interlab_D	889634	<0.01	<0.01	**0.13**	0.08	0.03	0.13	<0.01	<0.01	<0.05	0.02	0.06	<0.01	<0.01	<0.01	<0.01
MW302	On-base	12/01/2018	0906_MW302_D_180112	Normal	ES1802545	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
	On-base	11/04/2018	0906_MW302_D_180411	Normal	EM1806331	<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
	On-base	30/03/2020	0906_MW302_20200330	Normal	ES2011457	<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
	On-base	29/09/2020	0906_MW302_20200929	Normal	ES2034862-AB	<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
	On-base	29/09/2020	0906_QC102_20200929	Field_D	ES2034862-AB	<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
	On-base	29/09/2020	0906_QC202_20200929	Interlab_D	749220	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	On-base	21/04/2021	0906_MW302_20210421	Normal	ES2116327	<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
	On-base	21/04/2021	0906_QC103_20210421	Field_D	ES2116327	<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
	On-base	21/04/2021	0906_QC203_20210421	Interlab_D	792803	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	On-base	20/10/2021	0906_MW302_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	20/10/2021	0906_QC107_20211020	Field_D	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	20/10/2021	0906_QC207_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	On-base	1/05/2022	0906_MW302_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	1/05/2022	0906_QC105_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	1/05/2022	0906_QC205_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW304	On-base	16/01/2018	0906_MW304_D_180116	Normal	ES1802545	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
	On-base	13/04/2018	0906_MW304_D_180413	Normal	EM1806331	<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
	On-base	31/03/2020	0906_MW304_20200331	Normal	ES2011457	<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
	On-base	29/09/2020	0906_MW304_20200929	Normal	ES2034862-AB	<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
	On-base	28/04/2021	0906_MW304_20210428	Normal	ES2116327	<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
	On-base	20/10/2021	0906_MW304_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	1/05/2022	0906_MW304_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	1/05/2022	0906_QC104_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	1/05/2022	0906_QC204_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

					Perfluorocarbons														
					Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water						**0.56**	**0.07**												
PFAS NEMP 2.0 Table 5 Freshwater 95%					0.13	220													
Location Code	**Location Type**	**Sampled Date**	**Field ID**	**Sample Type**	**Lab Report Number**														
MW306	On-base	16/01/2018	0906_MW306_D_180116	Normal	ES1802545	<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
	On-base	12/04/2018	0906_MW306_D_180412	Normal	EM1806331	<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
	On-base	30/03/2020	0906_MW306_20200330	Normal	ES2011457	<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
	On-base	29/09/2020	0906_MW306_20200929	Normal	ES2034862-AB	<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
	On-base	22/04/2021	0906_MW306_20210422	Normal	ES2116327	<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
	On-base	22/10/2021	0906_MW306_20211022	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	2/05/2022	0906_MW306_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW308	On-base	15/01/2018	0906_MW308_D_180115	Normal	ES1802545	<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
	On-base	15/01/2018	0906_QC103_180115	Field_D	ES1802545	<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
	On-base	15/01/2018	0906_QC203_180115	Interlab_D	581313	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	On-base	11/04/2018	0906_MW308_D_180411	Normal	EM1806331	<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
	On-base	30/03/2020	0906_MW308_20200330	Normal	ES2011457	<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
	On-base	29/09/2020	0906_MW308_20200929	Normal	ES2034862-AB	<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
	On-base	21/04/2021	0906_MW308_20210421	Normal	ES2116327	<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
	On-base	22/04/2021	0906_MW308_20210422	Normal	ES2116327	<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
	On-base	21/10/2021	0906_MW308_20211021	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	1/05/2022	0906_MW308_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	1/05/2022	0906_QC103_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	1/05/2022	0906_QC203_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW310	On-base	16/01/2018	0906_MW310_D_180116	Normal	ES1802545	<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
	On-base	12/04/2018	0906_MW310_D_180412	Normal	EM1806331	<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
	On-base	31/03/2020	0906_MW310_20200331	Normal	ES2011457	<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
	On-base	30/09/2020	0906_MW310_20200930	Normal	ES2034862-AB	<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
	On-base	22/04/2021	0906_MW310_20210422	Normal	ES2116327	<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
	On-base	22/10/2021	0906_MW310_20211022	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	2/05/2022	0906_MW310_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW312	Off-base	16/01/2018	0906_MW312_D_180115	Normal	ES1802566	0.02	<0.01	**0.1**	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	13/04/2018	0906_MW312_D_180413	Normal	EM1806331	0.02	<0.01	**0.08**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	1/04/2020	0906_MW312_200401	Normal	ES2011454	0.01	<0.01	0.07	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	1/10/2020	0906_MW312_20201001	Normal	ES2034888	0.01	<0.01	0.06	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	21/10/2021	0906_MW312_20211021	Normal	ES2139399	0.01	<0.01	0.03	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_MW312_20220503	Normal	EM2208339	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

							Perfluorocarbons												
							Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
							µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR							0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water																						
PFAS NEMP 2.0 Table 5 Freshwater 95%																						
Location Code	**Location Type**	**Sampled Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
MW200	Off-base	7/07/2017	0906_GW200_D_07072017	Normal	ES1716876		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.62	-
	Off-base	25/03/2020	0906_MW200_20200325	Normal	ES2011455		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.7	-
	Off-base	30/09/2020	0906_MW200_20200930	Normal	ES2034893		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.3	-
	Off-base	23/04/2021	0906_MW200_20210423	Normal	ES2116296		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.04	-
	Off-base	21/10/2021	0906_MW200_20211021	Normal	ES2139300		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.29	-
	Off-base	3/05/2022	0906_MW200_20220503	Normal	EM2208337		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.33	-
MW204	Off-base	7/07/2017	0906_GW204_D_07072017	Normal	ES1716876		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
	Off-base	7/07/2017	0906_QC101_07072017	Field_D	ES1716876		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
	Off-base	7/07/2017	0906_QC201_07072017	Interlab_D	553701		<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-
	Off-base	18/01/2018	0906_MW204_D_180118	Normal	ES1802488		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
	Off-base	18/01/2018	0906_QC101_180118	Field_D	ES1802488		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base	18/01/2018	0906_QC201_180118	Interlab_D	581448		<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	Off-base	20/02/2018	0906_MW204_D_180220	Normal	ES1805693		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	30/03/2020	0906_MW204_20200330	Normal	ES2011455		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW204_20201001	Normal	ES2034893		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW204_20210423	Normal	ES2116296		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW204_20211021	Normal	ES2139300		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW204_20220503	Normal	EM2208337		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW209	Off-base	7/09/2017	0906_GW209_D_170907	Normal	EM1712263		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	7/09/2017	0906_QC101_170907	Field_D	EM1712263		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	7/09/2017	0906_QC201_170907	Interlab_D	562566		<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	Off-base	12/01/2018	0906_MW209_D_180112	Normal	ES1801990		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	31/03/2020	0906_MW209_20200331	Normal	ES2011456		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_MW209_20200930	Normal	ES2034898		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW209_20210422	Normal	ES2116325		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW209_20211021	Normal	ES2139301		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW209_20220503	Normal	EM2208336		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW210	Off-base	20/06/2017	0906_0S002_170620	Normal	ES1715329		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/06/2017	0906_QC101_170620	Field_D	ES1715329		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/06/2017	0906_QC201_170620	Interlab_D	551365		<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-
	Off-base	18/01/2018	0906_MW210_D_180112	Normal	ES1802470		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	21/02/2018	0906_MW210_D_180221	Normal	ES1805664		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	17/07/2018	0906_MW210_D_180717	Normal	EM1811457		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	17/07/2018	0906_QC101_180717	Field_D	EM1811457		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	17/07/2018	0906_QC201_180717	Interlab_D	608455		<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	26/03/2020	0906_MW210_20200326	Normal	ES2011461		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW210_20201001	Normal	ES2034897		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW210_20210423	Normal	ES2116321		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW210_20211021	Normal	ES2139302		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW210_20220503	Normal	EM2208335		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW211	Off-base	20/06/2017	0906_EWB1_170620	Normal	ES1715334		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/12/2017	0906_EWB1_171204	Normal	ES1731229		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_MW211_20200327	Normal	ES2011459		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_MW211_20200928	Normal	ES2034885		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW211_20210420	Normal	ES2116324		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW211_20211020	Normal	ES2139303		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW212	Off-base	20/06/2017	0906_EWB2_170620	Normal	ES1715334		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/12/2017	0906_EWB2_171204	Normal	ES1731229		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_MW212_20200327	Normal	ES2011459		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_MW212_20200928	Normal	ES2034885		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW212_20210420	Normal	ES2116324		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW212_20211020	Normal	ES2139303		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW212_20220502	Normal	EM2208334		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

								Perfluorocarbons												
								Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
								µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR								0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water																							
PFAS NEMP 2.0 Table 5 Freshwater 95%																							
Location Code	**Location Type**	**Sampled Date**	**Field ID**	**Sample Type**	**Lab Report Number**																		
MW213	Off-base	20/06/2017	0906_EWB3_170620	Normal	ES1715334	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/12/2017	0906_EWB3_171204	Normal	ES1731229	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_MW213_20200327	Normal	ES2011459	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_QC101_20200327	Field_D	ES2011459	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_QC201_20200327	Interlab_D	712442	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	28/09/2020	0906_MW213_20200928	Normal	ES2034885	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_QC101_20200928	Field_D	ES2034862-AA	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_QC201_20200928	Interlab_D	749083	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	20/04/2021	0906_MW213_20210420	Normal	ES2116324	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW213_20211020	Normal	ES2139303	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_QC104_20211020	Field_D	ES2139231	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_QC204_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	2/05/2022	0906_MW213_20220502	Normal	EM2208334	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW214	Off-base	20/06/2017	0906_GW047279_170620	Normal	ES1715334	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	18/01/2018	0906_MW214_D_180118	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	31/03/2020	0906_MW214_20200331	Normal	ES2011568	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW214_20201001	Normal	ES2034891	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/04/2021	0906_MW214_20210427	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW214_20211021	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/05/2022	0906_MW214_20220503	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW231	Off-base	12/01/2018	0906_MW231_D_180112	Normal	ES1802473	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	26/03/2020	0906_MW231_20200326	Normal	ES2011459	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	26/03/2020	0906_MW231_20200326	Normal	ES2011456	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_MW231_20200930	Normal	ES2034898	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW231_20210423	Normal	ES2116325	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906_MW231_20211022	Normal	ES2139301	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/05/2022	0906_MW231_20220504	Normal	EM2208336	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW233	Off-base	20/02/2018	0906_MW233_I_180220	Normal	ES1805656	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.2	-
	Off-base	25/03/2020	0906_MW233_20200325	Normal	ES2011451	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-
	Off-base	30/09/2020	0906_MW233_20200930	Normal	ES2034890	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	-
	Off-base	22/04/2021	0906_MW233_20210422	Normal	ES2116319	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-
	Off-base	19/10/2021	0906_MW233_20211019	Normal	ES2139304	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-
	Off-base	2/05/2022	0906_MW233_20220502	Normal	EM2208333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-
MW235	Off-base	11/01/2018	0906_MW235_D_180111	Normal	ES1802460	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/12/2019	0906_MW235_D_191219	Normal	ES1942606-AC	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	27/03/2020	0906_MW235_20200327	Normal	ES2011450	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_MW235_20200930	Normal	ES2034899	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW235_20210420	Normal	ES2115488	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW235_20211020	Normal	ES2139305	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/05/2022	0906_MW235_20220501	Normal	EM2208341	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW238	Off-base	12/12/2019	0906_MW238_I_191212	Normal	ES1941492-AC	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	30/03/2020	0906_MW238_20200330	Normal	ES2011456	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_MW238_20200930	Normal	ES2034898	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW238_20210423	Normal	ES2116325	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW238_20211021	Normal	ES2139301	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW238_20220503	Normal	EM2208336	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
MW239	Off-base	12/12/2019	0906_MW239_S_191212	Normal	ES1941492-AC	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	30/03/2020	0906_MW239_20200330	Normal	ES2011456	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW239_20201001	Normal	ES2034898	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW239_20210423	Normal	ES2116325	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW239_20211021	Normal	ES2139301	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW239_20220503	Normal	EM2208336	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW240	Off-base	12/12/2019	0906_MW240_D_191212	Normal	ES1941492-AD	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	12/12/2019	0906_QC101_191212	Field_D	ES1941492-AD	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	19/12/2019	0906_MW240_I_191219	Normal	ES1942606-AB	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	19/12/2019	0906_QC101_191219	Field_D	ES1942606-AB	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	19/12/2019	0906_QC201_191219	Interlab_D	695221	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.19	0.00012
	Off-base	1/04/2020	0906_MW240_20200330	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-
	Off-base	30/09/2020	0906_MW240_20200930	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-
	Off-base	20/04/2021	0906_MW240_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.42	-
	Off-base	19/10/2021	0906_MW240_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	-
	Off-base	1/05/2022	0906_MW240_20220501	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25	-

								Perfluorocarbons											
								Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
								µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR								0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water																			
PFAS NEMP 2.0 Table 5 Freshwater 95%																			
Location Code	**Location Type**	**Sampled Date**	**Field ID**	**Sample Type**	**Lab Report Number**														
MW241	Off-base	18/03/2020	0906_MW241_D_200318	Normal	ES2009949	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	31/03/2020	0906_MW241_20200331	Normal	ES2011462	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.15	<0.05	<0.05	0.15	-
	Off-base	1/10/2020	0906_MW241_20201001	Normal	ES2034889	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW241_20210422	Normal	ES2116320	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.12	<0.05	<0.05	0.12	-
	Off-base	24/10/2021	0906_MW241_20211024	Normal	ES2139236	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW241_20220502	Normal	EM2208340	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW242	Off-base	12/03/2020	0906_MW242_I_200312	Normal	ES2008845	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	31/03/2020	0906_MW242_20200331	Normal	ES2011462	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW242_20201001	Normal	ES2034889	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW242_20210422	Normal	ES2116320	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906_MW242_20211022	Normal	ES2139236	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW242_20220502	Normal	EM2208340	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW243	On-base	10/03/2020	0906_MW243_I_200310	Normal	ES2008845	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	10/03/2020	0906_QC201_200310	Interlab_D	707955	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	30/03/2020	0906_MW243_20200330	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/10/2020	0906_MW243_20201001	Normal	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	23/04/2021	0906_MW243_20210423	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	23/04/2021	0906_QC106_20210423	Field_D	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	23/04/2021	0906_QC206_20210423	Interlab_D	792771	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	20/10/2021	0906_MW243_20211020	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	2/05/2022	0906_MW243_20220502	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW244	Off-base	13/03/2020	0906_MW244_I_200313	Normal	ES2009442	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/04/2020	0906_MW244_20200401	Normal	ES2011562	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW244_20201001	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW244_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906_MW244_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW244_20220503	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW245	Off-base	13/03/2020	0906_MW245_S_200313	Normal	ES2009442	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
	Off-base	1/04/2020	0906_MW245_20200401	Normal	ES2011562	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
	Off-base	1/10/2020	0906_MW245_20201001	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	20/04/2021	0906_MW245_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
	Off-base	19/10/2021	0906_MW245_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/04/2022	0906_MW245_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW246	Off-base	22/06/2020	0906_MW246_I_200622	Normal	ES2021594	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/07/2020	0906_QC202_200730	Normal	735782	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	30/07/2020	0906_MW246_I_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW246_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW246_20211020	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/05/2022	0906_MW246_20220501	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW247	Off-base	30/07/2020	0906_MW247_I_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/04/2021	0906_MW247_20210427	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW247_20211021	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW247_20220502	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW248	Off-base	30/07/2020	0906_MW248_S_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	-
	Off-base	27/04/2021	0906_MW248_20210427	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-
	Off-base	20/10/2021	0906_MW248_20211020	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.24	-
	Off-base	2/05/2022	0906_MW248_20220502	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-
MW249	Off-base	30/07/2020	0906_MW249_I_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/04/2021	0906_MW249_20210428	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW249_20211021	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/04/2022	0906_MW249_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW250	Off-base	30/07/2020	0906_MW250_S_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
	Off-base	2/09/2020	0906_MW250_S_200902	Normal	ES2031377	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
	Off-base	2/09/2020	0906_QC202_200902	Interlab_D	742937	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.14	0.0001
	Off-base	28/04/2021	0906_MW250_20210428	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
	Off-base	28/04/2021	0906_QC107_20210428	Field_D	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
	Off-base	28/04/2021	0906_QC207_20210428	Interlab_D	792804	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00002
	Off-base	19/10/2021	0906_MW250_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
MW251	Off-base	30/07/2020	0906_QC201_200730	Normal	735782	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	30/07/2020	0906_MW251_S_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW251_20210422	Normal	ES2118542	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW251_20211021	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/04/2022	0906_MW251_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW252	Off-base	30/07/2020	0906_MW252_I_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW252_20210422	Normal	ES2118542	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906_MW252_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/04/2022	0906_MW252_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

						Perfluorocarbons																
						Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water																					
PFAS NEMP 2.0 Table 5 Freshwater 95%																					
Location Code	**Location Type**	**Sampled Date**	**Field ID**	**Sample Type**	**Lab Report Number**																
MW253	Off-base	30/07/2020	0906_MW253_I_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	20/04/2021	0906_MW253_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base	19/10/2021	0906_MW253_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	19/10/2021	0906_QC102_20211019	Field_D	ES2139231	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	19/10/2021	0906_QC202_20211019	Interlab_D	837704	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00006
	Off-base	30/04/2022	0906_MW253_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
MW254	Off-base	30/07/2020	0906_MW254_S_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-
	Off-base	20/04/2021	0906_MW254_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	-
	Off-base	19/10/2021	0906_MW254_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.43	-
	Off-base	19/10/2021	0906_QC101_20211019	Field_D	ES2139231	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-
	Off-base	19/10/2021	0906_QC201_20211019	Interlab_D	837704	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.44	0.00027
	Off-base	30/04/2022	0906_MW254_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.89	-
MW255	Off-base	30/07/2020	0906_MW255_I_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
	Off-base	22/04/2021	0906_MW255_20210422	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.16	-
	Off-base	2/07/2021	0906_MW255_02072021	Normal	ES2124834	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-
	Off-base	2/07/2021	0906_QC101_02072021	Field_D	ES2124834	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	2/07/2021	0906_QC201_210702	Interlab_D	808916	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	0.00013
	Off-base	19/10/2021	0906_MW255_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	30/04/2022	0906_MW255_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
MW256	Off-base	10/09/2020	0906_MW256_S_200910	Normal	ES2032277	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-
	Off-base	10/09/2020	0906_QC101_200910	Field_D	ES2032277	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	10/09/2020	0906_QC201_200910	Interlab_D	744316	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	0.00021
	Off-base	22/04/2021	0906_MW256_20210422	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.46	-
	Off-base	19/10/2021	0906_MW256_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-
	Off-base	2/05/2022	0906_MW256_20220502	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
MW257	Off-base	10/09/2020	0906_MW257_S_200910	Normal	ES2032277	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW257_20220502	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW300	On-base	12/01/2018	0906_MW300_D_180112	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base	13/04/2018	0906_MW300_D_180413	Normal	EM1806331	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/03/2020	0906_MW300_20200330	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base	29/09/2020	0906_MW300_20200929	Normal	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base	22/04/2021	0906_MW300_20210422	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base	22/04/2021	0906_QC105_20210422	Field_D	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base	22/04/2021	0906_QC205_20210422	Interlab_D	792803	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00002
	On-base	20/10/2021	0906_MW300_20211020	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.18	-
	On-base	20/10/2021	0906_QC106_20211020	Field_D	ES2139231	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-
	On-base	20/10/2021	0906_QC206_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.17	0.00007
	On-base	1/05/2022	0906_MW300_20220501	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.22	-
	On-base	1/05/2022	0906_QC102_20220501	Field_D	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-
	On-base	1/05/2022	0906_QC202_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.34	0.00013
MW302	On-base	12/01/2018	0906_MW302_D_180112	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
	On-base	11/04/2018	0906_MW302_D_180411	Normal	EM1806331	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/03/2020	0906_MW302_20200330	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	29/09/2020	0906_MW302_20200929	Normal	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	29/09/2020	0906_QC102_20200929	Field_D	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	29/09/2020	0906_QC202_20200929	Interlab_D	749220	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	21/04/2021	0906_MW302_20210421	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	21/04/2021	0906_QC103_20210421	Field_D	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	21/04/2021	0906_QC203_20210421	Interlab_D	792803	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	20/10/2021	0906_MW302_20211020	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	20/10/2021	0906_QC107_20211020	Field_D	ES2139231	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	20/10/2021	0906_QC207_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	1/05/2022	0906_MW302_20220501	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_QC105_20220501	Field_D	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_QC205_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW304	On-base	16/01/2018	0906_MW304_D_180116	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	0.15	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.24	-
	On-base	13/04/2018	0906_MW304_D_180413	Normal	EM1806331	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	31/03/2020	0906_MW304_20200331	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.06	-
	On-base	29/09/2020	0906_MW304_20200929	Normal	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	28/04/2021	0906_MW304_20210428	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	20/10/2021	0906_MW304_20211020	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_MW304_20220501	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_QC104_20220501	Field_D	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_QC204_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001

							Perfluorocarbons													
							Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
							µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR							0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water																						
PFAS NEMP 2.0 Table 5 Freshwater 95%																						
Location Code	**Location Type**	**Sampled Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
MW306	On-base	16/01/2018	0906_MW306_D_180116	Normal	ES1802545		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.08	-
	On-base	12/04/2018	0906_MW306_D_180412	Normal	EM1806331		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/03/2020	0906_MW306_20200330	Normal	ES2011457		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	29/09/2020	0906_MW306_20200929	Normal	ES2034862-AB		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/04/2021	0906_MW306_20210422	Normal	ES2116327		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/10/2021	0906_MW306_20211022	Normal	ES2139228		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	2/05/2022	0906_MW306_20220502	Normal	EM2208338		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW308	On-base	15/01/2018	0906_MW308_D_180115	Normal	ES1802545		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	15/01/2018	0906_QC103_180115	Field_D	ES1802545		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	15/01/2018	0906_QC203_180115	Interlab_D	581313		<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	On-base	11/04/2018	0906_MW308_D_180411	Normal	EM1806331		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/03/2020	0906_MW308_20200330	Normal	ES2011457		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	29/09/2020	0906_MW308_20200929	Normal	ES2034862-AB		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	21/04/2021	0906_MW308_20210421	Normal	ES2116327		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/04/2021	0906_MW308_20210422	Normal	ES2116327		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	21/10/2021	0906_MW308_20211021	Normal	ES2139228		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_MW308_20220501	Normal	EM2208338		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_QC103_20220501	Field_D	EM2208338		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_QC203_20220501	Interlab_D	889634		<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
MW310	On-base	16/01/2018	0906_MW310_D_180116	Normal	ES1802545		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	12/04/2018	0906_MW310_D_180412	Normal	EM1806331		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	31/03/2020	0906_MW310_20200331	Normal	ES2011457		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/09/2020	0906_MW310_20200930	Normal	ES2034862-AB		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/04/2021	0906_MW310_20210422	Normal	ES2116327		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/10/2021	0906_MW310_20211022	Normal	ES2139228		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	2/05/2022	0906_MW310_20220502	Normal	EM2208338		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW312	Off-base	16/01/2018	0906_MW312_D_180115	Normal	ES1802566		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.1	-
	Off-base	13/04/2018	0906_MW312_D_180413	Normal	EM1806331		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
	Off-base	1/04/2020	0906_MW312_200401	Normal	ES2011454		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
	Off-base	1/10/2020	0906_MW312_20201001	Normal	ES2034888		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
	Off-base	21/10/2021	0906_MW312_20211021	Normal	ES2139399		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	3/05/2022	0906_MW312_20220503	Normal	EM2208339		<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

Notes
Denotes first time detection above LOR in latest monitoring round
Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

						Perfluorocarbons															
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
						µg/L	µg/L	µg/L	µg/L	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	0.02	0.02	0.01	0.02	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**													
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*													
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220														
Location Code	**Location Type**	**Sampled Date Time**	**Field ID**	**Sample Type**	**Lab Report Number**																
SW104	On-base	4/12/2017	0906_SW104_171204	Normal	ES1731266	0.27	0.02	**0.34**	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	16/08/2018	0906_SW104_180816	Normal	ES1824412	0.05	<0.01	**0.17**	<0.02	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	17/10/2018	0906_SW104_181017	Normal	ES1831100	0.38	0.02	**0.67**	0.03	<0.02	0.29	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	25/03/2020	0906_SW104_20200325	Normal	ES2011457	0.09	<0.01	**0.15**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	2/09/2020	0906_SW104_200904	Normal	ES2031377	*2.83*	0.13	***4.27***	0.17	0.16	1.44	0.09	<0.02	<0.1	0.15	0.44	0.07	<0.02	<0.02	<0.02	<0.02
	On-base	4/09/2020	0906_QC201_200904	Interlab_D	742937	*2.3*	0.1	***3.29***	0.13	0.13	0.99	0.06	<0.01	0.06	0.1	0.41	0.06	<0.01	<0.01	<0.01	<0.01
	On-base	29/09/2020	0906_SW104_20200929	Normal	ES2034862-AB	*2.8*	0.17	***4.61***	0.21	0.23	1.81	0.12	<0.02	<0.1	0.17	0.59	0.08	<0.02	<0.02	<0.02	<0.02
	On-base	21/04/2021	0906_QC202_20210421	Interlab_D	792803	0.27	0.02	**0.41**	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01
	On-base	21/04/2021	0906_QC102_20210421	Field_D	ES2116327	0.26	0.02	**0.46**	0.03	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	21/04/2021	0906_SW104_20210421	Normal	ES2116327	0.28	0.02	**0.48**	0.04	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	20/10/2021	0906_QC105_20211020	Field_D	ES2139231	0.4	0.01	**0.65**	0.04	0.03	0.25	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	20/10/2021	0906_QC205_20211020	Interlab_D	837704	0.61	0.02	**0.91**	0.04	0.03	0.3	0.02	<0.01	<0.05	0.02	0.07	0.01	<0.01	<0.01	<0.01	<0.01
	On-base	21/10/2021	0906_SW104_20211020	Normal	ES2139228	0.41	0.01	**0.63**	0.05	0.04	0.22	<0.02	<0.02	<0.1	0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	1/05/2022	0906_QC101_20220501	Field_D	EM2208338	0.58	0.01	**0.78**	0.03	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
	On-base	1/05/2022	0906_QC201_20220501	Interlab_D	889634	0.83	0.02	**1.09**	0.03	0.02	0.26	0.02	<0.01	<0.05	0.03	0.07	<0.01	<0.01	<0.01	<0.01	<0.01
	On-base	1/05/2022	0906_SW104_20220501	Normal	EM2208338	0.63	0.01	**0.82**	0.03	<0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
SW206	Off-base	20/06/2017	0906_SW001_170620	Normal	ES1715334	0.23	<0.01	**0.34**	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	7/07/2017	0906_SW001_07072017	Normal	ES1716880	0.27	0.01	**0.36**	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	13/12/2017	0906_SW206_171213	Normal	ES1732701	0.57	0.02	**1.09**	0.05	0.04	0.52	<0.02	<0.02	<0.1	0.03	0.09	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	25/03/2020	0906_SW206_20200325	Normal	ES2011453	0.38	0.01	**0.54**	<0.02	<0.02	0.16	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	1/10/2020	0906_SW206_20201001	Normal	ES2034866	1.21	0.06	**1.87**	0.07	0.08	0.66	0.04	<0.02	<0.1	0.08	0.21	0.03	<0.02	<0.02	<0.02	<0.02
	Off-base	20/04/2021	0906_SW206_20210420	Normal	ES2116333	0.13	0.01	**0.25**	0.03	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	21/10/2021	0906_SW206_20211021	Normal	ES2139237	0.01	<0.01	0.03	<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
	Off-base	3/05/2022	0906_SW206_20220503	Normal	EM2208150	0.15	<0.01	**0.23**	0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW212	Off-base	11/12/2017	0906_SW212_171211	Normal	ES1731989	<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
	Off-base	18/06/2018	0906_SW212_180619	Normal	ES1818232	<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
	Off-base	15/08/2019	0906_SW212_190815	Normal	ES1926282	<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
	Off-base	27/03/2020	0906_SW212_20200327	Normal	ES2011453	<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
	Off-base	30/09/2020	0906_SW212_20200930	Normal	ES2034866	0.09	<0.01	**0.09**	<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
	Off-base	30/09/2020	0906_SW212_20200930 Dup	Normal	ES2034866	<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
	Off-base	23/04/2021	0906_SW212_20210423	Normal	ES2116333	<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
	Off-base	19/10/2021	0906_SW212_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_SW212_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW218	Off-base	17/01/2018	0906_SW218_180117	Normal	ES1802545	<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
	Off-base	25/03/2020	0906_SW218_20200325	Normal	ES2011453	0.03	<0.01	0.05	<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
	Off-base	1/10/2020	0906_QC204_20201001	Interlab_D	749074	0.04	<0.01	**0.23**	0.04	0.03	0.19	0.01	<0.01	<0.05	0.04	0.07	0.02	<0.01	<0.01	<0.01	<0.01
	Off-base	1/10/2020	0906_QC104_20201001	Field_D	ES2034866	0.06	0.01	**0.36**	0.08	0.05	0.3	<0.02	<0.02	<0.1	0.05	0.13	0.03	<0.02	<0.02	<0.02	<0.02
	Off-base	1/10/2020	0906_SW218_20201001	Normal	ES2034866	0.1	0.02	**0.39**	0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12	0.03	<0.02	<0.02	<0.02	<0.02
	Off-base	20/04/2021	0906_SW218_20210420	Normal	ES2116333	0.01	<0.01	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	21/10/2021	0906_SW218_20211021	Normal	ES2139237	0.27	0.01	**0.51**	0.04	0.04	0.24	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_SW218_20220503	Normal	EM2208150	0.24	0.01	**0.36**	0.03	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02
SW228	Off-base	7/12/2017	0906_SW228_171207	Normal	ES1731266	*2.9*	0.17	***4.33***	0.21	0.19	1.43	0.1	<0.02	<0.1	0.14	0.51	0.06	<0.02	<0.02	<0.02	<0.02
	Off-base	12/04/2018	0906_SW228_180412	Normal	EM1806331	0.3	0.04	**0.53**	0.02	0.02	0.23	<0.02	<0.02	<0.1	0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	7/08/2018	0906_SW228_A_180807	Normal	EM1812664	0.49	0.03	**0.96**	<0.02	0.02	0.47	0.02	<0.02	<0.1	<0.02	0.09	0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	7/08/2018	0906_SW228_B_180807	Normal	EM1812664	0.49	0.03	**0.98**	<0.02	0.02	0.49	0.02	<0.02	<0.1	<0.02	0.1	0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	4/04/2019	0906_QC201_190408	Interlab_D	650878	0.6	0.05	**1.16**	0.05	0.06	0.56	0.03	<0.01	<0.05	0.07	0.24	0.02	<0.01	<0.01	<0.01	<0.01
	Off-base	4/04/2019	0906_QC101_190408	Field_D	ES1911335	0.81	0.06	**1.41**	0.1	0.09	0.6	0.04	<0.02	<0.1	0.11	0.43	0.04	<0.02	<0.02	<0.02	<0.02
	Off-base	4/04/2019	0906_SW228_190408	Normal	ES1911335	0.77	0.06	**1.39**	0.1	0.08	0.62	0.04	<0.02	<0.1	0.12	0.43	0.04	<0.02	<0.02	<0.02	<0.02
	Off-base	27/03/2020	0906_SW228_20200327	Normal	ES2011453	0.73	0.05	**1.25**	0.05	0.06	0.52	0.03	<0.02	<0.1	0.07	0.25	0.03	<0.02	<0.02	<0.02	<0.02
	Off-base	27/03/2020	0906_QC102_20200327	Field_D	ES2011453	0.77	0.05	**1.31**	0.04	0.06	0.54	0.03	<0.02	<0.1	0.08	0.26	0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	27/03/2020	0906_QC202_20200327	Interlab_D	712445	0.63	0.03	**1.04**	0.04	0.05	0.41	0.02	<0.01	<0.05	0.05	0.16	0.02	<0.01	<0.01	<0.01	<0.01
	Off-base	1/10/2020	0906_SW228_20201001	Normal	ES2034866	*2.15*	0.09	***3.32***	0.11	0.14	1.17	0.08	<0.02	<0.1	0.1	0.4	0.04	<0.02	<0.02	<0.02	<0.02
	Off-base	27/04/2021	0906_SW228_20210427	Normal	ES2116333	1.1	0.06	***2.19***	0.19	0.1	1.09	0.06	<0.02	<0.1	0.1	0.48	0.04	<0.02	<0.02	<0.02	<0.02
	Off-base	21/10/2021	0906_SW228_20211021	Normal	ES2139237	1.41	0.06	***2.13***	0.1	0.09	0.72	0.06	<0.02	<0.1	0.09	0.32	0.03	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_SW228_20220503	Normal	EM2208150	0.86	0.04	**1.41**	0.14	0.06	0.55	0.04	<0.02	<0.1	0.05	0.2	0.02	<0.02	<0.02	<0.02	<0.02
SW234	Off-base	11/12/2017	0906_SW234_171211	Normal	ES1731989	0.22	0.03	**0.3**	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	18/06/2018	0906_SW234_180618	Normal	ES1818232	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
	Off-base	27/03/2020	0906_SW234_20200327	Normal	ES2011453	<0.01	0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	29/09/2020	0906_SW234_20200929	Normal	ES2034866	0.28	0.02	**0.39**	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	20/04/2021	0906_SW234_20210420	Normal	ES2116333	0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	19/10/2021	0906_SW234_20211019	Normal	ES2139237	0.04	<0.01	0.04	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	2/05/2022	0906_QC107_20220502	Field_D	EM2208150	0.02	<0.01	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	2/05/2022	0906_SW234_20220502	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_QC207_20220502	Interlab_D	889634	0.02	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
SW236	Off-base	15/12/2017	0906_SW236_171215	Normal	ES1732819	<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
	Off-base	2/10/2020	0906_SW236_20201002	Normal	ES2034866	<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
	Off-base	22/04/2021	0906_SW236_20210422	Normal	ES2116333	<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
	Off-base	22/10/2021	0906_SW236_20211022	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_SW236_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW240	Off-base	20/12/2017	0906_QC201_171220	Interlab_D	580967	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	20/12/2017	0906_QC101_171220	Field_D	ES1732819	<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
	Off-base	20/12/2017	0906_QC201_171220	Field_D	ES1732819	<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
	Off-base	20/12/2017	0906_SW240_171220	Normal	ES1732819	<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
	Off-base	2/10/2020	0906_SW240_20201002	Normal	ES2034866	<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
	Off-base	22/04/2021	0906_SW240_20210422	Normal	ES2116333	<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
	Off-base	22/10/2021	0906_SW240_20211022	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_SW240_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

						Perfluorocarbons															
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic 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)
						µg/L	µg/L	µg/L	µg/L	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	0.02	0.02	0.01	0.02	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**													
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*													
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220														
Location Code	**Location Type**	**Sampled Date Time**	**Field ID**	**Sample Type**	**Lab Report Number**																
SW261	Off-base	16/01/2018	0906_SW261_180116	Normal	ES1802545	<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
	Off-base	3/04/2018	0906_SW261_180403	Normal	ES1810698	<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
	Off-base	18/06/2018	0906_SW261_180618	Normal	ES1818232	<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
	Off-base	15/08/2019	0906_SW261_190815	Normal	ES1926282	<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
	Off-base	27/03/2020	0906_SW261_20200327	Normal	ES2011453	<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
	Off-base	28/09/2020	0906_SW261_20200928	Normal	ES2034866	<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
	Off-base	20/04/2021	0906_SW261_20210420	Normal	ES2116333	<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
	Off-base	19/10/2021	0906_QC103_20211019	Field_D	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	19/10/2021	0906_QC203_20211019	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	19/10/2021	0906_SW261_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	28/04/2022	0906_SW261_20220428	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW262	Off-base	16/01/2018	0906_SW262_180116	Normal	ES1802545	<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
	Off-base	18/06/2018	0906_SW262_180618	Normal	ES1818232	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
	Off-base	27/03/2020	0906_SW262_20200327	Normal	ES2011453	<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
	Off-base	28/09/2020	0906_SW262_20200928	Normal	ES2034866	0.05	<0.01	0.05	<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
	Off-base	20/04/2021	0906_SW262_20210420	Normal	ES2116333	<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
	Off-base	19/10/2021	0906_SW262_20211019	Normal	ES2139237	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	28/04/2022	0906_SW262_20220428	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW286	Off-base	8/04/2018	0906_SW286_180408	Normal	ES1810698	<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
	Off-base	15/08/2019	0906_SW286_190815	Normal	ES1926282	<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
	Off-base	27/03/2020	0906_SW286_20200327	Normal	ES2011453	<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
	Off-base	2/10/2020	0906_SW286_20201002	Normal	ES2034866	<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
	Off-base	22/04/2021	0906_SW286_20210422	Normal	ES2116333	<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
	Off-base	22/10/2021	0906_SW286_20211022	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_SW286_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW288	Off-base	12/04/2018	0906_SW288_180412	Normal	EM1806331	<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
	Off-base	15/08/2018	0906_SW288_180815	Normal	ES1824412	<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
	Off-base	16/08/2018	0906_QC201_180816	Interlab_D	613110	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	16/08/2018	0906_QC101_180816	Field_D	ES1824412	<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
	Off-base	16/08/2018	0906_SW288_180816	Normal	ES1824412	<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
	Off-base	4/04/2019	0906_SW288_190408	Normal	ES1911335	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	27/03/2020	0906_SW288_20200327	Normal	ES2011453	<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
	Off-base	1/10/2020	0906_SW288_20201001	Normal	ES2034866	<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
	Off-base	27/04/2021	0906_SW288_20210427	Normal	ES2116333	<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
	Off-base	21/10/2021	0906_SW288_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_SW288_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW289	Off-base	12/04/2018	0906_QC201_180412	Interlab_D	594506	0.18	0.03	**0.37**	0.02	0.02	0.19	0.01	<0.01	<0.05	0.02	0.07	<0.01	<0.01	<0.01	<0.01	<0.01
	Off-base	12/04/2018	0906_QC101_180412	Field_D	EM1806331	0.21	0.03	**0.43**	<0.02	0.02	0.22	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	12/04/2018	0906_SW289_180412	Normal	EM1806331	0.2	0.03	**0.4**	<0.02	<0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	4/04/2019	0906_SW289_190408	Normal	ES1911335	0.42	0.03	**0.74**	0.05	0.04	0.32	0.02	<0.02	<0.1	0.06	0.18	0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	27/03/2020	0906_SW289_20200327	Normal	ES2011453	0.79	0.03	**1.24**	0.03	0.04	0.45	0.02	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	1/10/2020	0906_SW289_20201001	Normal	ES2034866	0.05	0.01	**0.34**	0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12	0.03	<0.02	<0.02	<0.02	<0.02
	Off-base	27/04/2021	0906_SW289_20210427	Normal	ES2116333	0.24	0.02	**0.58**	<0.02	<0.02	0.34	<0.02	<0.02	<0.1	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	21/10/2021	0906_SW289_20211021	Normal	ES2139237	1.15	0.04	**1.84**	0.11	0.07	0.69	0.06	<0.02	<0.1	0.06	0.22	0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	3/05/2022	0906_SW289_20220503	Normal	EM2208150	0.65	0.02	**0.94**	0.04	0.03	0.29	0.02	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02
SW294	Off-base	18/06/2018	0906_SW294_180618	Normal	ES1818232	0.01	0.07	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
	Off-base	15/08/2019	0906_SW294_190815	Normal	ES1926282	<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
	Off-base	27/03/2020	0906_SW294_20200327	Normal	ES2011453	<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
	Off-base	28/09/2020	0906_SW294_20200928	Normal	ES2034866	0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	20/04/2021	0906_SW294_20210420	Normal	ES2116333	<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
	Off-base	19/10/2021	0906_SW294_20211019	Normal	ES2139237	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	28/04/2022	0906_SW294_20220428	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW309	Off-base	15/08/2019	0906_SW309_190815	Normal	ES1926282	<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
	Off-base	27/03/2020	0906_SW309_20200327	Normal	ES2011459	<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
	Off-base	28/09/2020	0906_SW309_20200928	Normal	ES2034885	<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
	Off-base	20/04/2021	0906_SW309_20210420	Normal	ES2116324	<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
	Off-base	19/10/2021	0906_SW309_20211019	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	2/05/2022	0906_SW309_20220502	Normal	EM2208334	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW310	Off-base	27/03/2020	0906_SW310_20200327	Normal	ES2011453	0.58	0.02	**0.82**	0.02	0.02	0.24	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	29/09/2020	0906_SW310_20200929	Normal	ES2034866	1.6	0.05	***2.11***	0.07	0.05	0.51	0.03	<0.02	<0.1	0.06	0.16	0.03	<0.02	<0.02	<0.02	<0.02
	Off-base	21/04/2021	0906_QC204_20210421	Interlab_D	792774	1	0.03	**1.36**	0.05	0.02	0.36	0.02	<0.01	<0.05	0.04	0.07	0.02	<0.01	<0.01	<0.01	<0.01
	Off-base	21/04/2021	0906_QC104_20210421	Field_D	ES2116333	0.92	0.03	**1.35**	0.06	0.03	0.43	<0.02	<0.02	<0.1	0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	21/04/2021	0906_SW310_20210421	Normal	ES2116333	0.85	0.02	**1.23**	0.1	0.03	0.38	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	19/10/2021	0906_SW310_20211019	Normal	ES2139237	1.21	0.02	**1.47**	0.04	0.02	0.26	0.02	<0.02	<0.1	0.03	0.07	<0.02	<0.02	<0.02	<0.02	<0.02
	Off-base	30/04/2022	0906_SW310_20220430	Normal	EM2208150	0.04	<0.01	0.04	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

						Perfluorocarbons														
						Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.02	0.05	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water																				
PFAS NEMP 2.0 Table 1 Health Recreational Water																				
PFAS NEMP 2.0 Table 5 Freshwater 95%																				
Location Code	**Location Type**	**Sampled Date Time**	**Field ID**	**Sample Type**	**Lab Report Number**															
SW104	On-base	4/12/2017	0906_SW104_171204	Normal	ES1731266	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.39	-
	On-base	16/08/2018	0906_SW104_180816	Normal	ES1824412	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.17	-
	On-base	17/10/2018	0906_SW104_181017	Normal	ES1831100	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.75	-
	On-base	25/03/2020	0906_SW104_20200325	Normal	ES2011457	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15	-
	On-base	2/09/2020	0906_SW104_200904	Normal	ES2031377	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.48	-
	On-base	4/09/2020	0906_QC201_200904	Interlab_D	742937	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	4.4	0.00339
	On-base	29/09/2020	0906_SW104_20200929	Normal	ES2034862-AB	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	6.18	-
	On-base	21/04/2021	0906_QC202_20210421	Interlab_D	792803	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.51	0.00043
	On-base	21/04/2021	0906_QC102_20210421	Field_D	ES2116327	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	0.63	-
	On-base	21/04/2021	0906_SW104_20210421	Normal	ES2116327	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.68	-
	On-base	20/10/2021	0906_QC105_20211020	Field_D	ES2139231	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.79	-
	On-base	20/10/2021	0906_QC205_20211020	Interlab_D	837704	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.14	0.00093
	On-base	21/10/2021	0906_SW104_20211020	Normal	ES2139228	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.82	-
	On-base	1/05/2022	0906_QC101_20220501	Field_D	EM2208338	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.89	-
	On-base	1/05/2022	0906_QC201_20220501	Interlab_D	889634	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.28	0.00111
	On-base	1/05/2022	0906_SW104_20220501	Normal	EM2208338	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.91	-
SW206	Off-base	20/06/2017	0906_SW001_170620	Normal	ES1715334	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.36	-
	Off-base	7/07/2017	0906_SW001_07072017	Normal	ES1716880	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.37	-
	Off-base	13/12/2017	0906_SW206_171213	Normal	ES1732701	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.32	-
	Off-base	25/03/2020	0906_SW206_20200325	Normal	ES2011453	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.59	-
	Off-base	1/10/2020	0906_SW206_20201001	Normal	ES2034866	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.44	-
	Off-base	20/04/2021	0906_SW206_20210420	Normal	ES2116333	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.31	-
	Off-base	21/10/2021	0906_SW206_20211021	Normal	ES2139237	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	3/05/2022	0906_SW206_20220503	Normal	EM2208150	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25	-
SW212	Off-base	11/12/2017	0906_SW212_171211	Normal	ES1731989	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	18/06/2018	0906_SW212_180619	Normal	ES1818232	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	15/08/2019	0906_SW212_190815	Normal	ES1926282	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_SW212_20200327	Normal	ES2011453	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_SW212_20200930	Normal	ES2034866	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09	-
	Off-base	30/09/2020	0906_SW212_20200930 Dup	Normal	ES2034866	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_SW212_20210423	Normal	ES2116333	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906_SW212_20211019	Normal	ES2139237	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_SW212_20220503	Normal	EM2208150	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW218	Off-base	17/01/2018	0906_SW218_180117	Normal	ES1802545	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	25/03/2020	0906_SW218_20200325	Normal	ES2011453	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	1/10/2020	0906_QC204_20201001	Interlab_D	749074	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.47	0.00023
	Off-base	1/10/2020	0906_QC104_20201001	Field_D	ES2034866	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.71	-
	Off-base	1/10/2020	0906_SW218_20201001	Normal	ES2034866	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72	-
	Off-base	20/04/2021	0906_SW218_20210420	Normal	ES2116333	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	21/10/2021	0906_SW218_20211021	Normal	ES2139237	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66	-
	Off-base	3/05/2022	0906_SW218_20220503	Normal	EM2208150	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-
SW228	Off-base	7/12/2017	0906_SW228_171207	Normal	ES1731266	<0.02	<0.05	<0.02	0.06	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.77	-
	Off-base	12/04/2018	0906_SW228_180412	Normal	EM1806331	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.73	-
	Off-base	7/08/2018	0906_SW228_A_180807	Normal	EM1812664	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	-
	Off-base	7/08/2018	0906_SW228_B_180807	Normal	EM1812664	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.17	-
	Off-base	4/04/2019	0906_QC201_190408	Interlab_D	650878	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.7	0.00121
	Off-base	4/04/2019	0906_QC101_190408	Field_D	ES1911335	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.28	-
	Off-base	4/04/2019	0906_SW228_190408	Normal	ES1911335	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	2.31	-
	Off-base	27/03/2020	0906_SW228_20200327	Normal	ES2011453	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.79	-
	Off-base	27/03/2020	0906_QC102_20200327	Field_D	ES2011453	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.85	-
	Off-base	27/03/2020	0906_QC202_20200327	Interlab_D	712445	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.43	0.00107
	Off-base	1/10/2020	0906_SW228_20201001	Normal	ES2034866	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.28	-
	Off-base	27/04/2021	0906_SW228_20210427	Normal	ES2116333	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.22	-
	Off-base	21/10/2021	0906_SW228_20211021	Normal	ES2139237	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.88	-
	Off-base	3/05/2022	0906_SW228_20220503	Normal	EM2208150	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.96	-
SW234	Off-base	11/12/2017	0906_SW234_171211	Normal	ES1731989	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.41	-
	Off-base	18/06/2018	0906_SW234_180618	Normal	ES1818232	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.08	-
	Off-base	27/03/2020	0906_SW234_20200327	Normal	ES2011453	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	<0.05	<0.05	0.25	-
	Off-base	29/09/2020	0906_SW234_20200929	Normal	ES2034866	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.11	<0.05	<0.05	0.6	-
	Off-base	20/04/2021	0906_SW234_20210420	Normal	ES2116333	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.34	<0.05	<0.05	0.42	-
	Off-base	19/10/2021	0906_SW234_20211019	Normal	ES2139237	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base	2/05/2022	0906_QC107_20220502	Field_D	EM2208150	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.23	<0.05	<0.05	0.25	-
	Off-base	2/05/2022	0906_SW234_20220502	Normal	EM2208150	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.22	<0.05	<0.05	0.22	-
	Off-base	3/05/2022	0906_QC207_20220502	Interlab_D	889634	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	0.28	<0.01	<0.01	0.34	0.00002
SW236	Off-base	15/12/2017	0906_SW236_171215	Normal	ES1732819	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/10/2020	0906_SW236_20201002	Normal	ES2034866	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_SW236_20210422	Normal	ES2116333	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906_SW236_20211022	Normal	ES2139237	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_SW236_20220503	Normal	EM2208150	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW240	Off-base	20/12/2017	0906_QC201_171220	Interlab_D	580967	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	Off-base	20/12/2017	0906_QC101_171220	Field_D	ES1732819	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/12/2017	0906_QC201_171220	Field_D	ES1732819	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/12/2017	0906_SW240_171220	Normal	ES1732819	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/10/2020	0906_SW240_20201002	Normal	ES2034866	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_SW240_20210422	Normal	ES2116333	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906_SW240_20211022	Normal	ES2139237	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_SW240_20220503	Normal	EM2208150	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

							Perfluorocarbons													
							Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
							µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR							0.02	0.05	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01	0.00001
PFAS NEMP 2.0 Table 1 Health Drinking Water																					
PFAS NEMP 2.0 Table 1 Health Recreational Water																					
PFAS NEMP 2.0 Table 5 Freshwater 95%																					
Location Code	**Location Type**	**Sampled Date Time**	**Field ID**	**Sample Type**	**Lab Report Number**																
SW261	Off-base	16/01/2018	0906_SW261_180116	Normal	ES1802545		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/04/2018	0906_SW261_180403	Normal	ES1810698		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	18/06/2018	0906_SW261_180618	Normal	ES1818232		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	15/08/2019	0906_SW261_190815	Normal	ES1926282		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_SW261_20200327	Normal	ES2011453		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_SW261_20200928	Normal	ES2034866		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_SW261_20210420	Normal	ES2116333		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906_QC103_20211019	Field_D	ES2139231		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906_QC203_20211019	Interlab_D	837704		<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	19/10/2021	0906_SW261_20211019	Normal	ES2139237		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/04/2022	0906_SW261_20220428	Normal	EM2208150		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW262	Off-base	16/01/2018	0906_SW262_180116	Normal	ES1802545		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	18/06/2018	0906_SW262_180618	Normal	ES1818232		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.08	-
	Off-base	27/03/2020	0906_SW262_20200327	Normal	ES2011453		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_SW262_20200928	Normal	ES2034866		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	20/04/2021	0906_SW262_20210420	Normal	ES2116333		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906_SW262_20211019	Normal	ES2139237		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
	Off-base	28/04/2022	0906_SW262_20220428	Normal	EM2208150		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW286	Off-base	8/04/2018	0906_SW286_180408	Normal	ES1810698		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	15/08/2019	0906_SW286_190815	Normal	ES1926282		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_SW286_20200327	Normal	ES2011453		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/10/2020	0906_SW286_20201002	Normal	ES2034866		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_SW286_20210422	Normal	ES2116333		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906_SW286_20211022	Normal	ES2139237		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_SW286_20220503	Normal	EM2208150		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW288	Off-base	12/04/2018	0906_SW288_180412	Normal	EM1806331		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	15/08/2018	0906_SW288_180815	Normal	ES1824412		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	16/08/2018	0906_QC201_180816	Interlab_D	613110		<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	16/08/2018	0906_QC101_180816	Field_D	ES1824412		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	16/08/2018	0906_SW288_180816	Normal	ES1824412		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/04/2019	0906_SW288_190408	Normal	ES1911335		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base	27/03/2020	0906_SW288_20200327	Normal	ES2011453		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_SW288_20201001	Normal	ES2034866		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/04/2021	0906_SW288_20210427	Normal	ES2116333		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_SW288_20211021	Normal	ES2139237		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_SW288_20220503	Normal	EM2208150		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW289	Off-base	12/04/2018	0906_QC201_180412	Interlab_D	594506		<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.54	-
	Off-base	12/04/2018	0906_QC101_180412	Field_D	EM1806331		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.55	-
	Off-base	12/04/2018	0906_SW289_180412	Normal	EM1806331		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-
	Off-base	4/04/2019	0906_SW289_190408	Normal	ES1911335		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	-
	Off-base	27/03/2020	0906_SW289_20200327	Normal	ES2011453		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.48	-
	Off-base	1/10/2020	0906_SW289_20201001	Normal	ES2034866		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66	-
	Off-base	27/04/2021	0906_SW289_20210427	Normal	ES2116333		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.7	-
	Off-base	21/10/2021	0906_SW289_20211021	Normal	ES2139237		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.42	-
	Off-base	3/05/2022	0906_SW289_20220503	Normal	EM2208150		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	-
SW294	Off-base	18/06/2018	0906_SW294_180618	Normal	ES1818232		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
	Off-base	15/08/2019	0906_SW294_190815	Normal	ES1926282		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_SW294_20200327	Normal	ES2011453		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_SW294_20200928	Normal	ES2034866		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
	Off-base	20/04/2021	0906_SW294_20210420	Normal	ES2116333		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	19/10/2021	0906_SW294_20211019	Normal	ES2139237		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
	Off-base	28/04/2022	0906_SW294_20220428	Normal	EM2208150		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	<0.05	<0.05	0.18	-
SW309	Off-base	15/08/2019	0906_SW309_190815	Normal	ES1926282		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_SW309_20200327	Normal	ES2011459		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_SW309_20200928	Normal	ES2034885		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_SW309_20210420	Normal	ES2116324		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906_SW309_20211019	Normal	ES2139303		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_SW309_20220502	Normal	EM2208334		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW310	Off-base	27/03/2020	0906_SW310_20200327	Normal	ES2011453		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.92	-
	Off-base	29/09/2020	0906_SW310_20200929	Normal	ES2034866		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.56	-
	Off-base	21/04/2021	0906_QC204_20210421	Interlab_D	792774		<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.63	0.00139
	Off-base	21/04/2021	0906_QC104_20210421	Field_D	ES2116333		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.57	-
	Off-base	21/04/2021	0906_SW310_20210421	Normal	ES2116333		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.46	-
	Off-base	19/10/2021	0906_SW310_20211019	Normal	ES2139237		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.67	-
	Off-base	30/04/2022	0906_SW310_20220430	Normal	EM2208150		<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

	Lab Report Number	EM2208150	EM2208150		EM2208338	EM2208338		EM2208338	EM2208338		EM2208338	EM2208338	
	Field ID	0906_SW234_20220502	0906_QC107_20220502	RPD	0906_SW104_20220501	0906_QC101_20220501	RPD	0906_MW300_20220501	0906_QC102_20220501	RPD	0906_MW308_20220501	0906_QC103_20220501	RPD
	Sampled Date/Time	2/05/2022 15:00	2/05/2022 15:00		1/05/2022	1/05/2022		1/05/2022	1/05/2022		1/05/2022	1/05/2022	
ChemName	**Units**	**EQL**											
Sum of WA DWER PFAS (n=10)*	ug/L	0.01 : 0.05 (Interlab)	0.22	0.25	13	0.91	0.87	4	0.19	0.2	5	<0.01	<0.01	0
Perfluorocarbons														
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	**<0.01**	**0.02**	**67**	0.63	0.58	8	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	0	0.01	0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	0.01	**<0.01**	**0.02**	**67**	0.82	0.78	5	0.1	0.1	0	<0.01	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	0.03	0.03	0	0.05	0.06	18	<0.02	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	0.02	0	0.03	0.03	0	<0.02	<0.02	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	0	0.19	0.2	5	0.1	0.1	0	<0.01	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	0.05	0.05	0	0.04	0.04	0	<0.02	<0.02	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	5e-005	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	0.22	0.23	4	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Sum of PFAS	µg/L	0.01 : 0.1 (Interlab)	0.22	0.25	13	0.91	0.89	2	0.22	0.23	4	<0.01	<0.01	0

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

		Lab Report Number	EM2208338	EM2208338		EM2208338	EM2208338		EM2208338	889634		EM2208338	889634		
		Field ID	0906_MW304_20220501	0906_QC104_20220501	**RPD**	0906_MW302_20220501	0906_QC105_20220501	**RPD**	0906_SW104_20220501	0906_QC201_20220501	**RPD**	0906_MW300_20220501	0906_QC202_20220501	**RPD**
		Sampled Date/Time	1/05/2022	1/05/2022		1/05/2022	1/05/2022		1/05/2022	1/05/2022		1/05/2022	1/05/2022	
ChemName	**Units**	**EQL**												
Sum of WA DWER PFAS (n=10)*	ug/L	0.01 : 0.05 (Interlab)	<0.01	<0.01	0	<0.01	<0.01	0	**0.91**	**1.24**	**31**	**0.19**	**0.29**	**42**
Perfluorocarbons														
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	0.63	0.83	27	<0.01	<0.01	0
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	**0.01**	**0.02**	**67**	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	0.82	1.09	28	0.1	0.13	26
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.03	0.03	0	**0.05**	**0.08**	**46**
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	0.02	0	0.03	0.03	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	**0.19**	**0.26**	**31**	0.1	0.13	26
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	0.02	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.05	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	**<0.02**	**0.03**	**40**	<0.02	0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	**0.05**	**0.07**	**33**	**0.04**	**0.06**	**40**
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	5e-005	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.01	0
Sum of PFAS	µg/L	0.01 : 0.1 (Interlab)	<0.01	<0.01	0	<0.01	<0.01	0	**0.91**	**1.28**	**34**	**0.22**	**0.34**	**43**

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 30 (1-10 x EQL); 30 (10-30 x
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any m

		Lab Report Number	EM2208338	889634		EM2208338	889634		EM2208338	889634		EM2208150	889634		
		Field ID	0906_MW308_20220501	0906_QC203_20220501	**RPD**	0906_MW304_20220501	0906_QC204_20220501	**RPD**	0906_MW302_20220501	0906_QC205_20220501	**RPD**	0906_SW234_20220502	0906_QC207_20220502	**RPD**
		Sampled Date/Time	1/05/2022	1/05/2022		1/05/2022	1/05/2022		1/05/2022	1/05/2022		2/05/2022 15:00	2/05/2022 15:00	
ChemName	**Units**	**EQL**												
Sum of WA DWER PFAS (n=10)*	ug/L	0.01 : 0.05 (Interlab)	<0.01	<0.05	0	<0.01	<0.05	0	<0.01	<0.05	0	**0.22**	**0.34**	**43**
Perfluorocarbons														
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	**<0.01**	**0.02**	**67**
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	**<0.01**	**0.02**	**67**
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0	<0.1	<0.05	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	0.02	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0	<0.02	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	5e-005	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0	<0.02	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	0.22	0.28	24
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
Sum of PFAS	µg/L	0.01 : 0.1 (Interlab)	<0.01	<0.1	0	<0.01	<0.1	0	<0.01	<0.1	0	**0.22**	**0.34**	**43**

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 30 (1-10 x EQL); 30 (10-30 x
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any m

Lab Report Number		EM2208338	EM2208338	EM2208338	EM2208338	EM2208338	EM2208338
Field ID		0906_QC300_20220428	0906_QC301_20220430	0906_QC303_20220501	0906_QC305_20220504	0906_QC307_20220502	0906_QC309_20220503
Sampled_Date/Time		28/04/2022	30/04/2022	1/05/2022	29/04/2022	2/05/2022	3/05/2022
Sample Type		Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate
ChemName	**Units**	**EQL**						
Sum of WA DWER PFAS (n=10)*	ug/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorocarbons								
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<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	<0.01	<0.01
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<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	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<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	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<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	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<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	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<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	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<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	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	0.00005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<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	<0.05	<0.05
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Lab Report Number	EM2208338	EM2208338	EM2208338	EM2208338	EM2208338	EM2208338	EM2208338
Field ID	0906_QC500_20220428	0906_QC501_20220430	0906_QC503_20220501	0906_QC505_20220504	0906_QC507_20220502	0906_QC509_20220503	0906_QC511_20220504
Sampled_Date/Time	28/04/2022	30/04/2022	1/05/2022	29/04/2022	2/05/2022	3/05/2022	4/05/2022
Sample Type	Trip_B	Trip_B	Trip_B	Trip_B	Trip_B	Trip_B	Trip_B

ChemName	Units	EQL							
Sum of WA DWER PFAS (n=10)*	ug/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorocarbons									
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	<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	<0.01	<0.01	<0.01
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<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	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<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	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<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	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<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	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<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	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<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	<0.05	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/l	0.00005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005	<5e-005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

APPENDIX

C

LABORATORY CERTIFICATES

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Stantec

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2208337**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_FPASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2017MWHAUS0015 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: JL/MB		

Dates

Date Samples Received	: 05-May-2022 15:30	Issue Date	: 07-May-2022
Client Requested Due Date	: 13-May-2022	Scheduled Reporting Date	: **13-May-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 5	Temperature	: 3.4°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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2208337-001	03-May-2022 00:00	0906_MW204_20220503	✓
EM2208337-002	03-May-2022 00:00	0906_MW200_20220503	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)	Email	[redacted]
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[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 - XTab (XTAB)	Email	[redacted]

DERP LAB REPORTS

- *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 - XTab (XTAB)	Email	[redacted]

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Chain of Custody

PM Name: [redacted]

Phone: [redacted] **Fax:** [redacted] **Mobile:** [redacted]

Address [redacted]

PM Email: [redacted]

Results Email (please email results to **all** listed): [redacted]

Project Number: NSW_0906_PFASOMP

Laboratory (name, phone, & contact person): [redacted]

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Water	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD	Discard		Please amend Sample IDs as follows	Please send to Eurofins
1	0906_MW204_20220503		2 x 20 ml	3/05/2022			X								X					
2	0906_MW200_20220503		2 x 20 ml	3/05/2022			X								X					

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** [redacted] Date: 04/05/2022

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Environmental Division
Melbourne
Work Order Reference
EM2208337

Telephone : + 61-3-8549 9600

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Ranil Weerakkody

From: [redacted]
Sent: Friday, 6 May 2022 8:54 AM
To: COC Melbourne
Subject: [redacted]
Attachments: [redacted]

Follow Up Flag: Follow up
Flag Status: Flagged

CoCs for samples that arrived yesterday

Kind Regards

[redacted]
Senior Project Manager - VIC, SA, TAS
ALS Limited
[redacted]

Please note that my office hours are 9:00am - 3:00pm Monday to Friday. For assistance outside of this time please contact [redacted] Please forward CoCs to [redacted]

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Navigating ALS Compass – https://youtu.be/UgxjZswyI6g
How to Create a Project - https://youtu.be/xg07UpuPLMo
How to Create a COC - https://youtu.be/TI29pSgeYAA

How to Begin Sample Collection - https://youtu.be/7bUgYqAHYFo

From: [redacted]
Sent: [redacted] 4:04 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Hi Graeme,

Please see attached COCs for site 0906 – note that there are 10 work orders in total.

Cheers,

[redacted]
TEAM LEADER - SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno now Stantec

[redacted]

CONNECT WITH CARDNO

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more.

Cardno's management systems are certified to ISO9001 (quality) and AS/NZS4801/OHSAS18001 (occupational health and safety)

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From: [redacted]
Sent: [redacted]
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Thanks

Kind Regards

Felix Dong

To: ALS Enviro Melbourne
Cc: COC Melbourne
Subject: NO ANALYSIS - EM2208150 - CARDNO - NSW_0906_PFASOMP

Hi team,

Please find the attached samples received without analysis.

Thanks,

Kind Regards,

[redacted]
Sample Receipt Officer, Environmental
Springvale

[redacted]

alsglobal.com

right solutions.
right partner.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2208337**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022 15:30
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022 10:59
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X: Poor matrix spike recovery for sample EM2208253-002 due to sample matrix interference.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/05/2022):This report has been amended due to incorrect quote applied. 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)				Sample ID	0906_MW204_20220503	0906_MW200_20220503	----	----	----
				Sampling date / time	03-May-2022 00:00	03-May-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2208337-001	EM2208337-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.09**	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.10**	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.64**	----	----	----
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	**0.28**	----	----	----
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	**0.03**	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.14**	----	----	----
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	**0.03**	----	----	----
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	0906_MW204_20220503	0906_MW200_20220503	----	----	----
				Sampling date / time	03-May-2022 00:00	03-May-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2208337-001	EM2208337-002	--------	--------	--------
					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		<0.01	**1.33**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.92**	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**1.21**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**95.1**	**92.0**	----	----	----
13C8-PFOA	----	0.02	%		**90.8**	**96.1**	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2208337**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.48	0.54	12.1	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.19	0.20	0.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2208314-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.54	0.57	5.3	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.72	2.79	2.5	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.71	0.74	3.4	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.27	0.28	0.0	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351) - continued									
EM2208314-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4333351)									
EM2208253-001	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	0.05	0.04	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	0.06	0.04	29.7	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
EM2208314-001	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: 4333351)									
EM2208253-001	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: 4333351) - continued									
EM2208253-001	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.09	0.10	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
EM2208314-001	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: 4333351)									
EM2208253-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	5.18	5.37	3.6	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.67	0.74	9.9	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	5.00	5.22	4.3	0% - 20%
EM2208314-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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

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

Sub-Matrix: **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: 4333351)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	96.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	87.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	93.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.8	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	95.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	126	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	103	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.7	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	105	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	103	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	107	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	113	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: 4333351) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	91.7	70.0	130
EP231P: PFAS Sums (QCLot: 4333351)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **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: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	73.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	91.1	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	105	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	73.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	78.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	125	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	104	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	80.5	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	73.0	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	67.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	# 62.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)							

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: 4333351) - continued							
EM2208253-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	85.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	# 67.9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	76.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	72.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	92.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	100.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	104	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	74.4	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2208337**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Site	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB	No. of samples received	: 2
Order number	: ----	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: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2208253--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorotetradecanoic acid (PFTeDA)**	376-06-7	62.5 %	71.0-132%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2208253--002	Anonymous	**N-Ethyl perfluorooctane sulfonamide (EtFOSA)**	4151-50-2	67.9 %	70.0-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **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)								
0906_MW204_20220503,	0906_MW200_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW204_20220503,	0906_MW200_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0906_MW204_20220503,	0906_MW200_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW204_20220503, 0906_MW200_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW204_20220503, 0906_MW200_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	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

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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2208336**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_FPASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2017MWHAUS0015 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: JL/MB		

Dates

Date Samples Received	: 05-May-2022 15:30	Issue Date	: 07-May-2022
Client Requested Due Date	: 13-May-2022	Scheduled Reporting Date	: **13-May-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 5	Temperature	: 3.4°C - 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
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2208336-001	03-May-2022 00:00	0906_MW239_20220503	✓
EM2208336-002	03-May-2022 00:00	0906_MW238_20220503	✓
EM2208336-003	03-May-2022 00:00	0906_MW209_20220503	✓
EM2208336-004	04-May-2022 00:00	0906_MW231_20220504	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV) — Email [redacted]

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email [redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email [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 - XTab (XTAB) — Email [redacted]

DERP LAB REPORTS

- *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 - XTab (XTAB) — Email [redacted]

Cardno

Chain of Custody

PM Name: [redacted]

Phone: [redacted] Fax [redacted] Mobile: [redacted]

Address [redacted]

PM Email: [redacted]

Results Email (please email results to **all** listed): [redacted]

Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone, & contact person): [redacted]

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Water	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD	Discard		Please amend Sample IDs as follows	Please send to Eurofins
1	0906_MW239_20220503		2 x 20 ml	3/05/2022			X								X					
2	0906_MW238_20220503		2 x 20 ml	3/05/2022			X								X					
3	0906_MW209_20220503		2 x 20 ml	3/05/2022			X								X					
4	0906_MW231_20220504		2 x 20 ml	4/05/2022			X								X					

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** [redacted] Date: 04/05/2022

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)		
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)		

Environmental Division
Melbourne
Work Order Reference
EM2208336

Telephone : +61-3-8549 9600

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Ranil Weerakkody

From: [redacted]
Sent: Friday, 6 May 2022 8:54 AM
To: COC Melbourne
Subject: LANECON - DEF19008 Kapooka Sample Order - CoCs
Attachments: DEF19008_WAG_E5_PO6_COC.xlsx; DEF19008_WAG_E5_PO7_COC.xls; DEF19008_WAG_E5_PO8_COC.xlsx; DEF19008_WAG_E5_PO9_COC.xlsx; DEF19008_WAG_E5_Base_COC.xlsx; DEF19008_WAG_E5_PO1_COC.xlsx; DEF19008_WAG_E5_PO2_COC.xlsx; DEF19008_WAG_E5_PO3_COC.xlsx; DEF19008_WAG_E5_PO4_COC.xlsx; DEF19008_WAG_E5_PO5_COC.xlsx

Follow Up Flag: Follow up
Flag Status: Flagged

CoCs for samples that arrived yesterday

Kind Regards

[redacted]
Senior Project Manager - VIC, SA, TAS
ALS Limited

[redacted]

alsglobal.com

Please note that **my office hours are 9:00am - 3:00pm Monday to Friday**. For assistance outside of this time please contact [redacted] Please forward CoCs to [redacted]

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Navigating ALS Compass – https://youtu.be/UgxjZswyI6g
How to Create a Project - https://youtu.be/xg07UpuPLMo
How to Create a COC - https://youtu.be/TI29pSgeYAA

How to Begin Sample Collection - https://youtu.be/7bUgYqAHYFo

From: [redacted]
Sent: [redacted]
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Hi Graeme,

Please see attached COCs for site 0906 – note that there are 10 work orders in total.

Cheers,

[redacted]
TEAM LEADER / SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno now Stantec

[redacted]

Email [redacted] Web www.cardno.com

CONNECT WITH CARDNO

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more.

Cardno's management systems are certified to ISO9001 (quality) and AS/NZS4801/OHSAS18001 (occupational health and safety)

This email [illegible]

From: [redacted]
Sent: [redacted]
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Thanks

Kind Regards

Felix Dong

To: ALS Enviro Melbourne
Cc: COC Melbourne
Subject: NO ANALYSIS - EM2208150 - CARDNO - NSW_0906_PFASOMP

Hi team,

Please find the attached samples received without analysis.

Thanks,

Kind Regards,

[redacted]
Sample Receipt Officer, Environmental
Springvale

[redacted]

alsglobal.com

right solutions.
right partner.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2208336**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
[redacted]	: [redacted]	[redacted]	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022 15:30
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022 12:27
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X: Poor matrix spike recovery for sample EM2208253-002 due to sample matrix interference.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/05/2022):This report has been amended due to incorrect quote applied. 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)			Sample ID	0906_MW239_20220503	0906_MW238_20220503	0906_MW209_20220503	0906_MW231_20220504	----
			Sampling date / time	03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00	04-May-2022 00:00	----
Compound	CAS Number	LOR	Unit	EM2208336-001	EM2208336-002	EM2208336-003	EM2208336-004	--------
				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	**0.03**	<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: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW239_20220503	0906_MW238_20220503	0906_MW209_20220503	0906_MW231_20220504	----
				Sampling date / time	03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00	04-May-2022 00:00	----
Compound	CAS Number	LOR	Unit		EM2208336-001	EM2208336-002	EM2208336-003	EM2208336-004	--------
					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	**0.03**	<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	**0.03**	<0.01	<0.01	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**91.9**	**100**	**88.7**	**94.6**	----
13C8-PFOA	----	0.02	%		**91.4**	**95.4**	**94.2**	**93.5**	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2208336**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
[redacted]	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.48	0.54	12.1	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.19	0.20	0.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2208314-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.54	0.57	5.3	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.72	2.79	2.5	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.71	0.74	3.4	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.27	0.28	0.0	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351) - continued									
EM2208314-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4333351)									
EM2208253-001	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	0.05	0.04	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	0.06	0.04	29.7	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
EM2208314-001	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: 4333351)									
EM2208253-001	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: 4333351) - continued									
EM2208253-001	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.09	0.10	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
EM2208314-001	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: 4333351)									
EM2208253-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	5.18	5.37	3.6	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.67	0.74	9.9	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	5.00	5.22	4.3	0% - 20%
EM2208314-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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

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

Sub-Matrix: **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: 4333351)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	96.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	87.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	93.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.8	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	95.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	126	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	103	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.7	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	105	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	103	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	107	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	113	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: 4333351) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	91.7	70.0	130
EP231P: PFAS Sums (QCLot: 4333351)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **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: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	73.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	91.1	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	105	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	73.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	78.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	125	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	104	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	80.5	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	73.0	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	67.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	# 62.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)							

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: 4333351) - continued							
EM2208253-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	85.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	# 67.9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	76.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	72.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	92.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	100.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	104	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	74.4	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2208336**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Site	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB	No. of samples received	: 4
Order number	: ----	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2208253--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorotetradecanoic acid (PFTeDA)**	376-06-7	62.5 %	71.0-132%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2208253--002	Anonymous	**N-Ethyl perfluorooctane sulfonamide (EtFOSA)**	4151-50-2	67.9 %	70.0-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **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) 0906_MW239_20220503, 0906_MW238_20220503, 0906_MW209_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW231_20220504	**04-May-2022**	**12-May-2022**	31-Oct-2022	✓	**12-May-2022**	31-Oct-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW239_20220503, 0906_MW238_20220503, 0906_MW209_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW231_20220504	**04-May-2022**	**12-May-2022**	31-Oct-2022	✓	**12-May-2022**	31-Oct-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW239_20220503, 0906_MW238_20220503, 0906_MW209_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW231_20220504	**04-May-2022**	**12-May-2022**	31-Oct-2022	✓	**12-May-2022**	31-Oct-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW239_20220503, 0906_MW238_20220503, 0906_MW209_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW231_20220504	**04-May-2022**	**12-May-2022**	31-Oct-2022	✓	**12-May-2022**	31-Oct-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW239_20220503, 0906_MW238_20220503, 0906_MW209_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW231_20220504	**04-May-2022**	**12-May-2022**	31-Oct-2022	✓	**12-May-2022**	31-Oct-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	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

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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2208335**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_FPASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2017MWHAUS0015 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: JL/MB		

Dates

Date Samples Received	: 05-May-2022 15:30	Issue Date	: 07-May-2022
Client Requested Due Date	: 13-May-2022	Scheduled Reporting Date	: **13-May-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 5	Temperature	: 3.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2208335-001	03-May-2022 00:00	0906_MW210_20220503	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)	Email	[redacted]
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[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 - XTab (XTAB)	Email	[redacted]

Cardno

Chain of Custody

PM Name: [redacted]

Phone: [redacted] **Fax:** [redacted] **Mobile:** [redacted]

Address: [redacted]

PM Email: [redacted]

Results Email (please email results to **all** listed):
[redacted]

Project Number: NSW_0906_PFASOMP **Site:**

Laboratory (name, phone, & contact person): [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	QC	Water	Sample preservation: Ice/ Ice Bricks				Analysis: EP231X - PFAS Standard	HOLD	Discard		Comments: Please amend Sample IDs as follows	Please send to Eurofins
(i) 0906_MW210_20220503		2 x 20 ml	3/05/2022			X								X					

Sampler: I attest that the proper field sampling proceedures were used during the collection of those samples. **Sampler name:** [redacted] Date: 04/05/2022

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Environmental Division
Melbourne
Work Order Reference
EM2208335

Telephone 61-3-8549 9600

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Ranil Weerakkody

From: [redacted]
Sent: Friday, 6 May 2022 8:54 AM
To: COC Melbourne
Subject: LANECON - DEF19008 Kapooka Sample Order - CoCs
Attachments: DEF19008_WAG_E5_PO6_COC.xlsx; DEF19008_WAG_E5_PO7_COC.xls; DEF19008_WAG_E5_PO8_COC.xlsx; DEF19008_WAG_E5_PO9_COC.xlsx; DEF19008_WAG_E5_Base_COC.xlsx; DEF19008_WAG_E5_PO1_COC.xlsx; DEF19008_WAG_E5_PO2_COC.xlsx; DEF19008_WAG_E5_PO3_COC.xlsx; DEF19008_WAG_E5_PO4_COC.xlsx; DEF19008_WAG_E5_PO5_COC.xlsx

Follow Up Flag: Follow up
Flag Status: Flagged

CoCs for samples that arrived yesterday

Kind Regards

[redacted]
Senior Project Manager - VIC, SA, TAS
ALS Limited

right solutions. right partner.

[redacted]

[redacted]

alsglobal.com

Please note that **my office hours are 9:00am - 3:00pm Monday to Friday**. For assistance outside of this time please contact [redacted] Please forward CoCs to [redacted]

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Navigating ALS Compass – https://youtu.be/UgxjZswyI6g
How to Create a Project - https://youtu.be/xg07UpuPLMo
How to Create a COC - https://youtu.be/TI29pSgeYAA

How to Begin Sample Collection - https://youtu.be/7bUgYqAHYFo

From: [redacted]
Sent: Thursday, 5 May 2022 4:04 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Hi [redacted]

Please see attached COCs for site 0906 – note that there are 10 work orders in total.

Cheers,

[redacted]
TEAM LEADER | SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno now Stantec

[redacted]

Email [redacted] Web www.cardno.com

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Cardno's management systems are certified to ISO9001 (quality) and AS/NZS4801/OHSAS18001 (occupational health and safety)

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From: [redacted]
Sent: Thursday, 5 May 2022 2:59 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Thanks

Kind Regards

[redacted]

To: ALS Enviro Melbourne
Cc: COC Melbourne
Subject: NO ANALYSIS - EM2208150 - CARDNO - NSW_0906_PFASOMP

Hi team,

Please find the attached samples received without analysis.

Thanks,

Kind Regards,

[redacted]
Sample Receipt Officer, Environmental
Springvale

right solutions.
right partner.

[redacted]

alsglobal.com

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2208335**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022 15:30
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022 11:04
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X: Poor matrix spike recovery for sample EM2208253-002 due to sample matrix interference.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/05/2022):This report has been amended due to incorrect quote applied. 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)				Sample ID	0906_MW210_20220503	----	----	----	----
				Sampling date / time	03-May-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2208335-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW210_20220503	----	----	----	----
				Sampling date / time	03-May-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2208335-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
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	%		**90.6**	----	----	----	----
13C8-PFOA	----	0.02	%		**93.2**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2208335**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.48	0.54	12.1	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.19	0.20	0.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2208314-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.54	0.57	5.3	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.72	2.79	2.5	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.71	0.74	3.4	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.27	0.28	0.0	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351) - continued									
EM2208314-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4333351)									
EM2208253-001	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	0.05	0.04	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	0.06	0.04	29.7	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
EM2208314-001	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: 4333351)									
EM2208253-001	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: 4333351) - continued									
EM2208253-001	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.09	0.10	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
EM2208314-001	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: 4333351)									
EM2208253-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	5.18	5.37	3.6	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.67	0.74	9.9	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	5.00	5.22	4.3	0% - 20%
EM2208314-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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

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

Sub-Matrix: **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: 4333351)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	96.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	87.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	93.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.8	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	95.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	126	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	103	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.7	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	105	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	103	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	107	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	113	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: 4333351) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	91.7	70.0	130
EP231P: PFAS Sums (QCLot: 4333351)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **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: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	73.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	91.1	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	105	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	73.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	78.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	125	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	104	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	80.5	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	73.0	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	67.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	# 62.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)							

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: 4333351) - continued							
EM2208253-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	85.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	# 67.9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	76.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	72.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	92.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	100.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	104	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	74.4	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2208335**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Site	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB	No. of samples received	: 1
Order number	: ----	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2208253--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorotetradecanoic acid (PFTeDA)**	376-06-7	62.5 %	71.0-132%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2208253--002	Anonymous	**N-Ethyl perfluorooctane sulfonamide (EtFOSA)**	4151-50-2	67.9 %	70.0-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **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)							
0906_MW210_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW210_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW210_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW210_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW210_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	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

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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2208334**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_FPASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2017MWHAUS0015 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: JL/MB		

Dates

Date Samples Received	: 05-May-2022 15:30	Issue Date	: 07-May-2022
Client Requested Due Date	: 13-May-2022	Scheduled Reporting Date	: **13-May-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 5	Temperature	: 3.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 3 / 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2208334-001	02-May-2022 00:00	0906_MW212_20220502	✓
EM2208334-002	02-May-2022 00:00	0906_MW213_20220502	✓
EM2208334-003	02-May-2022 00:00	0906_SW309_20220502	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV) Email [redacted]
[redacted]
- *AU Certificate of Analysis - NATA (COA) Email [redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email [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 - XTab (XTAB) Email [redacted]

DERP LAB REPORTS

- *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 - XTab (XTAB) Email [redacted]

Cardno

Chain of Custody

PM Name: [redacted]

Phone: [redacted] Fax: [redacted] Mobile: [redacted]

Address: [redacted]

PM Email: [redacted]

Results Email (please email results to <u>all</u> listed):

[redacted]

Project Number: NSW_0906_PFASOMP **Site:**

Laboratory (name, phone, & contact person): [redacted]

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	QC	Water	Sample preservation: Ice/ Ice Bricks				Analysis: EP231X - PFAS Standard	HOLD	Discard		Comments: Please amend Sample IDs as follows	Please send to Eurofins
1	0906_MW212_20220502		2 x 20 ml	2/05/2022			X								X					
2	0906_MW213_20220502		2 x 20 ml	2/05/2022			X								X					
3	0906_SW309_20220502		2 x 20 ml	2/05/2022				X							X					

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** [redacted] Date: 04/05/2022

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	

Environmental Division
Melbourne
Work Order Reference
EM2208334

Telephone : + 61-3-8549 9600

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) <u>Please circle</u>

Ranil Weerakkody

From: [redacted]
Sent: Friday, 6 May 2022 8:54 AM
To: COC Melbourne
Subject: LANECON - DEF19008 Kapooka Sample Order - CoCs
Attachments: DEF19008_WAG_E5_PO6_COC.xlsx; DEF19008_WAG_E5_PO7_COC.xls; DEF19008_WAG_E5_PO8_COC.xlsx; DEF19008_WAG_E5_PO9_COC.xlsx; DEF19008_WAG_E5_Base_COC.xlsx; DEF19008_WAG_E5_PO1_COC.xlsx; DEF19008_WAG_E5_PO2_COC.xlsx; DEF19008_WAG_E5_PO3_COC.xlsx; DEF19008_WAG_E5_PO4_COC.xlsx; DEF19008_WAG_E5_PO5_COC.xlsx

Follow Up Flag: Follow up
Flag Status: Flagged

CoCs for samples that arrived yesterday

Kind Regards

[redacted]
Senior Project Manager - VIC, SA, TAS
ALS Limited
[redacted]
alsglobal.com

Please note that **my office hours are 9:00am - 3:00pm Monday to Friday**. For assistance outside of this time please contact [redacted] Please forward CoCs to [redacted]

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How to Create a Project - https://youtu.be/xg07UpuPLMo
How to Create a COC - https://youtu.be/TI29pSgeYAA

How to Begin Sample Collection - https://youtu.be/7bUgYqAHYFo

From: [redacted]
Sent: Thursday, 5 May 2022 4:04 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Hi [redacted]

Please see attached COCs for site 0906 – note that there are 10 work orders in total.

Cheers,

[redacted]
TEAM LEADER | ENVIRONMENTAL SERVICES
CARDNO

Cardno now Stantec

[redacted]

Email bobby.wang@cardno.com.au Web www.cardno.com

CONNECT WITH CARDNO

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more.

Cardno's management systems are certified to ISO9001 (quality) and AS/NZS4801/OHSAS18001 (occupational health and safety)

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From: [redacted]
Sent: Thursday, 5 May 2022 2:59 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Thanks

Kind Regards

[redacted]

To: ALS Enviro Melbourne
Cc: COC Melbourne
Subject: NO ANALYSIS - EM2208150 - CARDNO - NSW_0906_PFASOMP

Hi team,

Please find the attached samples received without analysis.

Thanks,

Kind Regards,

[redacted]
Sample Receipt Officer, Environmental
Springvale

[redacted]

alsglobal.com

right solutions.
right partner.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2208334**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022 15:30
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022 10:57
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X: Poor matrix spike recovery for sample EM2208253-002 due to sample matrix interference.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/05/2022):This report has been amended due to incorrect quote applied. 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)				Sample ID	0906_MW212_20220502	0906_MW213_20220502	0906_SW309_20220502	----	----
				Sampling date / time	02-May-2022 00:00	02-May-2022 00:00	02-May-2022 00:00	----	----
Compound	CAS Number	LOR	Unit		EM2208334-001	EM2208334-002	EM2208334-003	--------	--------
					Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<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: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW212_20220502	0906_MW213_20220502	0906_SW309_20220502	----	----
				Sampling date / time	02-May-2022 00:00	02-May-2022 00:00	02-May-2022 00:00	----	----
Compound	CAS Number	LOR	Unit		EM2208334-001	EM2208334-002	EM2208334-003	--------	--------
					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	%		**93.0**	**89.9**	**94.8**	----	----
13C8-PFOA	----	0.02	%		**97.8**	**95.4**	**96.6**	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2208334**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.48	0.54	12.1	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.19	0.20	0.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2208314-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.54	0.57	5.3	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.72	2.79	2.5	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.71	0.74	3.4	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.27	0.28	0.0	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351) - continued									
EM2208314-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4333351)									
EM2208253-001	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	0.05	0.04	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	0.06	0.04	29.7	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
EM2208314-001	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: 4333351)									
EM2208253-001	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: 4333351) - continued									
EM2208253-001	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.09	0.10	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
EM2208314-001	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: 4333351)									
EM2208253-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	5.18	5.37	3.6	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.67	0.74	9.9	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	5.00	5.22	4.3	0% - 20%
EM2208314-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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

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

Sub-Matrix: **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: 4333351)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	96.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	87.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	93.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.8	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	95.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	126	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	103	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.7	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	105	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	103	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	107	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	113	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: 4333351) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	91.7	70.0	130
EP231P: PFAS Sums (QCLot: 4333351)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **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: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	73.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	91.1	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	105	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	73.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	78.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	125	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	104	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	80.5	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	73.0	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	67.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	# 62.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)							

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: 4333351) - continued							
EM2208253-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	85.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	# 67.9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	76.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	72.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	92.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	100.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	104	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	74.4	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2208334**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Site	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2208253--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorotetradecanoic acid (PFTeDA)**	376-06-7	62.5 %	71.0-132%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2208253--002	Anonymous	**N-Ethyl perfluorooctane sulfonamide (EtFOSA)**	4151-50-2	67.9 %	70.0-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **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)								
0906_MW212_20220502, 0906_SW309_20220502	0906_MW213_20220502,	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW212_20220502, 0906_SW309_20220502	0906_MW213_20220502,	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW212_20220502, 0906_MW213_20220502, 0906_SW309_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW212_20220502, 0906_MW213_20220502, 0906_SW309_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW212_20220502, 0906_MW213_20220502, 0906_SW309_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	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

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 : **EM2208333**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_FPASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2017MWHAUS0015 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: JL/MB		

Dates

Date Samples Received	: 05-May-2022 15:30	Issue Date	: 07-May-2022
Client Requested Due Date	: 13-May-2022	Scheduled Reporting Date	: **13-May-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 5	Temperature	: 3.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2208333-001	02-May-2022 00:00	0906_MW233_20220502	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)	Email	[redacted]
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[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 - XTab (XTAB)	Email	[redacted]

DERP LAB REPORTS

- *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 - XTab (XTAB)	Email	[redacted]

Cardno

Chain of Custody

PM Name [redacted]
Phone: [redacted] Fax: [redacted] Mobile: [redacted]
Address [redacted]
PM Email: [redacted]
Results Email (please email results to **all** listed):
[redacted]

Project Number: NSW_0906_PFASOMP **Site:**
Laboratory (name, phone, & contact person): [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Sample Matrix: Groundwater	Sample Matrix: Surface Water	Sample Matrix: QC	Sample Matrix: Water	Sample preservation: Ice/ Ice Bricks	Sample preservation	Sample preservation	Sample preservation	Analysis: EP231X - PFAS Standard	Analysis: HOLD	Analysis: Discard	Analysis	Comments: Please amend Sample IDs as follows	Comments: Please send to Eurofins
(1) 0906_MW233_20220502		2 x 20 ml	2/05/2022			X								X					

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** [redacted] Date: 04/05/2022

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Environmental Division
Melbourne
Work Order Reference
EM2208333

Telephone : +61-3-8549 9600

Ranil Weerakkody

From: [redacted]
Sent: Friday, 6 May 2022 8:54 AM
To: COC Melbourne
Subject: LANECON - DEF19008 Kapooka Sample Order - CoCs
Attachments: DEF19008_WAG_E5_PO6_COC.xlsx; DEF19008_WAG_E5_PO7_COC.xls; DEF19008_WAG_E5_PO8_COC.xlsx; DEF19008_WAG_E5_PO9_COC.xlsx; DEF19008_WAG_E5_Base_COC.xlsx; DEF19008_WAG_E5_PO1_COC.xlsx; DEF19008_WAG_E5_PO2_COC.xlsx; DEF19008_WAG_E5_PO3_COC.xlsx; DEF19008_WAG_E5_PO4_COC.xlsx; DEF19008_WAG_E5_PO5_COC.xlsx

Follow Up Flag: Follow up
Flag Status: Flagged

CoCs for samples that arrived yesterday

Kind Regards

[redacted]
Senior Project Manager - VIC, SA, TAS
ALS Limited

[redacted]

[redacted]

alsglobal.com

Please note that **my office hours are 9:00am - 3:00pm Monday to Friday**. For assistance outside of this time please contact [redacted] Please forward CoCs to [redacted]

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How to Create a Project - https://youtu.be/xg07UpuPLMo
How to Create a COC - https://youtu.be/TI29pSgeYAA

How to Begin Sample Collection - https://youtu.be/7bUgYqAIIYFo

From: [redacted]
Sent: Thursday, 5 May 2022 4:04 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Hi [redacted]

Please see attached COCs for site 0906 – note that there are 10 work orders in total.

Cheers,

[redacted]
TEAM LEADER - SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno now Stantec

[redacted]

Email [redacted] Web www.cardno.com

CONNECT WITH CARDNO

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more.

Cardno's management systems are certified to ISO9001 (quality) and AS/NZS4801/OHSAS18001 (occupational health and safety)

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From: [redacted]
Sent: Thursday, 5 May 2022 2:59 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Thanks

Kind Regards

[redacted]

To: ALS Enviro Melbourne
Cc: COC Melbourne
Subject: NO ANALYSIS - EM2208150 - CARDNO - NSW_0906_PFASOMP

Hi team,

Please find the attached samples received without analysis.

Thanks,

Kind Regards,

[redacted]
Sample Receipt Officer, Environmental
Springvale

[redacted]

alsglobal.com

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2208333**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022 15:30
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022 11:03
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X: Poor matrix spike recovery for sample EM2208253-002 due to sample matrix interference.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/05/2022):This report has been amended due to incorrect quote applied. 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)				Sample ID	0906_MW233_20220502	----	----	----	----
				Sampling date / time	02-May-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2208333-001	--------	--------	--------	--------
					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		**0.19**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.20**	----	----	----	----
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		**0.04**	----	----	----	----
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	0906_MW233_20220502	----	----	----	----
				Sampling date / time	02-May-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2208333-001	--------	--------	--------	--------
					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		**0.47**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.39**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.45**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.1**	----	----	----	----
13C8-PFOA	----	0.02	%		**93.1**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2208333**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.48	0.54	12.1	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.19	0.20	0.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2208314-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.54	0.57	5.3	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.72	2.79	2.5	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.71	0.74	3.4	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.27	0.28	0.0	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351) - continued									
EM2208314-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4333351)									
EM2208253-001	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	0.05	0.04	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	0.06	0.04	29.7	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
EM2208314-001	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: 4333351)									
EM2208253-001	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: 4333351) - continued									
EM2208253-001	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.09	0.10	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
EM2208314-001	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: 4333351)									
EM2208253-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	5.18	5.37	3.6	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.67	0.74	9.9	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	5.00	5.22	4.3	0% - 20%
EM2208314-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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

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

Sub-Matrix: **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: 4333351)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	96.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	87.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	93.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.8	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	95.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	126	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	103	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.7	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	105	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	103	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	107	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	113	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: 4333351) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	91.7	70.0	130
EP231P: PFAS Sums (QCLot: 4333351)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **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: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	73.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	91.1	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	105	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	73.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	78.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	125	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	104	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	80.5	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	73.0	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	67.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	# 62.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)							

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: 4333351) - continued							
EM2208253-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	85.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	# 67.9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	76.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	72.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	92.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	100.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	104	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	74.4	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2208333**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Site	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB	No. of samples received	: 1
Order number	: ----	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2208253--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorotetradecanoic acid (PFTeDA)**	376-06-7	62.5 %	71.0-132%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2208253--002	Anonymous	**N-Ethyl perfluorooctane sulfonamide (EtFOSA)**	4151-50-2	67.9 %	70.0-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **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) 0906_MW233_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW233_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW233_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW233_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW233_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	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

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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2208341**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_FPASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2017MWHAUS0015 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: JL/MB		

Dates

Date Samples Received	: 05-May-2022 15:30	Issue Date	: 07-May-2022
Client Requested Due Date	: 13-May-2022	Scheduled Reporting Date	: **13-May-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 5	Temperature	: 3.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2208341-001	01-May-2022 00:00	0906_MW235_20220501	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)	Email	[redacted]
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[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 - XTab (XTAB)	Email	[redacted]

DERP LAB REPORTS

- *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 - XTab (XTAB)	Email	[redacted]

Cardno

Chain of Custody

PM Name: [redacted]

Phone: [redacted] **Fax:** [redacted] **Mobile:** [redacted]

Address [redacted]

PM Email: [redacted]

Results Email (please email results to **all** listed):

- [redacted]

Project Number: NSW_0906_PFASOMP **Site:**

Laboratory (name, phone, & contact person): [redacted]

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Water	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD	Discard		Please amend Sample IDs as follows	Please send to Eurofins
						Sample Matrix					Sample preservation				Analysis				Comments	
(1)	0906_MW235_20220501		2 x 20 ml	1/05/2022			X								X					

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** [redacted] Date: 04/05/2022

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Environmental Division
Melbourne
Work Order Reference
EM2208341

Page of

Telephone : + 61-3-8549 9600

Ranil Weerakkody

From: [redacted]
Sent: Friday, 6 May 2022 8:54 AM
To: COC Melbourne
Subject: LANECON - DEF19008 Kapooka Sample Order - CoCs
Attachments: DEF19008_WAG_E5_PO6_COC.xlsx; DEF19008_WAG_E5_PO7_COC.xls; DEF19008_WAG_E5_PO8_COC.xlsx; DEF19008_WAG_E5_PO9_COC.xlsx; DEF19008_WAG_E5_Base_COC.xlsx; DEF19008_WAG_E5_PO1_COC.xlsx; DEF19008_WAG_E5_PO2_COC.xlsx; DEF19008_WAG_E5_PO3_COC.xlsx; DEF19008_WAG_E5_PO4_COC.xlsx; DEF19008_WAG_E5_PO5_COC.xlsx

Follow Up Flag: Follow up
Flag Status: Flagged

CoCs for samples that arrived yesterday

Kind Regards

[redacted]
Senior Project Manager - VIC, SA, TAS
ALS Limited
[redacted]
[redacted]
alsglobal.com

Please note that **my office hours are 9:00am - 3:00pm Monday to Friday**. For assistance outside of this time please contact [redacted] Please forward CoCs to [redacted]

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How to Create a Project - https://youtu.be/xg07UpuPLMo
How to Create a COC - https://youtu.be/TI29pSgeYAA

How to Begin Sample Collection - https://youtu.be/7bUgYqAHYFo

From: [redacted]
Sent: Thursday, 5 May 2022 4:04 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Hi [redacted]

Please see attached COCs for site 0906 – note that there are 10 work orders in total.

Cheers,

[redacted]
TEAM LEADER | SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno now Stantec

[redacted]

Email [redacted] Web www.cardno.com

CONNECT WITH CARDNO

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more.

Cardno's management systems are certified to ISO9001 (quality) and AS/NZS4801/OHSAS18001 (occupational health and safety)

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From: [redacted]
Sent: Thursday, 5 May 2022 2:59 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Thanks

Kind Regards

[redacted]

To: ALS Enviro Melbourne
Cc: COC Melbourne
Subject: NO ANALYSIS - EM2208150 - CARDNO - NSW_0906_PFASOMP

Hi team,

Please find the attached samples received without analysis.

Thanks,

Kind Regards,

[redacted]
Sample Receipt Officer, Environmental
Springvale

[redacted]

alsglobal.com

right solutions.
right partner.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2208341**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022 15:30
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022 11:07
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X: Poor matrix spike recovery for sample EM2208253-002 due to sample matrix interference.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/05/2022):This report has been amended due to incorrect quote applied. 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)				Sample ID	0906_MW235_20220501	----	----	----	----
				Sampling date / time	01-May-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2208341-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW235_20220501	----	----	----	----
				Sampling date / time	01-May-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2208341-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
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	%		**87.6**	----	----	----	----
13C8-PFOA	----	0.02	%		**96.6**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2208341**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.48	0.54	12.1	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.19	0.20	0.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2208314-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.54	0.57	5.3	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.72	2.79	2.5	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.71	0.74	3.4	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.27	0.28	0.0	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351) - continued									
EM2208314-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4333351)									
EM2208253-001	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	0.05	0.04	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	0.06	0.04	29.7	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
EM2208314-001	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: 4333351)									
EM2208253-001	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: 4333351) - continued									
EM2208253-001	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.09	0.10	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
EM2208314-001	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: 4333351)									
EM2208253-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	5.18	5.37	3.6	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.67	0.74	9.9	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	5.00	5.22	4.3	0% - 20%
EM2208314-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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

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

Sub-Matrix: **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: 4333351)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	96.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	87.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	93.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.8	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	95.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	126	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	103	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.7	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	105	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	103	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	107	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	113	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: 4333351) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	91.7	70.0	130
EP231P: PFAS Sums (QCLot: 4333351)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **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: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	73.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	91.1	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	105	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	73.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	78.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	125	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	104	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	80.5	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	73.0	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	67.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	# 62.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)							

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: 4333351) - continued							
EM2208253-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	85.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	# 67.9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	76.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	72.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	92.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	100.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	104	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	74.4	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2208341**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Site	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB	No. of samples received	: 1
Order number	: ----	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2208253--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorotetradecanoic acid (PFTeDA)**	376-06-7	62.5 %	71.0-132%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2208253--002	Anonymous	**N-Ethyl perfluorooctane sulfonamide (EtFOSA)**	4151-50-2	67.9 %	70.0-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **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) 0906_MW235_20220501	**01-May-2022**	**12-May-2022**	28-Oct-2022	✓	**12-May-2022**	28-Oct-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW235_20220501	**01-May-2022**	**12-May-2022**	28-Oct-2022	✓	**12-May-2022**	28-Oct-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW235_20220501	**01-May-2022**	**12-May-2022**	28-Oct-2022	✓	**12-May-2022**	28-Oct-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW235_20220501	**01-May-2022**	**12-May-2022**	28-Oct-2022	✓	**12-May-2022**	28-Oct-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW235_20220501	**01-May-2022**	**12-May-2022**	28-Oct-2022	✓	**12-May-2022**	28-Oct-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	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

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.

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Environmental Division
Melbourne
Work Order Reference
EM2208150

Telephone : +61-3-8549 9600

PM Name: [redacted]

Phone: [redacted] Fax [redacted] Mobile: [redacted]

Address: [redacted]

PM Email: [redacted]

Results Email (please email results to all listed):

[redacted]

Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone, & contact person): ALS

[redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	QC	Water	Sample preservation: Ice/ Ice Bricks				Analysis: EP231X - PFAS Standard	HOLD	Discard		Please amend Sample IDs as follows	Please send to Eurofins
0906_MW245_20220430		2 x 20 ml	30/04/2022			X									X				
0906_MW249_20220430		2 x 20 ml	30/04/2022			X									X				
0906_MW255_20220430		2 x 20 ml	30/04/2022			X									X				
0906_MW252_20220430		2 x 20 ml	30/04/2022			X									X				
0906_MW253_20220430		2 x 20 ml	30/04/2022			X									X				
0906_MW254_20220430		2 x 20 ml	30/04/2022			X									X				
0906_MW251_20220430		2 x 20 ml	30/04/2022			X									X				
0906_MW302_20220501		2 x 20 ml	1/05/2022			X									X				
0906_MW300_20220501		2 x 20 ml	1/05/2022			X									X				
0906_MW308_20220501		2 x 20 ml	1/05/2022			X									X				
0906_MW235_20220501		2 x 20 ml	1/05/2022			X									X				
0906_MW240_20220501		6 x 20 ml	1/05/2022			X									X				
0906_MW246_20220501		6 x 20 ml	1/05/2022			X									X				
0906_MW304_20220501		2 x 20 ml	1/05/2022			X									X				
0906_MW233_20220502		2 x 20 ml	2/05/2022			X									X				
0906_MW241_20220502		2 x 20 ml	2/05/2022			X									X				
0906_MW247_20220502		2 x 20 ml	2/05/2022			X									X				
0906_MW314_20220502		2 x 20 ml	2/05/2022			X									X				
0906_MW306_20220502		2 x 20 ml	2/05/2022			X									X				
0906_MW310_20220502		6 x 20 ml	2/05/2022			X									X				
0906_MW256_20220502		2 x 20 ml	2/05/2022			X									X				
0906_MW311_20220502		2 x 20 ml	2/05/2022			X										X			
0906_MW243_20220502		2 x 20 ml	2/05/2022			X									X				
0906_MW242_20220502		2 x 20 ml	2/05/2022			X									X				
0906_MW257_20220502		2 x 20 ml	2/05/2022			X									X				
0906_MW248_20220502		2 x 20 ml	2/05/2022			X									X				
0906_MW212_20220502		2 x 20 ml	2/05/2022			X									X				

Received: 15-30
C/note: Temp 3.4°C Cool / Ice Bricks / N/A Cert: Y/N
Carrier: COURIER ECHO (ALS)
13

[redacted]

0906_MW213_20220502		2 x 20 ml	2/05/2022	X				X
0906_MW214_20220503		2 x 20 ml	3/05/2022	X				X
0906_MW204_20220503		2 x 20 ml	3/05/2022	X				X
0906_MW210_20220503		2 x 20 ml	3/05/2022	X				X
0906_MW244_20220503		6 x 20 ml	3/05/2022	X				X
0906_MW200_20220503		2 x 20 ml	3/05/2022	X				X
0906_MW312_20220503		2 x 20 ml	3/05/2022	X				X
0906_MW239_20220503		2 x 20 ml	3/05/2022	X				X
0906_MW238_20220503		2 x 20 ml	3/05/2022	X				X
0906_MW209_20220503		2 x 20 ml	3/05/2022	X				X
0906_MW231_20220504		2 x 20 ml	4/05/2022	X				X
0906_SW262_20220428		2 x 20 ml	28/04/2022		X			X
0906_SW261_20220428		2 x 20 ml	28/04/2022		X			X
0906_SW294_20220428		2 x 20 ml	28/04/2022		X			X
0906_SW310_20220430		2 x 20 ml	30/04/2022		X			X
0906_SW104_20220501		2 x 20 ml	1/05/2022		X			X
0906_SW234_20220502		2 x 20 ml	2/05/2022		X			X
0906_SW234_20220502		2 x 20 ml	2/05/2022		X			X
0906_SW240_20220503		2 x 20 ml	3/05/2022		X			X
0906_SW286_20220503		2 x 20 ml	3/05/2022		X			X
0906_SW289_20220503		2 x 20 ml	3/05/2022		X			X
0906_SW228_20220503		2 x 20 ml	3/05/2022		X			X
0906_SW236_20220503		2 x 20 ml	3/05/2022		X			X
0906_SW288_20220503		2 x 20 ml	3/05/2022		X			X
0906_SW218_20220503		2 x 20 ml	3/05/2022		X			X
0906_SW206_20220503		6 x 20 ml	3/05/2022		X			X
0906_SW212_20220503		6 x 20 ml	3/05/2022		X			X
0906_DRUM01_20220503		2 x 20 ml	3/05/2022				X	X
0906_QC101_20220501		2 x 20 ml	1/05/2022		X			X
0906_QC102_20220501		2 x 20 ml	1/05/2022	X				X
0906_QC103_20220501		2 x 20 ml	1/05/2022	X				X
0906_QC104_20220501		2 x 20 ml	1/05/2022	X				X
0906_QC105_20220501		2 x 20 ml	1/05/2022	X				X
0906_QC106_20220502		2 x 20 ml	2/05/2022	X				X
0906_QC107_20220502		2 x 20 ml	2/05/2022		X			X
0906_QC108_20220503		4 x 20 ml	3/05/2022		X			X
0906_QC300_20220428		2 x 20 ml	28/04/2022			X		X

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0906_QC301_20220430		2 x 20 ml	30/04/2022				X						X						
0906_QC302_20220430		2 x 20 ml	30/04/2022				X						X						
0906_QC303_20220501		2 x 20 ml	1/05/2022				X						X						
0906_QC304_20220501		2 x 20 ml	1/05/2022				X						X						
0906_QC305_20220504		2 x 20 ml	29/04/2022				X						X						
0906_QC306_20220504		2 x 20 ml	29/04/2022				X						X						
0906_QC307_20220502		2 x 20 ml	2/05/2022				X						X						
0906_QC308_20220502		2 x 20 ml	2/05/2022				X						X						
0906_QC309_20220503		2 x 20 ml	3/05/2022				X						X						
0906_QC310_20220503		2 x 20 ml	3/05/2022				X						X						
0906_QC311_20220504		2 x 20 ml	4/05/2022				X						X						
0906_QC500_20220428		2 x 20 ml	28/04/2022				X						X						
0906_QC501_20220430		2 x 20 ml	30/04/2022				X						X						
0906_QC502_20220430		2 x 20 ml	30/04/2022				X						X						
0906_QC503_20220501		2 x 20 ml	1/05/2022				X						X						
0906_QC504_20220501		2 x 20 ml	1/05/2022				X						X						
0906_QC505_20220504		2 x 20 ml	29/04/2022				X						X						
0906_QC506_20220504		2 x 20 ml	29/04/2022				X						X						
0906_QC507_20220502		2 x 20 ml	2/05/2022				X						X						
0906_QC508_20220502		2 x 20 ml	2/05/2022				X						X						
0906_Q5309_20220503		2 x 20 ml	3/05/2022				X						X						
0906_QC510_20220503		2 x 20 ml	3/05/2022				X						X						
0906_QC311_20220504		2 x 20 ml	4/05/2022																

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** Jake Ludlow / Matthew Barham Date: 04/05/2022

Relinqushed by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

11

13

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Cardno

Chain of Custody

PM Nam[redacted]

Phon[redacted] Fax: [redacted] Mobile: [redacted]

Address: [redacted]

PM Email: [redacted]

Results Email (please email results to all listed): [redacted]

Project Number: NSW_0908_PFASOMP Site:

Laboratory (name, phone, & contact person): [redacted]

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Water	Sample preservation: Ice/ Ice Bricks	Analysis: EP231X - PFAS Standard	Analysis: HOLD	Analysis: Discard	Comments: Please amend Sample IDs as follows	Comments: Please send to Eurofins
1	0908_MW245_20220430		2 x 20 ml	30/04/2022		X		X				
2	0908_MW249_20220430		2 x 20 ml	30/04/2022		X		X				
3	0908_MW255_20220430		2 x 20 ml	30/04/2022		X		X				
4	0908_MW252_20220430		2 x 20 ml	30/04/2022		X		X				
5	0908_MW253_20220430		2 x 20 ml	30/04/2022		X		X				
6	0908_MW254_20220430		2 x 20 ml	30/04/2022		X		X				
7	0908_MW251_20220430		2 x 20 ml	30/04/2022		X		X				
8	0908_MW240_20220501		6 x 20 ml	1/05/2022		X		X				
9	0908_MW248_20220501		6 x 20 ml	1/05/2022		X		X				
10	0908_MW247_20220502		2 x 20 ml	2/05/2022		X		X				
11	0908_MW256_20220502		2 x 20 ml	2/05/2022		X		X				
12	0908_MW257_20220502		2 x 20 ml	2/05/2022		X		X				
13	0908_MW249_20220502		2 x 20 ml (6)	2/05/2022		X		X				
14	0908_MW244_20220503		6 x 20 ml	3/05/2022		X		X				
15	0908_SW262_20220428		2 x 20 ml	28/04/2022		X		X				
16	0908_SW261_20220428		2 x 20 ml	28/04/2022		X		X				
17	0908_SW264_20220428		2 x 20 ml	28/04/2022		X		X				
18	0908_SW310_20220430		2 x 20 ml	30/04/2022		X		X				
19	0908_SW234_20220502		2 x 20 ml	2/05/2022		X		X				
20	0908_SW240_20220503		2 x 20 ml	3/05/2022		X		X				
21	0908_SW286_20220503		2 x 20 ml	3/05/2022		X		X				
22	0908_SW289_20220503		2 x 20 ml	3/05/2022		X		X				
23	0908_SW228_20220503		2 x 20 ml	3/05/2022		X		X				
24	0908_SW236_20220503		2 x 20 ml	3/05/2022		X		X				
25	0908_SW288_20220503		2 x 20 ml	3/05/2022		X		X				
26	0908_SW218_20220503		2 x 20 ml	3/05/2022		X		X				
27	0908_SW206_20220503		6 x 20 ml (6)	3/05/2022		X		X				
28	0908_SW212_20220503		6 x 20 ml	3/05/2022		X		X				
29	0908_QC107_20220502		2 x 20 ml	2/05/2022		X		X				
30	0908_QC108_20220503		4 x 20 ml 2	3/05/2022		X			X			
31	HW219											

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Relinquished by: (print and signature)	Date	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Ranil Weerakkody

From: [redacted]
Sent: Friday, 6 May 2022 8:54 AM
To: COC Melbourne
Subject: LANECON - DEF19008 Kapooka Sample Order - CoCs
Attachments: DEF19008_WAG_E5_PO6_COC.xlsx; DEF19008_WAG_E5_PO7_COC.xls; DEF19008_WAG_E5_PO8_COC.xlsx; DEF19008_WAG_E5_PO9_COC.xlsx; DEF19008_WAG_E5_Base_COC.xlsx; DEF19008_WAG_E5_PO1_COC.xlsx; DEF19008_WAG_E5_PO2_COC.xlsx; DEF19008_WAG_E5_PO3_COC.xlsx; DEF19008_WAG_E5_PO4_COC.xlsx; DEF19008_WAG_E5_PO5_COC.xlsx

Follow Up Flag: Follow up
Flag Status: Flagged

CoCs for samples that arrived yesterday

Kind Regards

[redacted]
Senior Project Manager - VIC, SA, TAS
ALS Limited
[redacted]
[redacted]
alsglobal.com

Please note that **my office hours are 9:00am - 3:00pm Monday to Friday**. For assistance outside of this time please contact [redacted] Please forward CoCs to [redacted]

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Navigating ALS Compass – https://youtu.be/UgxjZswvI6g
How to Create a Project - https://youtu.be/xg07UpuPLMo
How to Create a COC - https://youtu.be/TI29pSgeYAA

How to Begin Sample Collection - https://youtu.be/7bUgYqAHYFo

From: [redacted]
Sent: Thursday, 5 May 2022 4:04 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Hi [redacted]

Please see attached COCs for site 0906 – note that there are 10 work orders in total.

Cheers,

[redacted]
TEAM LEADER ENVIRONMENTAL SCIENCE
CARDNO

Cardno now Stantec

[redacted]
Web www.cardno.com

CONNECT WITH CARDNO

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more.

Cardno's management systems are certified to ISO9001 (quality) and AS/NZS4801/OHSAS18001 (occupational health and safety)

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From: [redacted]
Sent: Thursday, 5 May 2022 2:59 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Thanks

Kind Regards

[redacted]

To: ALS Enviro Melbourne
Cc: COC Melbourne
Subject: NO ANALYSIS - EM2208150 - CARDNO - NSW_0906_PFASOMP

Hi team,

Please find the attached samples received without analysis.

Thanks,

Kind Regards,

right solutions.
right partner.

[redacted]
Sample Receipt Officer, Environmental
Springvale

[redacted]

alsglobal.com

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2208150**	Page	: 1 of 15
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022 15:30
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022 16:06
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 31		
No. of samples analysed	: 30		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW245_20220430	0906_MW249_20220430	0906_MW255_20220430	0906_MW252_20220430	0906_MW253_20220430
				Sampling date / time	30-Apr-2022 00:00	30-Apr-2022 00:00	30-Apr-2022 00:00	30-Apr-2022 00:00	30-Apr-2022 00:00
					EM2208150-001	EM2208150-002	EM2208150-003	EM2208150-004	EM2208150-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	**0.02**	<0.01	**0.03**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<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	0906_MW245_20220430	0906_MW249_20220430	0906_MW255_20220430	0906_MW252_20220430	0906_MW253_20220430
				Sampling date / time	30-Apr-2022 00:00	30-Apr-2022 00:00	30-Apr-2022 00:00	30-Apr-2022 00:00	30-Apr-2022 00:00
Compound	CAS Number	LOR	Unit		EM2208150-001	EM2208150-002	EM2208150-003	EM2208150-004	EM2208150-005
					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	<0.01	**0.02**	<0.01	**0.03**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.02**	<0.01	**0.03**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**0.02**	<0.01	**0.03**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**91.4**	**97.4**	**96.9**	**91.9**	**93.5**
13C8-PFOA	----	0.02	%		**94.4**	**95.4**	**98.4**	**94.1**	**93.5**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW254_20220430	0906_MW251_20220430	0906_MW240_20220501	0906_MW246_20220501	0906_MW247_20220502
				Sampling date / time	30-Apr-2022 00:00	30-Apr-2022 00:00	01-May-2022 00:00	01-May-2022 00:00	02-May-2022 00:00
					EM2208150-006	EM2208150-007	EM2208150-008	EM2208150-009	EM2208150-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.03**	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.03**	<0.02	**0.02**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.20**	<0.01	**0.15**	<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		**0.13**	<0.01	**0.04**	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.08**	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.09**	<0.02	**0.04**	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.08**	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.25**	<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	0906_MW254_20220430	0906_MW251_20220430	0906_MW240_20220501	0906_MW246_20220501	0906_MW247_20220502
				Sampling date / time	30-Apr-2022 00:00	30-Apr-2022 00:00	01-May-2022 00:00	01-May-2022 00:00	02-May-2022 00:00
					EM2208150-006	EM2208150-007	EM2208150-008	EM2208150-009	EM2208150-010
					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	<0.05	<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		**0.89**	<0.01	**0.25**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.33**	<0.01	**0.19**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.86**	<0.01	**0.23**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**90.7**	**93.1**	**94.3**	**94.0**	**99.5**
13C8-PFOA	----	0.02	%		**96.2**	**94.0**	**94.9**	**91.4**	**96.1**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW256_20220502	0906_MW257_20220502	0906_MW248_20220502	0906_MW244_20220503	0906_SW262_20220428
				Sampling date / time	02-May-2022 00:00	02-May-2022 00:00	02-May-2022 00:00	03-May-2022 00:00	28-Apr-2022 00:00
					EM2208150-011	EM2208150-012	EM2208150-013	EM2208150-014	EM2208150-015
					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		**0.06**	<0.01	**0.04**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	**0.06**	<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	<0.02	<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	0906_MW256_20220502	0906_MW257_20220502	0906_MW248_20220502	0906_MW244_20220503	0906_SW262_20220428
				Sampling date / time	02-May-2022 00:00	02-May-2022 00:00	02-May-2022 00:00	03-May-2022 00:00	28-Apr-2022 00:00
Compound	CAS Number	LOR	Unit		EM2208150-011	EM2208150-012	EM2208150-013	EM2208150-014	EM2208150-015
					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		**0.06**	<0.01	**0.12**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.06**	<0.01	**0.10**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.06**	<0.01	**0.12**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**89.5**	**87.5**	**94.2**	**94.3**	**101**
13C8-PFOA	----	0.02	%		**96.2**	**94.5**	**96.5**	**94.4**	**95.0**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_SW261_20220428	0906_SW294_20220428	0906_SW310_20220430	0906_SW234_20220502	0906_SW240_20220503
				Sampling date / time	28-Apr-2022 00:00	28-Apr-2022 00:00	30-Apr-2022 00:00	02-May-2022 00:00	03-May-2022 00:00
Compound	CAS Number	LOR	Unit		EM2208150-016	EM2208150-017	EM2208150-018	EM2208150-019	EM2208150-020
					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	**0.04**	<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	0906_SW261_20220428	0906_SW294_20220428	0906_SW310_20220430	0906_SW234_20220502	0906_SW240_20220503
				Sampling date / time	28-Apr-2022 00:00	28-Apr-2022 00:00	30-Apr-2022 00:00	02-May-2022 00:00	03-May-2022 00:00
Compound	CAS Number	LOR	Unit		EM2208150-016	EM2208150-017	EM2208150-018	EM2208150-019	EM2208150-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<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	**0.16**	<0.05	**0.22**	<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	**0.18**	**0.04**	**0.22**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.04**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.18**	**0.04**	**0.22**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.3**	**94.7**	**96.5**	**95.4**	**96.2**
13C8-PFOA	----	0.02	%		**96.5**	**97.2**	**95.0**	**95.7**	**92.0**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW286_20220503	0906_SW289_20220503	0906_SW228_20220503	0906_SW236_20220503	0906_SW288_20220503
				Sampling date / time	03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00
					EM2208150-021	EM2208150-022	EM2208150-023	EM2208150-024	EM2208150-025
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.04**	**0.14**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.03**	**0.06**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.29**	**0.55**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	**0.02**	**0.04**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	**0.65**	**0.86**	<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	**0.05**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.09**	**0.20**	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	**0.02**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.02**	**0.04**	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<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	0906_SW286_20220503	0906_SW289_20220503	0906_SW228_20220503	0906_SW236_20220503	0906_SW288_20220503
				Sampling date / time	03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00
Compound	CAS Number	LOR	Unit		EM2208150-021	EM2208150-022	EM2208150-023	EM2208150-024	EM2208150-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	**1.14**	**1.96**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.94**	**1.41**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**1.09**	**1.86**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**92.4**	**90.7**	**88.3**	**99.5**	**92.5**
13C8-PFOA	----	0.02	%		**96.0**	**90.3**	**93.6**	**98.7**	**99.3**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW218_20220503	0906_SW206_20220503	0906_SW212_20220503	0906_QC107_20220502	0906_MW214_20220503 Sample 031 moved to EM2208338
				Sampling date / time	03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00	02-May-2022 00:00	03-May-2022 00:00
					EM2208150-026	EM2208150-027	EM2208150-028	EM2208150-029	EM2208150-031
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.03**	**0.02**	<0.02	<0.02	----
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		**0.12**	**0.08**	<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		**0.24**	**0.15**	<0.01	**0.02**	----
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		**0.03**	<0.02	<0.02	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.01**	<0.01	<0.01	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW218_20220503	0906_SW206_20220503	0906_SW212_20220503	0906_QC107_20220502	0906_MW214_20220503 Sample 031 moved to EM2208338
				Sampling date / time	03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00	02-May-2022 00:00	03-May-2022 00:00
					EM2208150-026	EM2208150-027	EM2208150-028	EM2208150-029	EM2208150-031
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	**0.23**	----
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		**0.43**	**0.25**	<0.01	**0.25**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.36**	**0.23**	<0.01	**0.02**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.43**	**0.25**	<0.01	**0.25**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**95.2**	**95.1**	**96.8**	**91.5**	**92.7**
13C8-PFOA	----	0.02	%		**95.5**	**95.6**	**97.6**	**95.5**	**96.0**

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2208150**	Page	: 1 of 11
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 31		
No. of samples analysed	: 30		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 4330276)									
EM2208150-008	0906_MW240_20220501	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.15	0.16	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.04	0.04	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
EM2208150-011	0906_MW256_20220502	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.06	0.05	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: 4332326)									
EM2207888-001	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	0.05	0.05	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
EM2208150-028	0906_SW212_20220503	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

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: 4332326) - continued									
EM2208150-028	0906_SW212_20220503	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: 4330276)									
EM2208150-008	0906_MW240_20220501	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EM2208150-011	0906_MW256_20220502	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: 4332326)									
EM2207888-001	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	<0.02	<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
EM2208150-028	0906_SW212_20220503	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

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: 4332326) - continued									
EM2208150-028	0906_SW212_20220503	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: 4330276)									
EM2208150-008	0906_MW240_20220501	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
EM2208150-011	0906_MW256_20220502	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: 4332326)									
EM2207888-001	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

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: 4332326) - continued									
EM2207888-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EM2208150-028	0906_SW212_20220503	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: 4330276)									
EM2208150-008	0906_MW240_20220501	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
EM2208150-011	0906_MW256_20220502	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: 4332326)									
EM2207888-001	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: 4332326) - continued									
EM2207888-001	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
EM2208150-028	0906_SW212_20220503	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: 4330276)									
EM2208150-008	0906_MW240_20220501	EP231X: Sum of PFAS	----	0.01	µg/L	0.25	0.28	11.3	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.19	0.20	5.1	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.23	0.26	12.2	0% - 20%
EM2208150-011	0906_MW256_20220502	EP231X: Sum of PFAS	----	0.01	µg/L	0.06	0.05	18.2	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.06	0.05	18.2	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.06	0.05	18.2	No Limit
EP231P: PFAS Sums (QC Lot: 4332326)									
EM2207888-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.11	0.10	9.5	0% - 50%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.09	0.08	11.8	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.11	0.10	9.5	0% - 50%
EM2208150-028	0906_SW212_20220503	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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

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

Sub-Matrix: **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: 4330276)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	98.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	96.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	94.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	87.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	89.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	90.1	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4332326)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	100	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	100	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	97.3	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.5	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	96.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	94.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4330276)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	97.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.7	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	96.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.0	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.1	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	94.0	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	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4332326)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	90.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	97.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	97.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	100	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	101	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.6	69.0	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: 4332326) - continued								
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	98.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	95.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4330276)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.9	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	98.1	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	108	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	96.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	105	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	98.3	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4332326)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.3	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	108	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	96.9	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	99.6	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.9	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	102	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4330276)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	98.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	104	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	110	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	88.4	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4332326)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	99.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	102	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	114	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4330276)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	LCS: Spike Recovery (%)	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231P: PFAS Sums (QCLot: 4330276) - continued								
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4332326)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **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: 4330276)							
EM2208150-009	0906_MW246_20220501	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	103	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	101	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	98.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	100	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	100	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	97.3	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4332326)							
EM2208150-027	0906_SW206_20220503	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	101	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	92.7	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	99.7	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	97.5	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	128	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	94.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4330276)							
EM2208150-009	0906_MW246_20220501	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.2	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	100	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	98.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	100	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	96.7	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	95.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	101	71.0	129

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4330276) - continued							
EM2208150-009	0906_MW246_20220501	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	110	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	109	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	104	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	112	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4332326)							
EM2208150-027	0906_SW206_20220503	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.0	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	97.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	100	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	101	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	96.6	71.0	133
		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	99.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	95.5	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	97.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	103	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4330276)							
EM2208150-009	0906_MW246_20220501	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	101	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	129	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	114	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	112	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	103	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	120	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	104	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4332326)							
EM2208150-027	0906_SW206_20220503	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	100	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	102	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	99.5	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.1	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	96.6	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4332326) - continued							
EM2208150-027	0906_SW206_20220503	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	94.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4330276)							
EM2208150-009	0906_MW246_20220501	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	104	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	138	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	118	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	95.4	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4332326)							
EM2208150-027	0906_SW206_20220503	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	97.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	106	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	116	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	90.1	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2208150**	Page	: 1 of 6
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Site	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB	No. of samples received	: 31
Order number	: ----	No. of samples analysed	: 30

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)							
0906_MW240_20220501, 0906_MW246_20220501	**01-May-2022**	**11-May-2022**	28-Oct-2022	✓	**11-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X)							
0906_MW247_20220502, 0906_MW256_20220502, 0906_MW257_20220502, 0906_MW248_20220502, 0906_SW234_20220502, 0906_QC107_20220502	**02-May-2022**	**11-May-2022**	29-Oct-2022	✓	**11-May-2022**	29-Oct-2022	✓
HDPE (no PTFE) (EP231X)							
0906_MW244_20220503, 0906_SW240_20220503, 0906_SW286_20220503, 0906_SW289_20220503, 0906_SW228_20220503, 0906_SW236_20220503, 0906_SW288_20220503, 0906_SW218_20220503, 0906_SW206_20220503, 0906_SW212_20220503	**03-May-2022**	**11-May-2022**	30-Oct-2022	✓	**11-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X)							
0906_SW262_20220428, 0906_SW261_20220428, 0906_SW294_20220428	**28-Apr-2022**	**11-May-2022**	25-Oct-2022	✓	**11-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X)							
0906_MW245_20220430, 0906_MW249_20220430, 0906_MW255_20220430, 0906_MW252_20220430, 0906_MW253_20220430, 0906_MW254_20220430, 0906_MW251_20220430, 0906_SW310_20220430	**30-Apr-2022**	**11-May-2022**	27-Oct-2022	✓	**11-May-2022**	27-Oct-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW240_20220501,	0906_MW246_20220501	**01-May-2022**	**11-May-2022**	28-Oct-2022	✓	**11-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_MW247_20220502,	0906_MW256_20220502,	**02-May-2022**	**11-May-2022**	29-Oct-2022	✓	**11-May-2022**	29-Oct-2022	✓
0906_MW257_20220502,	0906_MW248_20220502,							
0906_SW234_20220502,	0906_QC107_20220502							
HDPE (no PTFE) (EP231X)								
0906_MW244_20220503,	0906_SW240_20220503,	**03-May-2022**	**11-May-2022**	30-Oct-2022	✓	**11-May-2022**	30-Oct-2022	✓
0906_SW286_20220503,	0906_SW289_20220503,							
0906_SW228_20220503,	0906_SW236_20220503,							
0906_SW288_20220503,	0906_SW218_20220503,							
0906_SW206_20220503,	0906_SW212_20220503							
HDPE (no PTFE) (EP231X)								
0906_SW262_20220428,	0906_SW261_20220428,	**28-Apr-2022**	**11-May-2022**	25-Oct-2022	✓	**11-May-2022**	25-Oct-2022	✓
0906_SW294_20220428								
HDPE (no PTFE) (EP231X)								
0906_MW245_20220430,	0906_MW249_20220430,	**30-Apr-2022**	**11-May-2022**	27-Oct-2022	✓	**11-May-2022**	27-Oct-2022	✓
0906_MW255_20220430,	0906_MW252_20220430,							
0906_MW253_20220430,	0906_MW254_20220430,							
0906_MW251_20220430,	0906_SW310_20220430							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0906_MW240_20220501,	0906_MW246_20220501	**01-May-2022**	**11-May-2022**	28-Oct-2022	✓	**11-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_MW247_20220502,	0906_MW256_20220502,	**02-May-2022**	**11-May-2022**	29-Oct-2022	✓	**11-May-2022**	29-Oct-2022	✓
0906_MW257_20220502,	0906_MW248_20220502,							
0906_SW234_20220502,	0906_QC107_20220502							
HDPE (no PTFE) (EP231X)								
0906_MW244_20220503,	0906_SW240_20220503,	**03-May-2022**	**11-May-2022**	30-Oct-2022	✓	**11-May-2022**	30-Oct-2022	✓
0906_SW286_20220503,	0906_SW289_20220503,							
0906_SW228_20220503,	0906_SW236_20220503,							
0906_SW288_20220503,	0906_SW218_20220503,							
0906_SW206_20220503,	0906_SW212_20220503							
HDPE (no PTFE) (EP231X)								
0906_SW262_20220428,	0906_SW261_20220428,	**28-Apr-2022**	**11-May-2022**	25-Oct-2022	✓	**11-May-2022**	25-Oct-2022	✓
0906_SW294_20220428								
HDPE (no PTFE) (EP231X)								
0906_MW245_20220430,	0906_MW249_20220430,	**30-Apr-2022**	**11-May-2022**	27-Oct-2022	✓	**11-May-2022**	27-Oct-2022	✓
0906_MW255_20220430,	0906_MW252_20220430,							
0906_MW253_20220430,	0906_MW254_20220430,							
0906_MW251_20220430,	0906_SW310_20220430							

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) 0906_MW240_20220501, 0906_MW246_20220501	**01-May-2022**	**11-May-2022**	28-Oct-2022	✓	**11-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW247_20220502, 0906_MW256_20220502, 0906_MW257_20220502, 0906_MW248_20220502, 0906_SW234_20220502, 0906_QC107_20220502	**02-May-2022**	**11-May-2022**	29-Oct-2022	✓	**11-May-2022**	29-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW244_20220503, 0906_SW240_20220503, 0906_SW286_20220503, 0906_SW289_20220503, 0906_SW228_20220503, 0906_SW236_20220503, 0906_SW288_20220503, 0906_SW218_20220503, 0906_SW206_20220503, 0906_SW212_20220503	**03-May-2022**	**11-May-2022**	30-Oct-2022	✓	**11-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_SW262_20220428, 0906_SW261_20220428, 0906_SW294_20220428	**28-Apr-2022**	**11-May-2022**	25-Oct-2022	✓	**11-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW245_20220430, 0906_MW249_20220430, 0906_MW255_20220430, 0906_MW252_20220430, 0906_MW253_20220430, 0906_MW254_20220430, 0906_MW251_20220430, 0906_SW310_20220430	**30-Apr-2022**	**11-May-2022**	27-Oct-2022	✓	**11-May-2022**	27-Oct-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW240_20220501, 0906_MW246_20220501	**01-May-2022**	**11-May-2022**	28-Oct-2022	✓	**11-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW247_20220502, 0906_MW256_20220502, 0906_MW257_20220502, 0906_MW248_20220502, 0906_SW234_20220502, 0906_QC107_20220502	**02-May-2022**	**11-May-2022**	29-Oct-2022	✓	**11-May-2022**	29-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW244_20220503, 0906_SW240_20220503, 0906_SW286_20220503, 0906_SW289_20220503, 0906_SW228_20220503, 0906_SW236_20220503, 0906_SW288_20220503, 0906_SW218_20220503, 0906_SW206_20220503, 0906_SW212_20220503	**03-May-2022**	**11-May-2022**	30-Oct-2022	✓	**11-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_SW262_20220428, 0906_SW261_20220428, 0906_SW294_20220428	**28-Apr-2022**	**11-May-2022**	25-Oct-2022	✓	**11-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW245_20220430, 0906_MW249_20220430, 0906_MW255_20220430, 0906_MW252_20220430, 0906_MW253_20220430, 0906_MW254_20220430, 0906_MW251_20220430, 0906_SW310_20220430	**30-Apr-2022**	**11-May-2022**	27-Oct-2022	✓	**11-May-2022**	27-Oct-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	39	**10.26**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2208340**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_FPASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2017MWHAUS0015 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: JL/MB		

Dates

Date Samples Received	: 05-May-2022 15:30	Issue Date	: 07-May-2022
Client Requested Due Date	: 13-May-2022	Scheduled Reporting Date	: **13-May-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 5	Temperature	: 3.4°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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2208340-001	02-May-2022 00:00	0906_MW241_20220502	✓
EM2208340-002	02-May-2022 00:00	0906_MW242_20220502	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)	Email	[redacted]
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[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 - XTab (XTAB)	Email	[redacted]

DERP LAB REPORTS

- *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 - XTab (XTAB)	Email	[redacted]

Cardno

Chain of Custody

PM Name: [redacted]

Phone: [redacted] Fax: [redacted] Mobile: [redacted]

Address [redacted]

PM Email: [redacted]

Results Email (please email results to **all** listed):
[redacted]

Project Number: NSW_0906_PFASOMP **Site:**

Laboratory (name, phone & contact person): [redacted]

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	QC	Water	Sample preservation: Ice/ Ice Bricks				Analysis: EP231X - PFAS Standard	HOLD	Discard		Comments: Please amend Sample IDs as follows	Please send to Eurofins
1	0906_MW241_20220502		2 x 20 ml	2/05/2022			X								X					
2	0906_MW242_20220502		2 x 20 ml	2/05/2022			X								X					

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. Sampler name: [redacted] Date: 04/05/2022

Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Environmental Division
Melbourne
Work Order Reference
EM2208340

Telephone : +61-3-8549 9600

Revision 1
Approved 23 May 2013

DEF19008_WAG_E5_PO8_COC.xlsx

Printed [illegible]/2022

Ranil Weerakkody

From: [redacted]
Sent: Friday, 6 May 2022 8:54 AM
To: COC Melbourne
Subject: LANECON - DEF19008 Kapooka Sample Order - CoCs
Attachments: DEF19008_WAG_E5_PO6_COC.xlsx; DEF19008_WAG_E5_PO7_COC.xls; DEF19008_WAG_E5_PO8_COC.xlsx; DEF19008_WAG_E5_PO9_COC.xlsx; DEF19008_WAG_E5_Base_COC.xlsx; DEF19008_WAG_E5_PO1_COC.xlsx; DEF19008_WAG_E5_PO2_COC.xlsx; DEF19008_WAG_E5_PO3_COC.xlsx; DEF19008_WAG_E5_PO4_COC.xlsx; DEF19008_WAG_E5_PO5_COC.xlsx

Follow Up Flag: Follow up
Flag Status: Flagged

CoCs for samples that arrived yesterday

Kind Regards

[redacted]
Senior Project Manager - VIC, SA, TAS
ALS Limited
[redacted]
[redacted]
alsglobal.com

Please note that **my office hours are 9:00am - 3:00pm Monday to Friday**. For assistance outside of this time please contact [redacted] Please forward CoCs to [redacted]

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How to Create a Project - https://youtu.be/xg07UpuPLMo
How to Create a COC - https://youtu.be/TI29pSgeYAA

How to Begin Sample Collection - https://youtu.be/7bUgYqAHYFo

From: [redacted]
Sent: Thursday, 5 May 2022 4:04 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Hi [redacted],

Please see attached COCs for site 0906 – note that there are 10 work orders in total.

Cheers,

[redacted]
TEAM LEADER | SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno now Stantec

[redacted]

[redacted] Web www.cardno.com

CONNECT WITH CARDNO

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more.

Cardno's management systems are certified to ISO9001 (quality) and AS/NZS4801/OHSAS18001 (occupational health and safety)

This email and its attachments may contain confidential and/or privileged information for the sole use of the intended recipient. All electronic data supplied data must be checked against an applicable hardcopy version which shall be the only document which Cardno warrants accuracy. If you are not the intended recipient, any use, distribution or copying of the information contained in this email and its attachments is strictly prohibited. If you have received this email in error, please email the sender by replying to the message and immediately delete and destroy any copies of this email and any attachments. The views and opinions expressed are those of the author and do not necessarily represent those of Cardno.

From: [redacted]
Sent: Thursday, 5 May 2022 2:59 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Thanks

Kind Regards

[redacted]

To: ALS Enviro Melbourne
Cc: COC Melbourne
Subject: NO ANALYSIS - EM2208150 - CARDNO - NSW_0906_PFASOMP

Hi team,

Please find the attached samples received without analysis.

Thanks,

Kind Regards,

[redacted]
Sample Receipt Officer, Environmental
Springvale

[redacted]

alsglobal.com

right solutions.
right partner.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2208340**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022 15:30
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022 11:03
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 2		
No. of samples analysed	: 2		

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Accredited for compliance with ISO/IEC 17025 - Testing

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X: Poor matrix spike recovery for sample EM2208253-002 due to sample matrix interference.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/05/2022):This report has been amended due to incorrect quote applied. 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)			Sample ID	0906_MW241_20220502	0906_MW242_20220502	----	----	----
			Sampling date / time	02-May-2022 00:00	02-May-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM2208340-001	EM2208340-002	--------	--------	--------
				Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
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	0906_MW241_20220502	0906_MW242_20220502	----	----	----
				Sampling date / time	02-May-2022 00:00	02-May-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2208340-001	EM2208340-002	--------	--------	--------
					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		<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**85.9**	**95.0**	----	----	----
13C8-PFOA	----	0.02	%		**97.1**	**97.5**	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2208340**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.48	0.54	12.1	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.19	0.20	0.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2208314-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.54	0.57	5.3	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.72	2.79	2.5	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.71	0.74	3.4	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.27	0.28	0.0	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351) - continued									
EM2208314-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4333351)									
EM2208253-001	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	0.05	0.04	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	0.06	0.04	29.7	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
EM2208314-001	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: 4333351)									
EM2208253-001	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: 4333351) - continued									
EM2208253-001	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.09	0.10	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
EM2208314-001	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: 4333351)									
EM2208253-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	5.18	5.37	3.6	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.67	0.74	9.9	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	5.00	5.22	4.3	0% - 20%
EM2208314-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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

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

Sub-Matrix: **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: 4333351)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	96.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	87.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	93.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.8	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	95.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	126	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	103	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.7	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	105	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	103	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	107	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	113	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: 4333351) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	91.7	70.0	130
EP231P: PFAS Sums (QCLot: 4333351)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **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: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	73.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	91.1	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	105	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	73.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	78.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	125	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	104	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	80.5	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	73.0	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	67.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	# 62.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)							

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: 4333351) - continued							
EM2208253-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	85.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	# 67.9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	76.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	72.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	92.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	100.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	104	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	74.4	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2208340**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Site	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB	No. of samples received	: 2
Order number	: ----	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: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2208253--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorotetradecanoic acid (PFTeDA)**	376-06-7	62.5 %	71.0-132%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2208253--002	Anonymous	**N-Ethyl perfluorooctane sulfonamide (EtFOSA)**	4151-50-2	67.9 %	70.0-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **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)								
0906_MW241_20220502,	0906_MW242_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW241_20220502,	0906_MW242_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0906_MW241_20220502,	0906_MW242_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW241_20220502, 0906_MW242_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW241_20220502, 0906_MW242_20220502	**02-May-2022**	**12-May-2022**	29-Oct-2022	✓	**12-May-2022**	29-Oct-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	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

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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2208339**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_FPASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2017MWHAUS0015 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: JL/MB		

Dates

Date Samples Received	: 05-May-2022 15:30	Issue Date	: 07-May-2022
Client Requested Due Date	: 13-May-2022	Scheduled Reporting Date	: **13-May-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 5	Temperature	: 3.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2208339-001	03-May-2022 00:00	0906_MW312_20220503	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV) Email [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 - XTab (XTAB) Email [redacted]

DERP LAB REPORTS

- *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 - XTab (XTAB) Email [redacted]

Cardno

Chain of Custody

PM Name: [redacted]

Phone: [redacted] Fax [redacted] Mobile: [redacted]

Address [redacted]

PM Email: [redacted]

Results Email (please email results to all listed): [redacted]

Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone, & contact person): [redacted]

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Water	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD	Discard		Please amend Sample IDs as follows	Please send to Eurofins
1	0906_MW312_20220503		2 x 20 ml	3/05/2022			X								X					

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. Sampler name: [redacted] Date: 04/05/2022

	Date	Time		Date	Time
Relinquished by: (print and signature)			Received by: (print and signature)		
Relinquished by: (print and signature)			Received by: (print and signature)		
Relinquished by: (print and signature)			Received by: (print and signature)		

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Environmental Division
Melbourne
Work Order Reference
EM2208339

Page of

Telephone : 61-3-8549 9600

Ranil Weerakkody

From: [redacted]
Sent: Friday, 6 May 2022 8:54 AM
To: COC Melbourne
Subject: LANECON - DEF19008 Kapooka Sample Order - CoCs
Attachments: DEF19008_WAG_E5_PO6_COC.xlsx; DEF19008_WAG_E5_PO7_COC.xls; DEF19008_WAG_E5_PO8_COC.xlsx; DEF19008_WAG_E5_PO9_COC.xlsx; DEF19008_WAG_E5_Base_COC.xlsx; DEF19008_WAG_E5_PO1_COC.xlsx; DEF19008_WAG_E5_PO2_COC.xlsx; DEF19008_WAG_E5_PO3_COC.xlsx; DEF19008_WAG_E5_PO4_COC.xlsx; DEF19008_WAG_E5_PO5_COC.xlsx

Follow Up Flag: Follow up
Flag Status: Flagged

CoCs for samples that arrived yesterday

Kind Regards

[redacted]
Senior Project Manager - VIC, SA, TAS
ALS Limited
[redacted]
alsglobal.com

Please note that **my office hours are 9:00am – 3:00pm Monday to Friday**. For assistance outside of this time please contact [redacted]. Please forward CoCs to [redacted]

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Navigating ALS Compass – https://youtu.be/UgxjZswyI6g
How to Create a Project - https://youtu.be/xg07UpuPLMo
How to Create a COC - https://youtu.be/TI29pSgeYAA

How to Begin Sample Collection - https://youtu.be/7bUgYqAHYFo

From: [redacted]
Sent: Thursday, 5 May 2022 4:04 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Hi [redacted]

Please see attached COCs for site 0906 – note that there are 10 work orders in total.

Cheers,

[redacted]
TEAM LEADER / SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno now Stantec

[redacted]

Email [redacted] Web www.cardno.com

CONNECT WITH CARDNO

Cardno acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging - learn more.

Cardno's management systems are certified to ISO9001 (quality) and AS/NZS4801/OHSAS18001 (occupational health and safety)

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From: [redacted]
Sent: Thursday, 5 May 2022 2:59 PM
To: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Sample Order

Thanks

Kind Regards

[redacted]

To: ALS Enviro Melbourne
Cc: COC Melbourne
Subject: NO ANALYSIS - EM2208150 - CARDNO - NSW_0906_PFASOMP

Hi team,

Please find the attached samples received without analysis.

Thanks,

Kind Regards,

[redacted]
Sample Receipt Officer, Environmental
Springvale

[redacted]

alsglobal.com

right solutions.
right partner.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2208339**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022 15:30
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022 11:06
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X: Poor matrix spike recovery for sample EM2208253-002 due to sample matrix interference.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/05/2022):This report has been amended due to incorrect quote applied. 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)				Sample ID	0906_MW312_20220503	----	----	----	----
				Sampling date / time	03-May-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2208339-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW312_20220503	----	----	----	----
				Sampling date / time	03-May-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2208339-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**92.6**	----	----	----	----
13C8-PFOA	----	0.02	%		**97.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2208339**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: Customer Services EM
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB		
Site	: ----		
Quote number	: SY/139/19_Wagga		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.48	0.54	12.1	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.19	0.20	0.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2208314-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351)									
EM2208253-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.54	0.57	5.3	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.72	2.79	2.5	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.71	0.74	3.4	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.27	0.28	0.0	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4333351) - continued									
EM2208314-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4333351)									
EM2208253-001	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	0.05	0.04	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	0.06	0.04	29.7	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
EM2208314-001	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: 4333351)									
EM2208253-001	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: 4333351) - continued									
EM2208253-001	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.09	0.10	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
EM2208314-001	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: 4333351)									
EM2208253-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	5.18	5.37	3.6	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.67	0.74	9.9	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	5.00	5.22	4.3	0% - 20%
EM2208314-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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

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

Sub-Matrix: **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: 4333351)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	96.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	87.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	93.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.8	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	95.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	126	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	103	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.7	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	105	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	103	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	107	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	113	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: 4333351) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	91.7	70.0	130
EP231P: PFAS Sums (QCLot: 4333351)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **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: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	73.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	91.1	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	105	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	73.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	78.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	125	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	104	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	80.5	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	73.0	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	67.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	# 62.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4333351)							

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: 4333351) - continued							
EM2208253-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	85.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	# 67.9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	76.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	72.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4333351)							
EM2208253-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	92.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	100.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	104	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	74.4	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2208339**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 05-May-2022
Site	: ----	Issue Date	: 13-May-2022
Sampler	: JL/MB	No. of samples received	: 1
Order number	: ----	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2208253--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2208253--002	Anonymous	**Perfluorotetradecanoic acid (PFTeDA)**	376-06-7	62.5 %	71.0-132%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2208253--002	Anonymous	**N-Ethyl perfluorooctane sulfonamide (EtFOSA)**	4151-50-2	67.9 %	70.0-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **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)							
0906_MW312_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW312_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW312_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW312_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW312_20220503	**03-May-2022**	**12-May-2022**	30-Oct-2022	✓	**12-May-2022**	30-Oct-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	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

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.

Cardno

Chain of Custody

PM Name: [redacted]

Phone: [redacted] Fax: [redacted] Mobile: [redacted]

Address: [redacted]

PM Email: [redacted]

Results Email (please email results to all listed): [redacted]

Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone, & contact person): [redacted]

	Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC	Water	Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD	Discard		Please amend Sample IDs as follows	Please send to Eurofins
1	0906_MW302_20220501		2 x 20 ml	1/05/2022			X								X					
2	0906_MW300_20220501		2 x 20 ml	1/05/2022			X								X					
3	0906_MW308_20220501		2 x 20 ml	1/05/2022			X								X					
4	0906_MW304_20220501		2 x 20 ml	1/05/2022			X								X					
5	0906_MW306_20220502		2 x 20 ml	2/05/2022			X								X					
6	0906_MW310_20220502		6 x 20 ml	2/05/2022			X								X					
—	0906_MW311_20220502		2 x 20 ml	2/05/2022			X										X			
7	0906_MW243_20220502		2 x 20 ml	2/05/2022			X								X					
8	0906_SW104_20220501		2 x 20 ml 4	1/05/2022				X								X				
—	0906_DRUM01_20220503		2 x 20 ml	3/05/2022						X							X			
9	0906_QC101_20220501		2 x 20 ml 4	1/05/2022				X							X					
10	0906_QC102_20220501		2 x 20 ml	1/05/2022			X								X					
11	0906_QC103_20220501		2 x 20 ml	1/05/2022			X								X					
12	0906_QC104_20220501		2 x 20 ml	1/05/2022			X								X					
13	0906_QC105_20220501		2 x 20 ml	1/05/2022			X								X					
14	0906_QC106_20220502		2 x 20 ml	2/05/2022			X									X				
15	0906_QC300_20220428		2 x 20 ml	28/04/2022					X						X					
16	0906_QC301_20220430		2 x 20 ml	30/04/2022					X						X					
17	0906_QC302_20220430		2 x 20 ml	30/04/2022					X							X				
18	0906_QC303_20220501		2 x 20 ml	1/05/2022					X						X					
19	0906_QC304_20220501		2 x 20 ml	1/05/2022					X							X				
20	0906_QC305_20220504		2 x 20 ml	29/04/2022					X						X					
21	0906_QC306_20220504		2 x 20 ml	29/04/2022					X							X				
22	0906_QC307_20220502		2 x 20 ml	2/05/2022					X						X					
23	0906_QC308_20220502		2 x 20 ml	2/05/2022					X							X				
24	0906_QC309_20220503		2 x 20 ml	3/05/2022					X						X					
25	0906_QC310_20220503		2 x 20 ml	3/05/2022					X							X				
26	0906_QC311_20220504		2 x 20 ml	4/05/2022					X							X				
27	0906_QC500_20220428		2 x 20 ml	28/04/2022					X						X					
28	0906_QC501_20220430		2 x 20 ml	30/04/2022					X						X					
29	0906_QC502_20220430		2 x 20 ml	30/04/2022					X							X				
30	0906_QC503_20220501		2 x 20 ml	1/05/2022					X						X					
31	0906_QC504_20220501		2 x 20 ml	1/05/2022					X							X				
32	0906_QC505_20220504		2 x 20 ml	29/04/2022					X						X					
33	0906_QC506_20220504		2 x 20 ml	29/04/2022					X							X				
34	0906_QC507_20220502		2 x 20 ml	2/05/2022					X						X					
35	0906_QC508_20220502		2 x 20 ml	2/05/2022					X							X				
36	0906_QC509_20220503		2 x 20 ml	3/05/2022					X						X					
37	0906_QC510_20220503		2 x 20 ml	3/05/2022					X							X				

Sample Matrix | Sample preservation | Analysis | Comments

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples — Sampler name: [redacted] — Date: 04/05/2022

Relinquished by (print and signature)	Date	Time	Received by (print and signature)	Date	Time
Relinquished by (print and signature)	Date	Time	Received by (print and signature)	Date	Time
Relinquished by (print and signature)	Date	Time	Received by (print and s		

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Environmental Division
Melbourne
Work Order Reference
EM2208338

Telephone : 61-3-8549 9600

[redacted]

From: [redacted]
Sent: Friday, 6 May 2022 8:54 AM
To: COC Melbourne
Subject: LANECON - DEF19008 Kapooka Sample Order - CoCs
Attachments: DEF19008_WAG_E5_PO6_COC.xlsx; DEF19008_WAG_E5_PO7_COC.xls; DEF19008_WAG_E5_PO8_COC.xlsx; DEF19008_WAG_E5_PO9_COC.xlsx; DEF19008_WAG_E5_Base_COC.xlsx; DEF19008_WAG_E5_PO1_COC.xlsx; DEF19008_WAG_E5_PO2_COC.xlsx; DEF19008_WAG_E5_PO3_COC.xlsx; DEF19008_WAG_E5_PO4_COC.xlsx; DEF19008_WAG_E5_PO5_COC.xlsx
Follow Up Flag: Follow up
Flag Status: Flagged

CoCs for samples that arrived yesterday

Kind Regards

[redacted]
Senior Project Manager - VIC, SA, TAS
ALS Limited
[redacted]
alsglobal.com

right solutions. right partner.

Please note that my office hours [redacted] Monday to Friday. For assistance outside of this time please contact [redacted] Please forward CoCs to

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How to Create a Project - https://youtu.be/xg07UpuPLMo
How to Create a COC - https://youtu.be/TI29pSgeYAA

How to Begin Sample Collection - https://youtu.be/7bUgYgAHYFo

From: [redacted]
Sent: T[redacted] 2022 4:04 PM
To: [redacted]
[redacted] RE: [EXTERNAL] - DEF19008 Ka[redacted]

Hi Graeme,

Please see attached COCs for site 0906 – note that there are 10 work orders in total.

Cheers,

[redacted]
TEAM LEADER / SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno now Stantec

[redacted]
E[redacted] Web www.cardno.com

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From: [redacted]
Sent: Thursday, 5 May 202[redacted]
To: [redacted]
Ludl[redacted]
Subject: RE: [EXTERNAL] - DEF19008 Kapooka Samp[redacted]

Thanks

Kind Regards

[redacted]

To: ALS Enviro Melbourne
Cc: COC Melbourne
Subject: NO ANALYSIS - EM2208150 - CARDNO - NSW_0906_PFASOMP

Hi team,

Please find the attached samples received without analysis.

Thanks,

Kind Regards,

[redacted]
Sample Receipt Officer, Environmental
Springvale

right solutions.
right partner.

[redacted]

alsglobal.com

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2208338**	Page	: 1 of 15
Amendment	: **1**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_FPASOMP	Date Samples Received	: 05-May-2022 15:30
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 12-May-2022 18:48
Sampler	: JL/MB		
Site	: ----		
Quote number	: EN/024/21		
No. of samples received	: 39		
No. of samples analysed	: 27		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW302_20220501	0906_MW300_20220501	0906_MW308_20220501	0906_MW304_20220501	0906_MW306_20220502
				Sampling date / time	01-May-2022 00:00	01-May-2022 00:00	01-May-2022 00:00	01-May-2022 00:00	02-May-2022 00:00
					EM2208338-001	EM2208338-002	EM2208338-003	EM2208338-004	EM2208338-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.05**	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.03**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.10**	<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	**0.04**	<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	0906_MW302_20220501	0906_MW300_20220501	0906_MW308_20220501	0906_MW304_20220501	0906_MW306_20220502
				Sampling date / time	01-May-2022 00:00	01-May-2022 00:00	01-May-2022 00:00	01-May-2022 00:00	02-May-2022 00:00
Compound	CAS Number	LOR	Unit		EM2208338-001	EM2208338-002	EM2208338-003	EM2208338-004	EM2208338-005
					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	**0.22**	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.10**	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.19**	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**91.1**	**92.6**	**92.2**	**93.5**	**91.3**
13C8-PFOA	----	0.02	%		**92.7**	**89.4**	**92.7**	**93.1**	**92.7**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW310_20220502	0906_MW243_20220502	0906_SW104_20220501	0906_QC101_20220501	0906_QC102_20220501
				Sampling date / time	02-May-2022 00:00	02-May-2022 00:00	01-May-2022 00:00	01-May-2022 00:00	01-May-2022 00:00
					EM2208338-006	EM2208338-007	EM2208338-008	EM2208338-009	EM2208338-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.03**	**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		<0.01	<0.01	**0.19**	**0.20**	**0.10**
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	**0.63**	**0.58**	<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	**0.05**	**0.05**	**0.04**
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	0906_MW310_20220502	0906_MW243_20220502	0906_SW104_20220501	0906_QC101_20220501	0906_QC102_20220501
				Sampling date / time	02-May-2022 00:00	02-May-2022 00:00	01-May-2022 00:00	01-May-2022 00:00	01-May-2022 00:00
Compound	CAS Number	LOR	Unit		EM2208338-006	EM2208338-007	EM2208338-008	EM2208338-009	EM2208338-010
					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	<0.05	<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	**0.91**	**0.89**	**0.23**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.82**	**0.78**	**0.10**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**0.91**	**0.87**	**0.20**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**88.4**	**85.8**	**95.4**	**92.8**	**88.3**
13C8-PFOA	----	0.02	%		**94.3**	**92.9**	**94.2**	**92.6**	**94.0**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_QC103_20220501	0906_QC104_20220501	0906_QC105_20220501	0906_QC300_20220428	0906_QC301_20220430
				Sampling date / time	01-May-2022 00:00	01-May-2022 00:00	01-May-2022 00:00	28-Apr-2022 00:00	30-Apr-2022 00:00
Compound	CAS Number	LOR	Unit		EM2208338-011	EM2208338-012	EM2208338-013	EM2208338-015	EM2208338-016
					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	0906_QC103_20220501	0906_QC104_20220501	0906_QC105_20220501	0906_QC300_20220428	0906_QC301_20220430
				Sampling date / time	01-May-2022 00:00	01-May-2022 00:00	01-May-2022 00:00	28-Apr-2022 00:00	30-Apr-2022 00:00
Compound	CAS Number	LOR	Unit		EM2208338-011	EM2208338-012	EM2208338-013	EM2208338-015	EM2208338-016
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<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	%		**88.4**	**90.2**	**95.0**	**82.6**	**90.3**
13C8-PFOA	----	0.02	%		**93.7**	**91.5**	**96.0**	**95.6**	**94.0**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC303_20220501	0906_QC305_20220504	0906_QC307_20220502	0906_QC309_20220503	0906_QC500_20220428
				Sampling date / time	01-May-2022 00:00	29-Apr-2022 00:00	02-May-2022 00:00	03-May-2022 00:00	28-Apr-2022 00:00
					EM2208338-018	EM2208338-020	EM2208338-022	EM2208338-024	EM2208338-027
					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	0906_QC303_20220501	0906_QC305_20220504	0906_QC307_20220502	0906_QC309_20220503	0906_QC500_20220428
				Sampling date / time	01-May-2022 00:00	29-Apr-2022 00:00	02-May-2022 00:00	03-May-2022 00:00	28-Apr-2022 00:00
Compound	CAS Number	LOR	Unit		EM2208338-018	EM2208338-020	EM2208338-022	EM2208338-024	EM2208338-027
					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	%		**83.0**	**87.6**	**89.9**	**87.9**	**95.8**
13C8-PFOA	----	0.02	%		**96.0**	**94.7**	**96.0**	**91.2**	**91.0**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC501_20220430	0906_QC503_20220501	0906_QC505_20220504	0906_QC507_20220502	0906_QC509_20220503
				Sampling date / time	30-Apr-2022 00:00	01-May-2022 00:00	29-Apr-2022 00:00	02-May-2022 00:00	03-May-2022 00:00
					EM2208338-028	EM2208338-030	EM2208338-032	EM2208338-034	EM2208338-036
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<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**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC501_20220430	0906_QC503_20220501	0906_QC505_20220504	0906_QC507_20220502	0906_QC509_20220503
				Sampling date / time	30-Apr-2022 00:00	01-May-2022 00:00	29-Apr-2022 00:00	02-May-2022 00:00	03-May-2022 00:00
					EM2208338-028	EM2208338-030	EM2208338-032	EM2208338-034	EM2208338-036
					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	%		**99.2**	**101**	**94.6**	**88.6**	**95.9**
13C8-PFOA	----	0.02	%		**97.8**	**105**	**97.1**	**101**	**89.0**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_QC511_20220504	0906_MW214_20220503	----	----	----
				Sampling date / time	04-May-2022 00:00	04-May-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2208338-038	EM2208338-039	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_QC511_20220504	0906_MW214_20220503	----	----	----
				Sampling date / time	04-May-2022 00:00	04-May-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2208338-038	EM2208338-039	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.3**	**92.0**	----	----	----
13C8-PFOA	----	0.02	%		**103**	**97.4**	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2208338**	Page	: 1 of 11
Amendment	: **1**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_FPASOMP	Date Samples Received	: 05-May-2022
Order number	: ----	Date Analysis Commenced	: 09-May-2022
C-O-C number	: ----	Issue Date	: 12-May-2022
Sampler	: JL/MB		
Site	: ----		
Quote number	: EN/024/21		
No. of samples received	: 39		
No. of samples analysed	: 27		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 4329418)									
EM2208338-006	0906_MW310_20220502	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
EM2208338-009	0906_QC101_20220501	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.20	0.19	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.58	0.57	2.8	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	<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: 4330275)									
EM2208205-022	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	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: 4329418)									
EM2208338-006	0906_MW310_20220502	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

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: 4329418) - continued									
EM2208338-006	0906_MW310_20220502	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
EM2208338-009	0906_QC101_20220501	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	0.05	0.05	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4330275)									
EM2208205-022	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: 4329418)									
EM2208338-006	0906_MW310_20220502	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4329418) - continued									
EM2208338-006	0906_MW310_20220502	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
EM2208338-009	0906_QC101_20220501	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: 4330275)									
EM2208205-022	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: 4329418)									
EM2208338-006	0906_MW310_20220502	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory 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: 4329418) - continued									
EM2208338-009	0906_QC101_20220501	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: 4330275)									
EM2208205-022	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: 4329418)									
EM2208338-006	0906_MW310_20220502	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EM2208338-009	0906_QC101_20220501	EP231X: Sum of PFAS	----	0.01	µg/L	0.89	0.85	4.6	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.78	0.76	2.6	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.87	0.85	2.3	0% - 20%
EP231P: PFAS Sums (QC Lot: 4330275)									
EM2208205-022	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.05	0.06	18.2	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.04	0.03	28.6	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.05	0.06	18.2	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4329418)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	102	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	96.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	97.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	94.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	91.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	90.5	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4330275)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	107	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	100	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	102	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	105	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	109	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4331993)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	92.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	111	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	101	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	99.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4329418)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	96.0	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	96.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	103	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	93.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	108	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	100	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	96.5	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	78.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	108	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4330275)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	96.5	73.0	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4330275) - continued								
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	84.9	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	99.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	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	104	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	103	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	108	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4331993)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	85.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	96.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	106	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	106	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	93.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	107	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	93.5	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4329418)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	103	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	111	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	104	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	110	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	106	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4330275)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	106	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	113	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	70.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4330275) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	105	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	98.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	101	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4331993)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	107	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	116	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	102	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	106	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	88.8	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	99.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4329418)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	101	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	113	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	86.3	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4330275)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	101	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	131	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	85.2	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4331993)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	104	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	110	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	113	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	72.5	70.0	130
EP231P: PFAS Sums (QCLot: 4329418)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231P: PFAS Sums (QCLot: 4329418) - continued								
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4330275)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4331993)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **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: 4329418)							
EM2208338-008	0906_SW104_20220501	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	102	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	98.9	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	99.7	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	103	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	102	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	96.2	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4330275)							
EM2208205-022	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	106	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	118	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	110	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	120	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	104	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	100	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4329418)							
EM2208338-008	0906_SW104_20220501	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	100	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	95.5	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	91.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	97.3	72.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4329418) - continued							
EM2208338-008	0906_SW104_20220501	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.1	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	97.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	98.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	103	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	99.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	99.3	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4330275)							
EM2208205-022	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	97.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	83.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	98.5	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	109	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	114	71.0	133
		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	105	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	107	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	106	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4329418)							
EM2208338-008	0906_SW104_20220501	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	105	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	108	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	93.6	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	96.9	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	103	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	114	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	97.7	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4330275)							
EM2208205-022	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	110	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	111	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	108	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	104	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4330275) - continued							
EM2208205-022	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	106	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	119	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	104	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4329418)							
EM2208338-008	0906_SW104_20220501	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	101	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	108	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	108	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	85.4	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4330275)							
EM2208205-022	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	105	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	110	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	107	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	84.0	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2208338**	Page	: 1 of 8
Amendment	: **1**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_FPASOMP	Date Samples Received	: 05-May-2022
Site	: ----	Issue Date	: 12-May-2022
Sampler	: JL/MB	No. of samples received	: 39
Order number	: ----	No. of samples analysed	: 27

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	3	39	7.69	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW302_20220501, 0906_MW308_20220501, 0906_SW104_20220501, 0906_QC102_20220501, 0906_QC104_20220501, 0906_QC303_20220501	0906_MW300_20220501, 0906_MW304_20220501, 0906_QC101_20220501, 0906_QC103_20220501, 0906_QC105_20220501,	**01-May-2022**	**10-May-2022**	28-Oct-2022	✓	**10-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC503_20220501		**01-May-2022**	**11-May-2022**	28-Oct-2022	✓	**11-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_MW306_20220502, 0906_MW243_20220502,	0906_MW310_20220502, 0906_QC307_20220502	**02-May-2022**	**10-May-2022**	29-Oct-2022	✓	**10-May-2022**	29-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC507_20220502		**02-May-2022**	**11-May-2022**	29-Oct-2022	✓	**11-May-2022**	29-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC309_20220503		**03-May-2022**	**10-May-2022**	30-Oct-2022	✓	**10-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC509_20220503		**03-May-2022**	**11-May-2022**	30-Oct-2022	✓	**11-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC511_20220504,	0906_MW214_20220503	**04-May-2022**	**11-May-2022**	31-Oct-2022	✓	**11-May-2022**	31-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC300_20220428		**28-Apr-2022**	**10-May-2022**	25-Oct-2022	✓	**10-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC500_20220428		**28-Apr-2022**	**11-May-2022**	25-Oct-2022	✓	**11-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20220504		**29-Apr-2022**	**10-May-2022**	26-Oct-2022	✓	**10-May-2022**	26-Oct-2022	✓
HDPE (no PTFE) (EP231X)								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
0906_QC505_20220504		**29-Apr-2022**	**11-May-2022**	26-Oct-2022	✓	**11-May-2022**	26-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC301_20220430		**30-Apr-2022**	**10-May-2022**	27-Oct-2022	✓	**10-May-2022**	27-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC501_20220430		**30-Apr-2022**	**11-May-2022**	27-Oct-2022	✓	**11-May-2022**	27-Oct-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) 0906_MW302_20220501, 0906_MW308_20220501, 0906_SW104_20220501, 0906_QC102_20220501, 0906_QC104_20220501, 0906_QC303_20220501	0906_MW300_20220501, 0906_MW304_20220501, 0906_QC101_20220501, 0906_QC103_20220501, 0906_QC105_20220501,	**01-May-2022**	**10-May-2022**	28-Oct-2022	✓	**10-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC503_20220501		**01-May-2022**	**11-May-2022**	28-Oct-2022	✓	**11-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW306_20220502, 0906_MW243_20220502,	0906_MW310_20220502, 0906_QC307_20220502	**02-May-2022**	**10-May-2022**	29-Oct-2022	✓	**10-May-2022**	29-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC507_20220502		**02-May-2022**	**11-May-2022**	29-Oct-2022	✓	**11-May-2022**	29-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC309_20220503		**03-May-2022**	**10-May-2022**	30-Oct-2022	✓	**10-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC509_20220503		**03-May-2022**	**11-May-2022**	30-Oct-2022	✓	**11-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC511_20220504,	0906_MW214_20220503	**04-May-2022**	**11-May-2022**	31-Oct-2022	✓	**11-May-2022**	31-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC300_20220428		**28-Apr-2022**	**10-May-2022**	25-Oct-2022	✓	**10-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC500_20220428		**28-Apr-2022**	**11-May-2022**	25-Oct-2022	✓	**11-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC305_20220504		**29-Apr-2022**	**10-May-2022**	26-Oct-2022	✓	**10-May-2022**	26-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC505_20220504		**29-Apr-2022**	**11-May-2022**	26-Oct-2022	✓	**11-May-2022**	26-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC301_20220430		**30-Apr-2022**	**10-May-2022**	27-Oct-2022	✓	**10-May-2022**	27-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC501_20220430		**30-Apr-2022**	**11-May-2022**	27-Oct-2022	✓	**11-May-2022**	27-Oct-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0906_MW302_20220501,	0906_MW300_20220501,	**01-May-2022**	**10-May-2022**	28-Oct-2022	✓	**10-May-2022**	28-Oct-2022	✓
0906_MW308_20220501,	0906_MW304_20220501,							
0906_SW104_20220501,	0906_QC101_20220501,							
0906_QC102_20220501,	0906_QC103_20220501,							
0906_QC104_20220501,	0906_QC105_20220501,							
0906_QC303_20220501								
HDPE (no PTFE) (EP231X)								
0906_QC503_20220501		**01-May-2022**	**11-May-2022**	28-Oct-2022	✓	**11-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_MW306_20220502,	0906_MW310_20220502,	**02-May-2022**	**10-May-2022**	29-Oct-2022	✓	**10-May-2022**	29-Oct-2022	✓
0906_MW243_20220502,	0906_QC307_20220502							
HDPE (no PTFE) (EP231X)								
0906_QC507_20220502		**02-May-2022**	**11-May-2022**	29-Oct-2022	✓	**11-May-2022**	29-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC309_20220503		**03-May-2022**	**10-May-2022**	30-Oct-2022	✓	**10-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC509_20220503		**03-May-2022**	**11-May-2022**	30-Oct-2022	✓	**11-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC511_20220504,	0906_MW214_20220503	**04-May-2022**	**11-May-2022**	31-Oct-2022	✓	**11-May-2022**	31-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC300_20220428		**28-Apr-2022**	**10-May-2022**	25-Oct-2022	✓	**10-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC500_20220428		**28-Apr-2022**	**11-May-2022**	25-Oct-2022	✓	**11-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20220504		**29-Apr-2022**	**10-May-2022**	26-Oct-2022	✓	**10-May-2022**	26-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC505_20220504		**29-Apr-2022**	**11-May-2022**	26-Oct-2022	✓	**11-May-2022**	26-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC301_20220430		**30-Apr-2022**	**10-May-2022**	27-Oct-2022	✓	**10-May-2022**	27-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC501_20220430		**30-Apr-2022**	**11-May-2022**	27-Oct-2022	✓	**11-May-2022**	27-Oct-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW302_20220501,	0906_MW300_20220501,	**01-May-2022**	**10-May-2022**	28-Oct-2022	✓	**10-May-2022**	28-Oct-2022	✓
0906_MW308_20220501,	0906_MW304_20220501,							
0906_SW104_20220501,	0906_QC101_20220501,							
0906_QC102_20220501,	0906_QC103_20220501,							
0906_QC104_20220501,	0906_QC105_20220501,							
0906_QC303_20220501								
HDPE (no PTFE) (EP231X)								
0906_QC503_20220501		**01-May-2022**	**11-May-2022**	28-Oct-2022	✓	**11-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_MW306_20220502,	0906_MW310_20220502,	**02-May-2022**	**10-May-2022**	29-Oct-2022	✓	**10-May-2022**	29-Oct-2022	✓
0906_MW243_20220502,	0906_QC307_20220502							
HDPE (no PTFE) (EP231X)								
0906_QC507_20220502		**02-May-2022**	**11-May-2022**	29-Oct-2022	✓	**11-May-2022**	29-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC309_20220503		**03-May-2022**	**10-May-2022**	30-Oct-2022	✓	**10-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC509_20220503		**03-May-2022**	**11-May-2022**	30-Oct-2022	✓	**11-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC511_20220504,	0906_MW214_20220503	**04-May-2022**	**11-May-2022**	31-Oct-2022	✓	**11-May-2022**	31-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC300_20220428		**28-Apr-2022**	**10-May-2022**	25-Oct-2022	✓	**10-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC500_20220428		**28-Apr-2022**	**11-May-2022**	25-Oct-2022	✓	**11-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20220504		**29-Apr-2022**	**10-May-2022**	26-Oct-2022	✓	**10-May-2022**	26-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC505_20220504		**29-Apr-2022**	**11-May-2022**	26-Oct-2022	✓	**11-May-2022**	26-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC301_20220430		**30-Apr-2022**	**10-May-2022**	27-Oct-2022	✓	**10-May-2022**	27-Oct-2022	✓
HDPE (no PTFE) (EP231X)								
0906_QC501_20220430		**30-Apr-2022**	**11-May-2022**	27-Oct-2022	✓	**11-May-2022**	27-Oct-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW302_20220501, 0906_MW300_20220501, 0906_MW308_20220501, 0906_MW304_20220501, 0906_SW104_20220501, 0906_QC101_20220501, 0906_QC102_20220501, 0906_QC103_20220501, 0906_QC104_20220501, 0906_QC105_20220501, 0906_QC303_20220501	**01-May-2022**	**10-May-2022**	28-Oct-2022	✓	**10-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC503_20220501	**01-May-2022**	**11-May-2022**	28-Oct-2022	✓	**11-May-2022**	28-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_MW306_20220502, 0906_MW310_20220502, 0906_MW243_20220502, 0906_QC307_20220502	**02-May-2022**	**10-May-2022**	29-Oct-2022	✓	**10-May-2022**	29-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC507_20220502	**02-May-2022**	**11-May-2022**	29-Oct-2022	✓	**11-May-2022**	29-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC309_20220503	**03-May-2022**	**10-May-2022**	30-Oct-2022	✓	**10-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC509_20220503	**03-May-2022**	**11-May-2022**	30-Oct-2022	✓	**11-May-2022**	30-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC511_20220504, 0906_MW214_20220503	**04-May-2022**	**11-May-2022**	31-Oct-2022	✓	**11-May-2022**	31-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC300_20220428	**28-Apr-2022**	**10-May-2022**	25-Oct-2022	✓	**10-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC500_20220428	**28-Apr-2022**	**11-May-2022**	25-Oct-2022	✓	**11-May-2022**	25-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC305_20220504	**29-Apr-2022**	**10-May-2022**	26-Oct-2022	✓	**10-May-2022**	26-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC505_20220504	**29-Apr-2022**	**11-May-2022**	26-Oct-2022	✓	**11-May-2022**	26-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC301_20220430	**30-Apr-2022**	**10-May-2022**	27-Oct-2022	✓	**10-May-2022**	27-Oct-2022	✓
HDPE (no PTFE) (EP231X) 0906_QC501_20220430	**30-Apr-2022**	**11-May-2022**	27-Oct-2022	✓	**11-May-2022**	27-Oct-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **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	39	**7.69**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	39	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	39	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

PM Name: [redacted]

Phone: [redacted] Fax [redacted] Mobile: [redacted]

Address: [redacted]

PM Email: [redacted]

Results Email (please email results to all listed):
[redacted]

Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone, & contact person): Eurofins Mgt
[redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	QC		Ice/ Ice Bricks				EP231X - PFAS Standard	HOLD			Please amend Sample IDs as follows	Please send to Eurofins
0906_QC201_20220501			5/1/2022				X			X				X					
0906_QC202_20220501			5/1/2022			X				X				X					
0906_QC203_20220501			5/1/2022			X				X				X					
0906_QC204_20220501			5/1/2022			X				X				X					
0906_QC205_20220501			5/1/2022			X				X				X					
0906_QC206_20220502			5/2/2022			X				X					X				
0906_QC207_20220502			5/3/2022				X			X				X					

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. Sampler name: [redacted] Date: 4/05/2022

Relinquished by: (print and signature)	Date 16/05/2	Time 1600	Received by: (print and signature) JL	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/**5 days**) Please circle

Revision 1

[redacted]

16/5/22
6:23 PM

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889634...

Stantec Australia Pty Ltd
[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **889634-W**
Project name
Project ID NSW_0906_PFASOMP
Received Date May 16, 2022

Client Sample ID			**0906_QC201_20220501**	**0906_QC202_20220501**	**0906_QC203_20220501**	**0906_QC204_20220501**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**S22-My0042926**	**S22-My0042927**	**S22-My0042928**	**S22-My0042929**
Date Sampled			**May 01, 2022**	**May 01, 2022**	**May 01, 2022**	**May 01, 2022**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	[N09]0.03	[N09]0.02	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	[N09]0.07	[N09]0.06	< 0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	[N09]0.02	< 0.01	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	84	90	89	89
13C5-PFPeA (surr.)	1	%	98	111	109	109
13C5-PFHxA (surr.)	1	%	97	100	102	105
13C4-PFHpA (surr.)	1	%	99	103	98	106
13C8-PFOA (surr.)	1	%	104	102	99	105
13C5-PFNA (surr.)	1	%	102	101	96	102
13C6-PFDA (surr.)	1	%	86	100	100	105
13C2-PFUnDA (surr.)	1	%	74	99	95	102
13C2-PFDoDA (surr.)	1	%	60	102	99	101
13C2-PFTeDA (surr.)	1	%	36	82	80	85
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	87	94	95	97
D3-N-MeFOSA (surr.)	1	%	41	72	70	74

Client Sample ID			0906_QC201_20220501	0906_QC202_20220501	0906_QC203_20220501	0906_QC204_20220501
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S22-My0042926	S22-My0042927	S22-My0042928	S22-My0042929
Date Sampled			May 01, 2022	May 01, 2022	May 01, 2022	May 01, 2022
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D5-N-EtFOSA (surr.)	1	%	39	76	74	75
D7-N-MeFOSE (surr.)	1	%	39	75	74	77
D9-N-EtFOSE (surr.)	1	%	40	77	77	77
D5-N-EtFOSAA (surr.)	1	%	65	100	100	106
D3-N-MeFOSAA (surr.)	1	%	69	92	93	103
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	[N09]0.03	[N09]0.08	< 0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	0.02	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	[N09]0.02	[N09]0.03	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	[N09]0.26	[N09]0.13	< 0.01	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	[N09]0.02	< 0.01	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	[N09]0.83	< 0.01	< 0.01	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	102	101	104	111
18O2-PFHxS (surr.)	1	%	99	99	100	103
13C8-PFOS (surr.)	1	%	78	98	99	96
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	141	132	131	157
13C2-6:2 FTSA (surr.)	1	%	157	119	124	154
13C2-8:2 FTSA (surr.)	1	%	180	INT	INT	INT
13C2-10:2 FTSA (surr.)	1	%	63	91	98	120
PFASs Summations						
Sum (PFHxS + PFOS)*	0.01	ug/L	1.09	0.13	< 0.01	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	0.85	< 0.01	< 0.01	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	1.11	0.13	< 0.01	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	1.24	0.29	< 0.05	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	1.28	0.34	< 0.1	< 0.1

Client Sample ID			0906_QC205_20220501	0906_QC207_20220502
Sample Matrix			Water	Water
Eurofins Sample No.			S22-My0042930	S22-My0042932
Date Sampled			May 01, 2022	May 03, 2022
Test/Reference	LOR	Unit		
Perfluoroalkyl carboxylic acids (PFCAs)				
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01	[N09]0.02
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01	0.02
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	92	84
13C5-PFPeA (surr.)	1	%	117	85
13C5-PFHxA (surr.)	1	%	107	95
13C4-PFHpA (surr.)	1	%	105	100
13C8-PFOA (surr.)	1	%	104	102
13C5-PFNA (surr.)	1	%	96	105
13C6-PFDA (surr.)	1	%	92	95
13C2-PFUnDA (surr.)	1	%	80	75
13C2-PFDoDA (surr.)	1	%	71	53
13C2-PFTeDA (surr.)	1	%	27	27
Perfluoroalkyl sulfonamido substances				
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	86	81
D3-N-MeFOSA (surr.)	1	%	50	36
D5-N-EtFOSA (surr.)	1	%	48	33
D7-N-MeFOSE (surr.)	1	%	62	35
D9-N-EtFOSE (surr.)	1	%	57	32
D5-N-EtFOSAA (surr.)	1	%	80	68
D3-N-MeFOSAA (surr.)	1	%	83	82
Perfluoroalkyl sulfonic acids (PFSAs)				
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01	[N09]0.02
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01

Client Sample ID			0906_QC205_20220501	0906_QC207_20220502
Sample Matrix			Water	Water
Eurofins Sample No.			S22-My0042930	S22-My0042932
Date Sampled			May 01, 2022	May 03, 2022
Test/Reference	LOR	Unit		
Perfluoroalkyl sulfonic acids (PFSAs)				
13C3-PFBS (surr.)	1	%	104	99
18O2-PFHxS (surr.)	1	%	103	105
13C8-PFOS (surr.)	1	%	91	95
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.05	ug/L	< 0.05	0.28
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	122	184
13C2-6:2 FTSA (surr.)	1	%	117	189
13C2-8:2 FTSA (surr.)	1	%	194	189
13C2-10:2 FTSA (surr.)	1	%	68	55
PFASs Summations				
Sum (PFHxS + PFOS)*	0.01	ug/L	< 0.01	0.02
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01	0.02
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	< 0.01	0.02
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	< 0.05	0.34
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1	0.34

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Sydney	May 18, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Sydney	May 18, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Sydney	May 18, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Sydney	May 18, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Sydney	May 18, 2022	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Company Name: Cardno (NSW/ACT) Pty Ltd
Address: [redacted]

Order No.:
Report #: 889634
Phone: [redacted]
Fax: [redacted]

Received: May 16, 2022 6:23 PM
Due: May 24, 2022
Priority: 5 Day
Contact Name: [redacted]

Project Name:
Project ID: NSW_0906_PFASOMP

Eurofins Analytical Services Manager : [redacted]

Sample Detail						HOLD	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
Mayfield Laboratory - NATA # 1261 Site # 25079							
Perth Laboratory - NATA # 2377 Site # 2370							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0906_QC201_20220501	May 01, 2022		Water	S22-My0042926		X
2	0906_QC202_20220501	May 01, 2022		Water	S22-My0042927		X
3	0906_QC203_20220501	May 01, 2022		Water	S22-My0042928		X
4	0906_QC204_20220501	May 01, 2022		Water	S22-My0042929		X
5	0906_QC205_20220501	May 01, 2022		Water	S22-My0042930		X
6	0906_QC206_	May 02, 2022		Water	S22-	X	

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Eurofins Environment Testing NZ Limited
NZBN: 9429046024954
Auckland Christchurch

[redacted]

Company Name: Cardno (NSW/ACT) Pty Ltd
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Sample Detail						HOLD	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
Mayfield Laboratory - NATA # 1261 Site # 25079							
Perth Laboratory - NATA # 2377 Site # 2370							
External Laboratory							
	20220502				My0042931		
7	0906_QC207_20220502	May 03, 2022		Water	S22-My0042932		X
8	0906_QC208_20220503	May 03, 2022		Water	S22-My0042933	X	
Test Counts						2	6

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

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

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR: No Limit

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

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

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QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	113			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	114			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	105			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	112			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	104			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	108			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	109			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	112			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	112			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	120			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	107			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	102			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	110			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	112			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	114			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	114			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	107			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	110			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	91			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	108			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	91			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	93			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	102			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	101			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	100			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	114			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	112			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	105			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	114			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	113			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	S22-My0063132	NCP	%	97			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S22-My0063132	NCP	%	102			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S22-My0063132	NCP	%	96			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S22-My0063132	NCP	%	102			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S22-My0063132	NCP	%	99			50-150	Pass	
Perfluorononanoic acid (PFNA)	S22-My0063132	NCP	%	102			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S22-My0063132	NCP	%	104			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S22-My0063132	NCP	%	104			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S22-My0063132	NCP	%	107			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S22-My0063132	NCP	%	99			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S22-My0063132	NCP	%	99			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S22-My0063132	NCP	%	103			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S22-My0063132	NCP	%	109			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S22-My0063132	NCP	%	104			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S22-My0063132	NCP	%	101			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S22-My0063132	NCP	%	103			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S22-My0063132	NCP	%	99			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S22-My0063132	NCP	%	101			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S22-My0063132	NCP	%	84			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S22-My0063132	NCP	%	104			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S22-My0063132	NCP	%	80			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S22-My0063132	NCP	%	85			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S22-My0063132	NCP	%	93			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S22-My0063132	NCP	%	103			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S22-My0063132	NCP	%	98			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S22-My0063132	NCP	%	91			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S22-My0063132	NCP	%	101			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S22-My0063132	NCP	%	96			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S22-My0063132	NCP	%	106			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S22-My0063132	NCP	%	105			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	S22-My0059892	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	S22-My0059892	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S22-My0059892	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S22-My0059892	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S22-My0059892	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S22-My0059892	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S22-My0059892	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S22-My0059892	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S22-My0059892	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S22-My0059892	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

[redacted] Analytical Services Manager

[redacted] Senior Analyst-PFAS

[redacted]

General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521
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Eurofins ARL Pty Ltd
ABN: 91 05 0159 898
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Eurofins Environment Testing NZ Limited
NZBN: 9429046024954
[redacted]

Company Name: Cardno (NSW/ACT) Pty Ltd
Address: [redacted]

Order No.:
Report #: 889634
Phone: [redacted]
Fax: [redacted]

Received: May 16, 2022 6:23 PM
Due: May 24, 2022
Priority: 5 Day
Contact Name: [redacted]

Project Name:
Project ID: NSW_0906_PFASOMP

Eurofins Analytical Services Manager [redacted]

Sample Detail						HOLD	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
Mayfield Laboratory - NATA # 1261 Site # 25079							
Perth Laboratory - NATA # 2377 Site # 2370							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0906_QC201_20220501	May 01, 2022		Water	S22-My0042926		X
2	0906_QC202_20220501	May 01, 2022		Water	S22-My0042927		X
3	0906_QC203_20220501	May 01, 2022		Water	S22-My0042928		X
4	0906_QC204_20220501	May 01, 2022		Water	S22-My0042929		X
5	0906_QC205_20220501	May 01, 2022		Water	S22-My0042930		X
6	0906_QC206_	May 02, 2022		Water	S22-	X	

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Eurofins ARL Pty Ltd
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Perth

Eurofins Environment Testing NZ Limited
NZBN: 9429046024954
Auckland Christchurch

[redacted]

Company Name: Cardno (NSW/ACT) Pty Ltd
Address: [redacted]

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Sample Detail						HOLD	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
Mayfield Laboratory - NATA # 1261 Site # 25079							
Perth Laboratory - NATA # 2377 Site # 2370							
External Laboratory							
	20220502				My0042931		
7	0906_QC207_20220502	May 03, 2022		Water	S22-My0042932		X
8	0906_QC208_20220503	May 03, 2022		Water	S22-My0042933	X	
Test Counts						2	6

APPENDIX

D

FIELD RECORDS & CALIBRATION CERTIFICATES

Cardno

now

Stantec

Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Duplicate Samples	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)	Aquifer
MW200	Off-site	540489.09	6111231.75	3/05/2022	-	183.137	-	-	Clear	NM	No well present, sample taken from aqua pond fill point.		18.1	1.27	1.36	0.884	6.85	-5.4	Lachlan
MW204	Off-site	540107.16	6110883.61	3/05/2022	54	183.024	15.255	167.769	Clear	Low	Sleeve grey water, sulf odour with dark specs. Sediment at base black		19.5	0.73	0.485	0.315	7.26	-50.0	Lachlan
MW208	Off-site	539924.30	6112236.46	-	NM	-	-	-	-	NM	Not sampled - no access		-	-	-	-	-	-	Lachlan
MW209	Off-site	542521.77	6114403.23	3/05/2022	NM	-	-	-	-	NM	Sampled from outflow pipe, well depth in excess of 100m, water clear, no odour, no particulates		20.5	0.61	196	127.4	6.5	-28	Lachlan
MW210	Off-site	540664.20	6114397.70	3/05/2022	NM	-	-	-	Clear	NM	Previous sampling point, tap not working. All connected to same bore. Ran for few min the sampled.		18.3	6.18	234	152.1	7.06	18.1	Lachlan
MW211	On-site	535735.79	6113725.27	-	NM	181.707	-	-	-	NM	Electrical fault, not sampled					0			Lachlan
MW212	On-site	535681.87	6113475.53	2/05/2022	NM	181.215	-	-	Clear	NM	Pump left running for 5 minutes prior to sampling. Sampled using the tap.		18.6	2.87	439	285.4	6.69	132.2	Lachlan
MW213	On-site	536651.55	6114239.35	2/05/2022	NM	180.533	-	-	Clear	NM	Pump left to run for 5 minutes prior to sample collection. Sampled directly from tap.		17.8	2.11	213	138.5	6.53	169.2	Lachlan
MW214	On-site	542678.11	6111434.75	3/05/2022	NM	186.043	-	-	Clear	NM	Keys required from Downer on base. Sampled from tap after a few mins running. Water colour brown then grey when turned on, turned clear		18.4	1.42	560	364	6.82	3	Lachlan
MW215	On-site	542678.11	6111434.75	2/05/2022	49.56	-	14.72	-	-	NM	Not sampled- data logger only								Lachlan
MW231	On-site	540910.71	6113541.05	3/05/2022	NM	-	-	-	Clear	NM	Sample taken from bore pump. Water initially black allowed to run for 5 minutes prior to sampling. When sampled water was clear, no odour, no particulates		17	7.58	444	288.6	6.66	103.5	Lachlan
MW233	Off-site	539802.59	6112448.66	2/05/2022	NM	-	-	-	Clear	NM	Pump left running 5 minutes prior to sampling. Sample taken from tap attached to bore.		19.1	4.66	1920	1248	6.73	194.7	Cowra
MW235	Off-site	[redacted]	[redacted]	1/05/2022	NM	-	-	-	Clear	NM	Unable to access bore - sampled from hose		17.7	1.58	19	12.35	6.59	125.8	Lachlan
MW238	Off-site	540682.06	6112227.81	2/05/2022	72.054	182.88	15.902	166.978	Clear	NM	Hydrasleeve had hole in bottom, was unable to capture image of full hydrasleeve, water was clear with minimal silt at base of sleeve. Top of sleeve deployed at 66.1 m		16.8	1.93	720	468	6.65	58.4	Lachlan
MW239	Off-site	540678.34	6112216.01	2/05/2022	21.246	182.8	15.712	167.088	Clear	NM	Top of sleeve deployed at 19.05 m		17	6.17	910	591.5	6.88	185.7	Cowra
MW240	Off-site	538090.54	6112266.06	1/05/2022	27.4	182.54	15.463	167.077	Clear	NM	Extensive rootlets just above sleeve at 15.8 m, decontaminated metal bailer sent down to clear . Top of sleeve deployed at 25.9 m		20.8	2.52	680	442	6.6	-77.9	Cowra
MW241	Off-site	544118.31	6109524.74	2/05/2022	75.598	200.07	14.071	185.999	Clear	NM	Hole in bottom of sleeve, image of full hydrasleeve could not be captured, Top sleeve deployed at 69. 3 m		19.3	2.32	590	383.5	7.89	212.9	Lachlan
MW242	Off-site	544118.75	6109538.52	2/05/2022	63.38	199.89	14.12	185.77	Clear	NM	Logger deployed. Top of sleeve deployed at 58.3 m		19.1	0.9	520	338	7.32	1.5	Lachlan
MW243	On-site	542979.06	6110074.36	30/04/2022	54.85	211.48	39.64	171.84	Clear	NM	Logger. Sleeve pulled up with hole at bottom, quickly sampled. New sleeve deployed. Top of sleeve deployed at 52.35 m		18.9	2.06	1240	806	6.47	34.6	Lachlan
MW244	Off-site	536997.10	6113055.36	3/05/2022	60.6	180.37	13.976	166.394	Cloudy	Med	Top of sleeve deployed at 57. 5 m		19.3	0.98	274	178.1	6.94	-2.2	Lachlan
MW245	Off-site	537011.85	6113066.50	30/04/2022	20.92	180.37	13.93	166.440	Cloudy	Med	Top of sleeve deployed at 19.5 m		17.4	0.65	740	481	6.16	88.7	Cowra
MW246	Off-site	541737.871	6110580.212	1/05/2022	48.62	189.563	19.3	170.263	Clear	NM	Top of sleeve deployed at 30.2 m		18	2.49	456	296.4	6.76	-114.5	Lachlan
MW247	Off-site	536050.951	6112506.299	2/05/2022	33.676	181.343	13.725	167.618	Cloudy	NM	Strong sulfuric odor, black silts in bottom of sleeve, Top of sleeve deployed at 29.95 m		17.4	1.86	630	409.5	7.09	-33.1	Cowra
MW248	Off-site	536049.397	6112509.06	2/05/2022	25.2	181.361	13.65	167.711	Cloudy	NM	Changed label on stand pipe from 247 to 248. Logger also changed. Top of sleeve deployed at 20.0 m		18	2.02	2320	1508	6.72	22.4	Lachlan
MW249	Off-site	536082.812	6113454.968	30/04/2022	60.674	180.008	17.772	162.236	Cloudy	NM	Top of sleeve deployed at 47. 7 m		19.4	9.07	1	0.65	5.84	610.7	Cowra
MW250	Off-site	536087.341	6113452.451	30/04/2022	26	179.936	15.559	164.377	Clear	Low, slightly cloudy	Logger. Sleeve Full. Top of sleeve deployed at 22.6 m		18.4	3.01	790	513.5	6.71	59.9	Lachlan
MW251	Off-site	536569.189	6113765.545	30/04/2022	24.1	178.394	13.512	164.882	Clear	NM	Top of sleeve deployed at 19. 15 m		18	0.84	540	351	6.12	21.7	Cowra
MW252	Off-site	536569.976	6113769.891	30/04/2022	62.45	178.607	14.798	163.809	Clear	NM	Top of sleeve deployed at 47.15 m		18.3	1.52	239	155.4	6.00	182.4	Lachlan
MW253	Off-site	537469.028	6112456.611	30/04/2022	48.893	180.991	15.534	165.457	Clear	NM	Top of sleeve deployed at 45. 5 m		17.5	4.98	195	126.8	6.32	138.6	Cowra
MW254	Off-site	537469.851	6112462.06	30/04/2022	26.03	181.122	14.792	166.33	Brown	NM	Hydrasleeve contained silt at bottom of sleeve. Top of sleeve deployed at 18.6 m		16	4.35	171	111.2	6.09	156.6	Lachlan
MW255	Off-site	539219.759	6112296.567	30/04/2022	53	182.094	15.25	166.844	Cloudy	Medium	Top of sleeve at 49 m		18	1.38	750	487.5	6.71	-5.1	Cowra
MW256	Off-site	539217.619	6112291.105	1/05/2022	22.44	182.128	15.25	166.878	Cloudy	Med, yellow	Sleeve full sampled. Top of sleeve deployed at 18.35 m		15.9	2.75	1510	981.5	6.58	19.2	Lachlan
MW257	Off-site	538761.456	6111519.667	1/05/2022	16.47	182.37	15.31	167.06	Cloudy	Med, yellow brown	5 x bailer volumes removed then sampled via bailer. Sleeve empty		15.3	4.37	3620	2353	6.45	57.8	Cowra
MW300	On-site	542277.11	6110129.15	30/04/2022	62.012	200.538	30.173	170.365	Clear	NM	Duplicate samples collected. Top of sleeve deployed at 50.2 m	QC102_20220501, QC202_20220501	15.8	5.36	700	455	6.40	228.5	Cowra
MW301	On-site	542281.27	6110125.89	-	19.1	200.705	30.13	-	-	NM	Location Dry		-	-	-	-	-	-	Lachlan
MW302	On-site	542356.16	6109473.31	1/05/2022	65.256	209.607	39	170.607	Clear	NM	Dual leaks in bottom of hydrasleeve. Had to begin sampling immediately so no picture of full hydrasleeve. Water was clear with minimal orange silt build up on the bottom. Top of sleeve deployed at 61.5 m	QC105_20220501, QC205_20220501	18	8.68	2	1.3	7.04	242.5	Cowra
MW303	On-site	542358.37	6109470.43	-	21.4	209.568	-	-	-	NM	Location Dry		-	-	-	-	-	-	Lachlan
MW304	On-site	541367.48	6108802.00	1/05/2022	69.2	211.767	39.02	172.747	Clear	NM	Duplicate samples collected. Top of sleeve deployed at 48.5 m	QC104_20220501, QC204_20220501	18.4	1.26	1780	1157	6.95	-81.4	Lachlan
MW305	On-site	541363.15	6108795.52	-	25.3	211.774	-	-	-	NM	Location Dry		-	-	-	-	-	-	Cowra
MW306	On-site	542799.42	6107013.89	2/05/2022	62.3	233.058	45.85	187.208	Cloudy	NM	Top of sleeve deployed at 54 m		19.6	0.57	2270	1476	7.01	4.7	Lachlan

Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Duplicate Samples	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)	Aquifer
MW307	On-site	542791.05	6107014.44	-	30.415	232.904	-	-	-	NM	Location Dry		-	-	-	-	-	-	Cowra
MW308	On-site	543139.39	6109381.63	1/05/2022	66.876	213.901	41.99	171.911	Brown	NM	Duplicate samples collected. Top of sleeve deployed at 51.7 m	QC103_20220501, QC203_20220501	19.8	3.72	364	236.6	7.89	140.1	Cowra
MW309	On-site	543133.57	6109377.71	-	25.1	213.826	-	-	-	NM	Location Dry		-	-	-	-	-	-	Lachlan
MW310	On-site	543564.83	6108980.78	2/05/2022	59	210.274	-	-	Cloudy	Med	Top of sleeve deployed at 52.2 m		17.9	2.37	4710	3062	6.75	13.2	Lachlan
MW311	On-site	543566.06	6108977.08	2/05/2022	22	210.651	20.69	189.961	Cloudy	High	Stagnant water in sump, not sampled		17.9	2.37	4710	3062	6.75	13.2	Cowra
MW312	Off-site	[redacted]		2/05/2022	60.4	182.97	13.84	169.13	Cloudy	Med. orange yellow	Top of sleeve deployed at 53 m		16.8	0.85	880	572	6.84	40.5	Lachlan
MW313	Off-site			-	12	182.99	-	-	-	-	Location Dry		-	-	-	-	-	-	

Sample ID	Property	Easting	Northing	Monitoring Date	Sample Depth (m)	Water Body Depth (m)	Flow Rate	Water Colour	Turbidity	Other Observations	Duplicate Samples	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)
SW104	On-site	542263.80	6110131.68	1/05/2022	0.1	0.1	Fast	Clear	Low	Strong decaying odour, dead cat observed downstream of sampling point in pit	QC101_20220501, QC201_20220501	18.4	9.60	194	126.1	7.4	157.2
SW206	Off-site	541675.39	6110527.28	3/05/2022	0.1	0.1	Medium	Clear	Low	Very stagnant water below		14.3	7.51	201	130.7	7.9	163.4
SW212	Off-site	539563.37	6114381.22	3/05/2022	0.1	2	Medium	Clear	Low	Brown colour		15.9	3.37	125	81.3	7.5	47.2
SW218	Off-site	541679.77	6110529.39	3/05/2022	0.1	0.1	Fast	Clear	Low	-		12.5	7.88	209	135.9	8.3	162.5
SW228	Off-site	543262.03	6112272.39	3/05/2022	0.3	1	Fast	Green	Low	Some particulates, no odour		18	12.12	366	237.9	9.5	50.3
SW234	Off-site	536166.15	6112334.13	3/05/2022	0.3	1	Slow	Brown	High	Very stagnant and little flow	QC107_20220502, QC207_20220502	18.5	4.20	477	310.1	7.2	173.3
SW236	Off-site	543767.40	6112318.00	3/05/2022	0.2	0.5	Slow	Brown	High	Water highly stagnant, no flow observed, high number of particulates, no odour, no water surface sheening, fish observed swimming		17	8.82	238	154.7	7.6	102.7
SW240	Off-site	545028.00	6110672.00	3/05/2022	0.2	0.5	Slow	Brown	High	Highly stagnant, no flow, layer of brown algae on surface, high proportion of particulates, organic decomposing odour		14.1	5.23	191	124.2	7.4	31.7
SW261	Off-site	534761.81	6114107.59	-	-	-	-	-	-	Sampling sheet not available due to software malfunction		-	-	-	-	-	-
SW262	Off-site	534970.84	6113903.83	28/04/2022	0.1	2	Medium	Clear	Low	-		17.6	5.35	217	141.1	7.6	34.8
SW286	Off-site	543605.67	6114255.45	3/05/2022	0.2	0.5	Fast	Brown	High	No odour, minimal particulates, river flowing rapidly		16.6	8.19	61	39.7	5.3	145.6
SW288	Off-site	542930.77	6112004.76	3/05/2022	0.3	1	Slow	Cloudy	Medium	Strong sewage odour, particulates present in sample		22.4	7.54	456	296.4	7.8	39.9
SW289	Off-site	543054.42	6112176.56	3/05/2022	0	0	Fast	Cloudy	Medium	Taken from RAAF inflow stream		22.8	0.96	477	310.1	7.7	18.5
SW294	Off-site	535307.66	6113375.69	28/04/2022	0.1	0.5	Medium	Clear	Low	River appears grey brown. Clear. Sampled DS of steel plate culvert		17.7	0.39	590	383.5	7.4	21.0
SW309	Off-site	535436.96	6113744.17	2/05/2022	0.2	5	Medium	Brown	Medium	Organic material within river water		17.3	5.89	151	98.2	7.4	175.2
SW310	Off-site	538809.34	6111596.73	30/04/2022	0.1	0.1	Slow	Brown	Medium	Sampled from scoop by hand-pole		18.7	0.05	190	123.5	7.7	65.3

Multi Parameter Water Meter

Instrument **YSI Quatro Pro Plus**
Serial No. **11K101257**

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.00		377339	pH 7.03
2. pH 4.00		pH 4.00		380327	pH 3.99
3. mV		236.48mV		380834/378285	236.8mV
4. EC		2.76mS		377099	2.77mS
5. D.O		0%		371864	-0.10%
6. Temp		21.8°C		MultiTherm	21.6°C

Calibrated by: [redacted]

Calibration date: **19/04/2022**

Next calibration due: **20/05/2022**

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 16G104247

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		377339	7.07
2. pH 4.00		pH 4.00		380327	3.95
3. mV		237.8mV		371922/378285	242.6mV
4. EC		2.76mS		377099	2.76
5. D.O		0%		371864	0.02
6. Temp		21		MultiTherm	20.8

Calibrated by: [redacted]

Calibration date: 26/04/2022

Next calibration due: 26/05/2022

Date of Bump Test	Job Number	Unit Brand/ Model	Ambient Air Oxygen Calibration	Zero % Oxygen Solution Calibration	Standard Concentrations	Ambient Temperature (°C)	Bump Test Reading	Bump Test Readings within ±5%?	Comment	Test by (Name)	(Signature)
28/4/22	DEF1900 8	YSI (Airmet)	100% Saturation? Y / N 994	0% Calibration? Y / N / NA 0.20	pH 4.00 Y / N pH 6.88 Y / N ~~pH 9.22~~ Y / N EC: 2,760µS/cm Y / N	16.6	pH 4.00: 4.02 pH 6.88: 7.07 pH 9.22: Temp: EC: 29750@16	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N ~~pH 9.22:~~ (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N	No pH 10 EC(mS) = 2.55@16.6 EC, temp overranged	[redacted]	[redacted]
29/4/22	DEF19008	YSI (Airmet)	100% Saturation? Y / N 103	0% Calibration? Y / N / NA 0.~~04~~	pH 4.00 Y / N pH 6.88 Y / N pH 9.22 Y / N EC: 2,760µS/cm Y / N	17.~~7~~ 3	pH 4.00: 4.05 pH 6.88: 7.08 ~~pH 9.22:~~ Temp: 17.3 EC: 2933@17.2	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N	ORP = 254 EC(mS) = 252	[redacted]	[redacted]
30/4/22	DEF19008	YSI (Airmet	100% Saturation? Y / N	0% Calibration? Y / N / NA 0.03	pH 4.00 Y / N pH 6.88 Y / N pH 9.22 Y / N EC: 2,760µS/cm Y / N	16	pH 4.00: 4.06 pH 6.88: 7.~~03~~ ~~pH 9.22:~~ Temp: 16 EC: 2900@16.2	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N	ORP = 257 EC(mS) =	[redacted]	[redacted]
1/5/22	DEF19008	YSI (Airmet)	100% Saturation? Y / N	0% Calibration? Y / N / NA 0.09	pH 4.00 Y / N pH 6.88 Y / N ~~pH 9.22~~ Y / N EC: 2,760µS/cm Y / N	5.4	pH 4.00: 4.05 pH 6.88: 7.05 ~~pH 9.22:~~ Temp: 5.4 EC: 2978@7.1	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N	ORP = 274 EC(mS) = 1.96	[redacted]	[redacted]
2/5/22	DEF19008	YSI (Airmet)	100% Saturation? Y / N	0% Calibration? Y / N / NA	pH 4.00 Y / N pH 6.88 Y / N ~~pH 9.22~~ Y / N EC: 2,760µS/cm Y / N	6.0	pH 4.00: 4.05 pH 6.88: 6.97 ~~pH 9.22:~~ Temp: 6.0 EC: 3100@6.2	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N	ORP = 266 EC(mS) = 2.02	[redacted]	[redacted]
3/5/22	DEF19008	YSI Airmet	100% Saturation? Y / N	0% Calibration? Y / N / NA 0.06	pH 4.00 Y / N pH 6.88 Y / N ~~pH 9.22~~ Y / N EC: 2,760µS/cm Y / N	7.1	pH 4.00: 4.03 pH 6.88: 7.03 ~~pH 9.22:~~ Temp: 7.1 EC: 3005@6.7	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N ~~pH 9.22:~~ (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N	ORP = 267 EC(mS) = 2.05	[redacted]	[redacted]
			100% Saturation? Y / N	0% Calibration? Y / N / NA	pH 4.00 Y / N pH 6.88 Y / N pH 9.22 Y / N EC: 2,760µS/cm Y / N		pH 4.00: pH 6.88: pH 9.22: Temp: EC:	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N			
			100% Saturation? Y / N	0% Calibration? Y / N / NA	pH 4.00 Y / N pH 6.88 Y / N pH 9.22 Y / N EC: 2,760µS/cm Y / N		pH 4.00: pH 6.88: pH 9.22: Temp: EC:	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N			

Date of Bump Test	Job Number	Unit Brand/ Model	Ambient Air Oxygen Calibration		Zero % Oxygen Solution Calibration		Standard Concentrations (Y if all are present)		Ambient Temperature (°C)	Bump Test Reading	Bump Test Readings within ±5%?			Comment	Test by (Name)	(Signature)
28/04		YSI Pro Plus (Cardno YSI serial number: 19H102165)	100% Saturation?	(Y) N	0% Calibration	(Y) N	pH 4.00 (Y) N pH 7.00 (Y) N pH 10.00 (Y) N EC: 10.7 µS/cm @ 16.2 °C (Y) N ORP: 250 mV @ 15.4 °C (Y) N		16.0	pH 4.00: 4.13 pH 7.00: 7.00 pH 10.00 10.10 EC: 10.78 µS/cm @ 16.2 °C ORP: 240 mV @ 15.9 °C	pH 4.00: (± pH 0.2) (Y) N pH 7.00: (± pH 0.2) (Y) N pH 10.00 (± pH 0.2) (Y) N EC: (± 150µS/cm) (Y) N ORP: (± 10mV) (Y) N Temp: (± 2°C) (Y) N			[redacted]	[redacted]
29/04		" "	100% Saturation?	(Y) N	0% Calibration	(Y) N	pH 4.00 (Y) N pH 7.00 (Y) N pH 10.00 (Y) N EC: 11.13 µS/cm @ 17.8 °C (Y) N ORP: 244 mV @ 17.8 °C (Y) N		17	pH 4.00: 3.66 pH 7.00: 7.27 pH 10.00 10.08 EC: 11.02 µS/cm @ 17.8 °C ORP: 238.6 mV @ 17.8 °C	pH 4.00: (± pH 0.2) Y (N) pH 7.00: (± pH 0.2) Y (N) pH 10.00 (± pH 0.2) (Y) N EC: (± 150µS/cm) (Y) N ORP: (± 10mV) (Y) N Temp: (± 2°C) (Y) N		pH Recalibrated	" "	
30/04		" "	100% Saturation?	(Y) N	0% Calibration	(Y) N	pH 4.00 (Y) N pH 7.00 (Y) N pH 10.00 (Y) N EC: 10.79 µS/cm @ 16.5 °C (Y) N ORP: 247 mV @ 16.5 °C (Y) N		18	pH 4.00: 3.72 pH 7.00: 7.10 pH 10.00 10.07 EC: 10.69 µS/cm @ 16.5 °C ORP: 241.2 mV @ 16.5 °C	pH 4.00: (± pH 0.2) Y / N pH 7.00: (± pH 0.2) Y / N pH 10.00 (± pH 0.2) Y / N EC: (± 150µS/cm) Y / N ORP: (± 10mV) Y / N Temp: (± 2°C) Y / N		pH Recalibrated	" "	
09/05		" "	100% Saturation?	(Y) N	0% Calibration	(Y) N	pH 4.00 (Y) N pH 7.00 (Y) N pH 10.00 (Y) N EC: 9.10 µS/cm @ 9.7 °C (Y) N ORP: 263 mV @ 9.4 °C (Y) N		5	pH 4.00: 3.81 pH 7.00: 4.05 pH 10.00 9.94 EC: 9.34 µS/cm @ 9.7 °C ORP: 243.2 mV @ 9.4 °C	pH 4.00: (± pH 0.2) Y / N pH 7.00: (± pH 0.2) Y / N pH 10.00 (± pH 0.2) Y / N EC: (± 150µS/cm) Y / N ORP: (± 10mV) Y / N Temp: (± 2°C) Y / N			" "	
02/05		" "	100% Saturation?	(Y) N	0% Calibration	(Y) N	pH 4.00 (Y) N pH 7.00 (Y) N pH 10.00 (Y) N EC: 8.5 µS/cm @ 8.0 °C (Y) N ORP: 267 mV @ 8.7 °C (Y) N		6	pH 4.00: 3.83 pH 7.00: 6.47 pH 10.00 9.46 EC: 8.67 µS/cm @ 8.0 °C ORP: 266.5 mV @ 8.7 °C	pH 4.00: (± pH 0.2) Y / N pH 7.00: (± pH 0.2) Y / N pH 10.00 (± pH 0.2) Y / N EC: (± 150µS/cm) Y / N ORP: (± 10mV) Y / N Temp: (± 2°C) Y / N			" "	
03/05		" "	100% Saturation?	(Y) N	0% Calibration	(Y) N	pH 4.00 (Y) N pH 7.00 (Y) N pH 10.00 (Y) N EC: 8.8 µS/cm @ 8.4 °C (Y) N ORP: 26266 mV @ 8.9 °C (Y) N		6	pH 4.00: 3.83 pH 7.00: 7.05 pH 10.00 9.99 EC: 8.95 µS/cm @ 8.4 °C ORP: 264.7 mV @ 8.9 °C	pH 4.00: (± pH 0.2) Y / N pH 7.00: (± pH 0.2) Y / N pH 10.00 (± pH 0.2) Y / N EC: (± 150µS/cm) Y / N ORP: (± 10mV) Y / N Temp: (± 2°C) Y / N			" "	
04/05		" "	100% Saturation?	(Y) N	0% Calibration	(Y) N	pH 4.00 (Y) N pH 7.00 (Y) N pH 10.00 (Y) N EC: 10.03 µS/cm @ 13.4 °C (Y) N ORP: 248 mV @ 13.6 °C (Y) N		12	pH 4.00: 3.78 pH 7.00: 7.15 pH 10.00 10.00 13.4 EC: 10.17 µS/cm @ 8.6 °C ORP: 255.1 mV @ 8.6 °C 13.6	pH 4.00: (± pH 0.2) Y / N pH 7.00: (± pH 0.2) Y / N pH 10.00 (± pH 0.2) Y / N EC: (± 150µS/cm) Y / N ORP: (± 10mV) Y / N Temp: (± 2°C) Y / N		pH recalibrated	" "	
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC: ____ µS/cm @ ____ °C Y / N ORP: ____ mV @ ____ °C Y / N			pH 4.00: pH 7.00: pH 10.00 EC: ____ µS/cm @ 13.4 °C ORP: ____ mV @ 13.6 °C	pH 4.00: (± pH 0.2) Y / N pH 7.00: (± pH 0.2) Y / N pH 10.00 (± pH 0.2) Y / N EC: (± 150µS/cm) Y / N ORP: (± 10mV) Y / N Temp: (± 2°C) Y / N				
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC: ____ µS/cm @ ____ °C Y / N ORP: ____ mV @ ____ °C Y / N			pH 4.00: pH 7.00: pH 10.00 EC: ____ µS/cm @ ____ °C ORP: ____ mV @ ____ °C	pH 4.00: (± pH 0.2) Y / N pH 7.00: (± pH 0.2) Y / N pH 10.00 (± pH 0.2) Y / N EC: (± 150µS/cm) Y / N ORP: (± 10mV) Y / N Temp: (± 2°C) Y / N				

F3.01 Equipment Calibration Report
YSI ProPlus Water Quality Meter

This YSI ProPlus Water Quality Meter has been performance checked as per the manufacturer's guidelines[1].

Unit Type: YSI ProPlus
Serial Number: 19H102165

The unit has been checked for and comprises of the following items:

Item	Present	Damaged or Absent?
Carry case	✓	☐
Attached sensors (x4)	✓	☐
Spare Batteries	✓	☐
Connector Cable	✓	☐
Instruction Manual	✓	☐

The following tests and operational checks have been conducted on the unit:

Item	Test Completed	Test Passed
WQM unit electrodes cleaned and checked	✓	☐
Operations check (screen functions)	✓	☐
Temperature check	✓	☐

Calibration:

27/04 01/04

Sensor	Cal. Solution	Value	Reading	
pH	pH: Buffer Solution 4.00	4.00	4.03	4.05
pH	pH: Buffer Solution 7.00	7.00	7.04	7.03
pH	pH: Buffer Solution 10.00	10.00	10.05	10.08
Redox	Standard ORP solution	____ mV @ __ °c	246 mV @ 17 °c	265 @ 10
O_2	Ambient Air for 100% Dissolved Oxygen	100%	NOA 102	105
O_2	Sodium Sulphite for 0% Dissolved Oxygen	0%	0.00	0.00
Conductivity	Standard Conductivity Solution	____ µS/cm @ __ °c	10.88 ~~mV~~ mS @ 17 °c	9.17 @ 10

Checked/ Calibrated by: [redacted]

Signed: [redacted]

Date: 04/05/2022

[1] YSI Professional Plus – Calibration Tips; Rev A, December 2010.

APPENDIX

E

DATA QUALITY REVIEW

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Data Quality Review
RAAF Base Wagga, NSW, 2650

This Appendix reviews the Quality Assurance (QA) and Quality Control (QC) documentation. Quality assurance encompasses the actions, procedures, checks and decisions undertaken to ensure sample integrity and representativeness, and the reliability and accuracy of analysis results. The QA documentation should also include an indication of the Data Quality Objectives sought in relation to each significant action, test or process involved in the Assessment.

QC activities measure the effectiveness of the QA procedures by undertaking testing, and then comparing results to previously established objectives. QC work will include the internal laboratory testing as well as results of QC samples submitted such as trip blanks and duplicates. The quality of the information and/or data is deemed satisfactory when the QC results demonstrate that agreed objectives have been met.

Cardno undertook a review of its QA/QC as part of the data validation exercise. The findings are summarised below.

QA/QC Aspects	Evidence and Evaluation
	QA Documentation
Sampling and Analysis Quality Plan and Data Quality Objectives	Cardno was engaged by Department of Defence (the client) to carry out the PFAS Ongoing Monitoring Plan (OMP) of RAAF Base Wagga, NSW, 2650 (the site). The monitoring event commenced on 28 April 2022 until 4 May 2022 and is in general accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP) of 18 October 2021 (Our Ref: 20191021_OMP002_Wagga_ SAQP_Rev6). The assessment was carried out in general compliance with the following: ▪ Australian Standard AS 4482-2005 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds. ▪ Department of Defence (2019a), Contamination Management Manual (DCMM), August 2019. ▪ Department of Defence (2019b), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring. ▪ Department of Defence, Department of Energy, 2018, Quality System Manual Schedule B15. ▪ EPA Victoria (2009), Industrial Waste Resources Guidelines, Sampling and Analysis of Waters, Wastewaters, Soils and Wastes, Publication 701. ▪ Heads of Environmental Protection Authority's Australia and New Zealand (HEPA) (2020), PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020. ▪ National Environment Protection Council (NEPC), 1999, National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM). ▪ National Health and Medical Research Council (NHMRC) (2019), Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water, August 2019. ▪ USEPA (2000), Guidance for the Data Quality Objectives Process (EPA QA/G-4).

QA/QC Aspects	Evidence and Evaluation
	A quality control program was implemented during the investigation and the quality assurance procedures used have been reiterated in the report. The investigation was carried out in accordance with the Safe Work method Statements (SWMS) and Occupational Health and Safety (OHS) plan for the site. Detailed work plans were also provided for each phase of investigation and are outlined in the SAQP. The Data Quality Objectives were expressed in terms of the purpose of the assessment and the relevant assessment criteria.
Data Validation Report	This review constitutes a data validation review. This was supported by an Esdat generated "QAQC Checker" excel report, summarised in Tables B3 and B4, Appendix B.
Data Representativeness	
Holding Times	Groundwater and surface water sample analysis holding times were in conformance with EPA Publication IWRG701 2009 *'Sampling and Analysis of Waters, Wastewaters, Soils and Wastes*.
Background Samples	No background samples were collected as part of this assessment.
Equipment Decontamination	The decontamination methodology conducted during this investigation is documented in the body of the report, and was in general conformance with the SAQP and work plans. ▪ All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection.
Lab Reports Considered for this Assessment	Please refer to Appendix C ALS: EM2208333, EM2208334, EM2208335, EM2208336, EM2208337, EM2208338 EM2208339, EM2208340 EM2208341, EM2208150 Eurofins: 889634
Data Precision and Accuracy	
QC Testing – Blind Replicates (Primary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 36 ▪ Blind Replicate Samples Analysed: 4 ▪ Blind Replicate Analyte Pairs: 112 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances reported for PFAS compounds. RPD results are presented in Table B3, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 16 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 56 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: ▪ Percentage of Analyte Pairs Exceeding Criteria: 1.7% The RPD exceedances observed for PFAS compounds were considered to be minor and are due to low reported concentrations of analytes close to the LOR. Since they are within the same order of magnitude, it is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B.

QA/QC Aspects	Evidence and Evaluation
QC Testing – Field Splits (Secondary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 36 ▪ Blind Replicate Samples Analysed: 4 ▪ Blind Replicate Analyte Pairs: 112 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 2 ▪ Percentage of Analyte Pairs Exceeding Criteria: 1.7% The RPD exceedances observed for PFAS compounds were considered to be minor and are due to low reported concentrations of analytes close to the LOR. Since they are within the same order of magnitude, it is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 16 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 56 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 5 ▪ Percentage of Analyte Pairs Exceeding Criteria: 8.9% The RPD exceedances associated with PFAS compounds are considered to be minor and likely attributed to low concentrations of analyte pairs. It is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B.
Trip Blanks	Seven (7) trip blanks were collected and laboratory tested for PFAS. All analytes were reported below the limit of reporting (LOR). Trip blank results are presented in Table B4, Appendix B.
Laboratory Internal QC	Evidence of the laboratories internal QC testing is present and complete. Both ALS (the primary laboratory) and Eurofins-mgt performed internal QC with adequate testing and mostly satisfactory results for matrix spikes, method blanks and laboratory duplicates. Exceptions include: Reports EM2208253, EM2208333, EM2208334, EM2208335, EM2208339, EM2208340, EM2208341: Matrix Spike EM2208253-002 did not determine a matrix spike recovery as the background level was in excess of spike level for select PFAS compounds.
Laboratory Method Detection Limit	Laboratory reports indicate the method detection limits were lower than the respective assessment criteria.
NATA endorsement of laboratory reports	Laboratory reports were stamped with the NATA endorsement stamp and signature. Laboratory reports are included in Appendix C of this report.
Calibration of Field Equipment	All field equipment used was calibrated by the equipment supplier. Additionally, daily bump tests were performed of the water quality meter throughout the monitoring event. Certificates are included in Appendix D of this report. The electrical conductivity (EC) probe did not pass the bump test on 02/05/2022, however, this is not considered to affect the integrity of the field parameters collected. EC data from the E4 October 2021 event for Wagga has been compared against the EC values recorded at the groundwater and surface water locations sampled on 02/05/2022. Most of the EC values for the locations sampled on 02/05/2022 are fairly consistent and some have varied between the two events. However, other parameters recorded (which passed the bump test) indicate a change in conditions between the two events, which may be a result of seasonal variation.

QA/QC Aspects	Evidence and Evaluation
Decontamination and Equipment Blanks	All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection. No PFAS compounds reported above LOR in any rinsate blank sample, indicating that decontamination was adequate. Rinsate blank samples were tested for PFAS which all reported a concentration below the laboratory LOR. Results are shown in Table B4, Appendix B.
Data Comparability	
Full Review of Data	Once all results have been received, Cardno undertook a full review of the data for any anomalies in consideration of historical data at each location (where available), such as first-time detections or exceedances being reported at locations which have not had detections or exceedances previously. Where potentially anomalous data is identified or suspected, further confirmatory measures were undertaken such as re-extraction and reanalysis of the sample by the laboratory and/or additional data quality review. The following samples were re-extracted and reanalysed: MW238, MW300, QC102, MW254, SW206, and QC107. All original results were confirmed.
Standard Procedures	Fieldwork procedures are detailed in the report and followed the work methods outlined in the SAQP.
Qualified Personnel	Staff involved in managing and reviewing the project and those involved in fieldwork are qualified personnel.
Volatile Losses	Volatile losses are not applicable to PFAS.
Sample Integrity	Field Chain of Custody forms are included in Appendix C of this report and demonstrate sample integrity.
Data Completeness	
Completeness of Test Program	The scope of work undertaken was generally consistent with that set out in the Sampling and Analysis Quality Plan (SAQP). Variations to the SAQP are detailed in the Factual Report.
Validity of Data Set	The data quality review indicates no significant systematic errors in the data collection process for surface water and groundwater and therefore, the data set used as the basis for the assessment is considered valid and complete.

APPENDIX

F

INFORMATION ABOUT ENVIRONMENTAL REPORTS

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About Site Environmental Assessment Reports

1. Introduction

This document explains the Environmental Site Assessment (ESA) process and the context that applies to the use of Environmental Reports issued by Cardno.

2. What is an ESA?

Environmental Site Assessments (ESA) are undertaken for a range of purposes, specific to the brief issued by the client in each case. The scope may include one or a combination of any of the following:

- A factual report of the condition of a portion of the site or one aspect of an entire site.
- Assessment of the contamination levels in soil to be removed from a site – a waste classification assessment.
- Validation of the success of remediation of a site or a portion of a site.
- Provision of a professional opinion about the suitability of a site for one or more uses, in terms of its contamination status.

The scope of any ESA needs to be defined at the outset.

An ESA is not an Environmental Audit. Such audits are undertaken in accordance with the provisions of regulations enacted in various states of Australia, and are referred to as Site Audits in some jurisdictions. Statutory audits provide certification by EPA accredited auditors that a site is suitable for one or more uses. An ESA may provide similar advice but cannot be used in place of an audit if the latter is required by regulation in any instance. However in some circumstances and jurisdictions an ESA is sufficient to provide "environmental sign-off" of a site.

An ESA may be undertaken for due diligence purposes, to establish whether the site has been impacted to the extent that some beneficial uses of the site may be precluded. Due diligence audits in many cases may be completed as non-statutory Audits, although in some jurisdictions they can also be statutory audits, if defined as such at the outset.

3. The ESA Process

The Client generally initiates the ESA process by specifying a brief which identifies the specific objectives of the assessment. If not, it is the consultants' duty to so specify the ESA

In the case of an ESA to provide an opinion about the suitability of the site for use, it would be conducted in accordance with NEPM (Site Assessment). Such ESA would not commence until a thorough site history assessment (Phase 1 Assessment: to identify the potential for significant contamination at a site) is conducted. However, where the history is unclear, a broad screening of chemical parameters can be used to test environmental media. This normally includes a broad range of organic and inorganic compounds and elements, often referred to as an Environmental Screen.

(In the case of an ESA for a purpose other than to provide an opinion about the suitability of the site for use, it is not always necessary to undertake a Phase 1 assessment.)

The ESA requires sampling of soil at representative locations across the site. A NATA accredited laboratory performs the analysis of soil. It is impractical for all of the soil to be assessed. The ESA is often based on a statistical method of grid or random sampling, augmented by targeted sampling at locations known or suspected to be contaminated. Guidance on sampling strategy and density is provided in Australian Standard AS4482.1–2005. However, some considerable degree of judgement is still required in the application of any sampling and testing strategy. For example the blanket application of the "hot spot" method presented in this standard is often inappropriate given its limitations.

The field program also investigates the likelihood of contamination below the site surface. Field investigations must sample and test fill as well as the natural soils. If contamination is found then it is common for further work to be undertaken to characterise, to the extent practical, its vertical and horizontal extent. However, where fill is encountered and testing shows it to be uncontaminated, it must be realised that the heterogeneous nature of the material might mean that not all pockets of contaminated material can be detected using normal sampling regimes.

EPA guidelines for auditors, that may be relevant for an ESA, indicate the need in all cases to consider the potential for groundwater contamination in any site. This does not mean all sites need to be drilled to sample groundwater, but it is most often the case. Most hydrogeological settings and groundwater conditions are complex and vary in space and time. The condition of groundwater is investigated to identify if any beneficial use or environmental value of groundwater is precluded due to contamination.

As previously stated for soil, all groundwater at the site cannot be tested. The environmental investigations are conducted in accordance with industry standards and guidelines (e.g. EPA Vic Pub 668). This provides a level of confidence that a sufficiently comprehensive assessment of the groundwater at the site is achieved.

Where an investigation shows that groundwater is polluted, consideration should be given to assessing the risks and the need for and practicality of any clean up.

4. Environmental Assessment Report

The ESA Report details the findings of the ESA. It provides summary information on the site definition, the reasons for the assessment and other relevant facts. It reviews the scope and quality of the site investigations, laboratory testing and data analyses undertaken. These reports also present a review of the contamination status of the site, the need for any further clean up, and an opinion on the suitability of the site for a range of beneficial uses and land uses such as “residential – low density”, “commercial” etc, as appropriate.

However, as noted above, some ESA have a narrow scope such as for classification of waste soil for removal from site, and do not make conclusions on suitability of site for use.

The ESA Report generally includes copies of other documents and reports, necessary to support the assessment findings, presented as appendices. These can contain more detailed information than the body of the ESA Report. Care should be taken to also read the appended documents and the ESA report in full.

Cardno generally issues reports in electronic form (e-Report) on CD ROM. ESA Reports are issued in this format as Adobe Acrobat™ PDF files. However, a paper copy of the executive summary of the ESA Report is generally issued to the client, and others as required by the brief or by regulation.

5. Limitations of Environmental Assessment Report

The ESA Report is prepared in a manner that can be easily read by a lay person with a legitimate interest in the contamination status of the site, such as the site owner or occupier, EPA and Local Planning Authority. The ESA report is not intended for use by other parties or for other purposes. Anyone who uses the assessment report for purposes other than specified in the report, does so at their own risk.

The site should only be used for one or more of the beneficial uses and land uses identified in the ESA as suitable.

The conditions and qualifications may apply to the suitability of the site for use, and it is the responsibility of the Client to be cognizant of and accept these in accepting the report. Cardno are only responsible for the issuing of the ESA report but accepts no liability for the costs incurred in the implementation of ESA findings.

The ESA provides a “snapshot” of the site conditions at the time of the site investigation. Consequently, the report may not be valid at a later time if there has been any change to the contamination status of the site in that time. Verification of the status of the site may be required in cases where a significant time has elapsed, or site conditions have changed since the assessment and audit.

The ESA is necessarily limited by constraints such as time, cost and available information; although normal professional practice at the time has been applied with all due care to prepare the report. A necessary requirement of this process is the horizontal and vertical interpolation of data from discrete locations. However, site conditions are generally not homogenous and some discrepancies will occur between the actual and predicted results at locations not directly sampled. There is a risk that contamination may occur at the site and not be identified by a competent investigation and assessment. The approach adopted in sampling (a combination of statistically based grid and judgmental sampling) seeks to reduce, but cannot eliminate, this risk.

Where unexpected occurrences of contamination arise, subsequent to the issue of the ESA Report, Cardno should be permitted to make an interpretation of these facts in relation to the ESA Report findings. Consequently, the Client should inform Cardno and seek their opinion. Cardno accepts no liability for costs incurred due to such

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The ESA Report is not intended to be a comprehensive analysis of the presence and associated risk of asbestos in buildings and services. Where asbestos in buildings and services is known or likely, the report may only caution that an appropriately qualified person be engaged to undertake demolition to avoid contamination of the site.

Cardno

13 August 2015

APPENDIX

H

E6 FACTUAL REPORT

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Stantec

PFAS OMP Factual Report

Biannual Sampling Event November 2022

RAAF Base Wagga

DEF19008

Prepared for
Department of Defence

9 March 2023

Cardno

now

Stantec

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Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Cardno is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

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List of Abbreviations and Units

Chemical Names

DO	Dissolved Oxygen
PFAS	Per- and Poly-fluoroalkyl Substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Per-fluoro-octanoic Acid
PFOS	Per-fluoro-octane Sulfonate
TDS	Total Dissolved Solids (salinity of water)

Technical Terms

AFFF	Aqueous Film-Forming Foam
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
AS	Australian Standard
BGL	Below Ground Level
COC	Chain of Custody
DSI	Detailed Site Investigation
EC	Electrical Conductivity
EPA	Environment Protection Authority
LOR	Limit of Reporting
N/A	Not Applicable
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environmental Protection Measure
ORP	Oxidation Reduction Potential
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan
SWL	Standing Water Level

Units

ha	Hectares
mAHD	Metres above Australian Height Datum
mBGL	Metres Below Ground Level
mbTOC	Metres below Top of Casing
mg/kg	Milligram per Kilogram (approximately equivalent to ppm)
mg/L	Milligram per Litre
ppm	Parts per Million
µg/L	Micrograms per Litre

µS/cm	Micro Siemens per Centimetre (Electrical Conductivity – Water)

Site Specific

OMP	Ongoing Monitoring Plan
DCMM	Defence Contamination Management Manual
Esdat	Environmental data management software
WWCDA	Wagga Wagga City Domestic Airport

1 Introduction

1 1 Background

Cardno was engaged by the Australian Department of Defence (Defence) to carry out the Per- and Poly-Fluoroalkyl Substances (PFAS) Ongoing Monitoring Plan (OMP; Jacobs, 2019b) of groundwater and surface water at RAAF Base Wagga ("the site"). The site is located outside of Wagga Wagga in Forest Hill, New South Wales, as shown in Figure 1, Appendix A.

The OMP was carried out in accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP):

> Cardno, 24 October 2022, Reference: DEF19008, PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP) Rev7, RAAF Base Wagga Wagga.

For the purposes of this report:

> RAAF Base Wagga is defined as "the Site", which also represents the "On-Site Monitoring Area". The Site is inclusive of the RAAF base as well as an operational airfield, Wagga Wagga City Domestic Airport (WWCDA), which is operated by the Wagga Wagga City Council (Council) (Figure 1, Appendix A).

> The "Off-Site Monitoring Area" comprise areas to the east, north, west and northwest of the Site (Figure 1, Appendix A).

> The "Monitoring Area" (MA) is comprised of the "On-Site Monitoring Area" and the "Off-Site Monitoring Area" (Figure 1, Appendix A).

1 Purpose Ob ectives

The objective of the OMP is to assess the changes in the nature and extent of PFAS in groundwater and surface water within the environment, specifically where there is an identified potentially elevated risk to a receptor or a potential future risk to a receptor associated with Defence's historical use of Aqueous Film Forming Foam (AFFF).

The purpose of this PFAS OMP factual report is to provide an up-to-date status of the condition of the site as it is currently understood in relation to the most recent sampling event.

The objectives of the report are:

> To provide a succinct summary of the November 2022 sampling event and provision of analytical results with supporting tables and figures.

> To provide confirmation of the current understanding of risk.

> To provide supporting data for the assessment of management actions, where relevant.

1 Relevant Guidelines

This assessment has been undertaken in general accordance with applicable industry standards for a site investigation for the purpose, objectives and scope identified in this report. These standards are set out in:

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

> Australian Standard AS 4482-2005 *Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 – Non-volatile and semi-volatile compounds*.

> Department of Defence, Department of Energy, 2018, *Quality System Manual Schedule B15*.

> Heads of Environmental Protection Authority's Australia and New Zealand (HEPA), 2020, *PFAS National Environmental Management Plan (NEMP),* Version 2.0, January 2020.

> National Environment Protection Council (NEPC), 1999, *National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013)* (ASC NEPM).

> National Health and Medical Research Council (NHMRC), 2019, *Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water*.

> Standards Australia, 1998, AS/NZ 5667:1998 *Water quality – sampling*.

> U.S. Environmental Protection Agency (EPA), 2000, '*Guidance for the Data Quality Objectives Process (EPA QA/G-4)*'.

> USEPA, 2002, '*Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8)'.*

Scope of Work

Cardno carried out the following tasks in order to satisfy the purpose and objectives of this assessment.

1 Review / Revision o the SAQP

Cardno undertook a review of the SAQP prior to commencement of the field program and revised the SAQP to reflect some updates to the field methodology. The SAQP will be reviewed and further revised as required prior to the next monitoring event scheduled for April 2023.

Groundwater Monitoring

Sampling of selected groundwater bores was performed in accordance with the SAQP, applying methods set out in Section 3 of this report. The groundwater bores monitored as part of the OMP are presented in Table 2-1, and are shown in Figure 4, Appendix A.

Table 2-1 Groundwater Monitoring Locations

Monitoring Area	Location ID
On-site	MW243, MW300, MW301, MW302, MW303, MW304, MW305, MW306, MW307, MW308, MW309, MW310, MW311.
Gumly Gumly Wetland	MW200, MW204, MW233, MW312, MW313.
Down-gradient of Gumly Gumly Wetland	MW238, MW239, MW240, MW244, MW245, MW247, MW248, MW249, MW250, MW251, MW252, MW253, MW254, MW255, MW256, MW257.
Off-site to the north and north-west of site	MW214[1], MW231, MW235, MW246.
Drinking water supply bores to the north and north-west of site	MW209, MW210, MW211, MW212, MW213.
Property to the east of the site	MW241, MW242.

Notes:
1. MW214 is the current production bore supplying irrigation water to the Base.

Data loggers previously installed in 13 groundwater monitoring locations to monitor water levels over time were retrieved and the data downloaded: MW215, MW242, MW243, MW304, MW312, MW238, MW239, MW245, MW244, MW247, MW248, MW249 and MW250. Data retrieved from MW250 was observed to have only recorded 10 April readings from the previous deployment. The logger was reset and confirmed to be accurately recording for this event. The data will be assessed and reported as part of the Annual Interpretive Report (AIR) for 2022.

Sur ace Water Monitoring

Sampling of selected surface water locations was performed in accordance with the SAQP, applying methods set out in Section 3 of this report. The surface water locations monitored as part of the OMP are presented in Table 2-2, and are shown in Figure 5, Appendix A.

Table 2-2 Surface Water Monitoring Locations

Monitoring Area	Location ID
Surface Water Inflows – drains discharging from the Site	SW104, SW206.
Surface Water Outflows – drain parallel to Forest Hill Rural Fire Service	SW218.

Monitoring Area	Location ID
Marshalls Creek downstream of Gumly Gumly Wetland	SW234, SW262, SW294, SW310.
Murrumbidgee River	SW212, SW261, SW286, SW309.
Kyeamba Creek	SW236, SW240.
Forest Hill Sewage Treatment Plant	SW228, SW288, SW289.

Data Management

All the data included in the report have been collected, uploaded to the Esdat database and reviewed according to the data management requirements of the Defence Contamination Management Manual (DCMM) Annex L.

Deviations rom the OMP SAQP

Deviations from the SAQP were attributed to a lack of sampling media or access constraints resulting from the regional flooding, as summarised in Table 2-3. On-site and off-site sampling and testing was undertaken at 36 groundwater monitoring wells, and 13 surface water locations. Six groundwater monitoring wells could not be sampled as the wells were found to be dry or had insufficient water for sampling. Three groundwater monitoring wells and three surface water locations could not be sampled as they were inaccessible due to flood water. Four surface water locations were moved slightly as they were inaccessible due to flood water.

Table 2-3 Deviations from the SAQP

Location	Deviation	Comment/ usti ication	Impact on E isting Dataset
Groundwater			
MW213	Not Sampled.	Bore under water and not operational	Minimal impact – Location last sampled in the May 2022 sampling event. Historical results at this location have been <LOR.
MW251	Not Sampled.	Unable to access location due to flood water.	Minimal impact – Location last sampled in the May 2022 sampling event. Historical results at this location have been <LOR.
MW252	Not Sampled.	Unable to access location due to flood water.	Minimal impact – Location last sampled in the May 2022 sampling event. Historical results at this location have been <LOR.
MW301	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW303	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW305	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW307	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW309	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP, with the exception of April 2021 where results were reported below criteria.
MW313	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.

Sur ace Water			
SW212	Not sampled.	Water level too high, unable to access due to flood water.	Minimal impact – Location last sampled in the May 2022 sampling event. Downstream locations have been sampled in this event. Results at this location have been <LOR since 2020.
SW236	Location moved.	Due to high water level sampling location was moved 10 m east.	Minimal impact – review of results from this sampling point are consistent with historical results.
SW261	Not sampled.	Water level too high, unable to access due to flood water.	Minimal impact – Location last sampled in the May 2022 sampling event. Upstream locations have been sampled in this event. Historical results at this location have been <LOR.
SW262	Location moved.	Due to high water level sampling location was moved 15 m south.	Minimal impact – review of results from this sampling point are consistent with historical results.
SW286	Location moved.	Due to high water level sampling location was moved 15 m south.	Minimal impact – review of results from this sampling point are consistent with historical results.
SW294	Not sampled.	Water level too high, unable to access due to flood water.	Minimal impact – Location last sampled in the May 2022 sampling event. Upstream and downstream locations have been sampled in this event. Historical results at this location have been consistent throughout the OMP.
SW309	Location moved.	Due to high water level sampling location was moved 20 m west and 10 m south.	Minimal impact – review of results from this sampling point are consistent with historical results.

Impact on the understanding of the risk profile is considered to be minimal to none for following locations:

- Locations MW213, MW251 and MW252: Location last sampled in May 2022, historical results have been <LOR.
- Locations MW301, MW303, MW305, MW307, MW309 and MW313: These locations have been historically dry. The data obtained from the paired water bearing wells installed in the Lachlan formation will provide insight into the vertical migration pathways of PFAS in the groundwater. The lack of data from these wells is not considered to affect the interpretation of the results obtained or the understanding of PFAS migration in the vicinity of the monitoring area.
- Locations SW212, SW261 and SW294: Location last sampled in May 2022, upstream and/or downstream locations have been sampled in this event. Results at these locations have been consistent throughout the OMP.
- Locations SW236, SW262, SW286 and SW309: review of results from these locations are consistent with historical results.

Overall, the deviations do not represent significant data gaps and therefore the impact on the understanding of the risk profile is negligible.

Methodology

1 Groundwater Sampling Methodology

Groundwater monitoring was undertaken as detailed in Table 3-1.

Table 3-1 Groundwater Sampling Method

Activity	Details
Dates of Field Activity	4 to 9 November 2022
Well Gauging	Standing Water Levels (SWL) were gauged using an interface probe. All wells were measured against a specified mark at the top of the well casing.
Groundwater Field Parameters	Groundwater water quality parameter field measurements (field parameters) were recorded with a water quality meter before sample collection (with the sample in a clean jar). The following field parameters were recorded using a water quality meter: ▪ pH. ▪ electrical conductivity (EC). ▪ oxidation reduction potential (ORP). ▪ Dissolved oxygen (DO). ▪ Temperature. Field parameters measured by the water quality meter were recorded on field data records. All field instruments (e.g. water quality meter) were calibrated by the equipment supplier to 5ptimize the accuracy of the measurements taken. Bump tests were also completed daily by field staff during the monitoring event. Calibration certificates and bump test records are provided in Appendix D.
Deployment of HydraSleeve®	The HydraSleeves® were deployed with attached weights in order for sample collection to begin at the lowest point of the well screen. All existing HydraSleeves® were replaced during the initial gauging round on 5 November 2022. HydraSleeve® were left in wells for a minimum of 24 hours to allow restabilisation of the well following the slight disturbance caused by sampler deployment, before sampling.
Retrieval of HydraSleeves® (Sample Collection)	Samples were collected via continuous pull method at a rate allowing the water to pass through the check valve into the sample sleeve. Samples were discharged immediately (to minimise changes in chemistry) via a discharge tube. All HydraSleeves® were replaced with new HydraSleeves® after sampling in preparation for the next sampling event. Where insufficient water was available for HydraSleeve® sampling, 3 monitoring well volumes were removed by bailer, or the well was purged dry, prior to bailer sample collection.
Decontamination procedure	New HydraSleeves® were used at each groundwater monitoring well, thus removing the need for decontamination. Where HydraSleeves® could not be used, single use bailers were used instead which also did not require decontamination. All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection.
Sample identification, preservation transport and holding times	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Samples were collected directly into appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under Chain of Custody (CoC) documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998 and AS 4482.1 as appropriate).
Laboratory Testing	All groundwater samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and Chain of Custody documentation are included in Appendix C.

Activity	Details
Laboratory Testing – Quality Control	Groundwater quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples (4 samples). ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples (4 samples). ▪ Rinsate blank samples at 1 per day [collected off re-used sampling equipment (e.g. interface probe)] (5 samples total). ▪ Trip blank samples of 1 per shipment included in the chilled sample containers upon transport to the laboratory (5 samples total).

Sur ace Water Sampling Methodology

Surface water monitoring was undertaken using a grab method as detailed in Table 3-2.

Table 3-2 Surface Water Sampling Method

Item	Details
Dates of Field Activity	4 to 9 November 2022
Water Level Gauging	Water depths were measured where relevant with an interface probe, limiting water disturbance.
Field parameters	Surface water field parameters (i.e. pH, electrical conductivity (EC), oxidation reduction potential (ORP), dissolved oxygen (DO), and temperature) were recorded at the time of sampling using a pre-calibrated water quality meter. Field observations such as flow, turbidity, and the presence of odours, sheen, nuisance organisms, floating debris and frothing (where observed) were also recorded on field sampling sheets.
Sampling Method	Where possible, the samples were collected directly into sample containers. The sample bottles were positioned at least 10 cm below the surface water level and above the sediment bed and orientated with the opening facing downwards to avoid the collection of surface films. Where access to surface water samples was difficult, the samples were collected using a long-handled sampling device with a glass container (scoop) that was lowered directly into the water body. Samples were then decanted into the laboratory-supplied sample containers. Samples were collected in accordance with Australian/New Zealand Standards (AS/NZS 5667.1:1998) '*Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*'.
Decontamination	All re-usable sampling equipment were thoroughly washed using phosphate-free detergent (Liquinox), and subsequently double rinsed with clean water before the sample collection.
Sample identification, preservation, transport and holding times.	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM. Samples were contained in appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under Chain of Custody (COC) documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998 and AS 4482.1 as appropriate).
Laboratory Testing	All surface water samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and Chain of Custody documentation are included in Appendix C.

Item	Details
Laboratory Testing – Quality Control	Surface water quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples (2 samples). ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples (2 samples). ▪ Rinsate blank samples at 1 per day [collected off re-used sampling equipment (e.g. long-handled sampling device)] (5 samples total). ▪ Trip blank samples of 1 per shipment included in the chilled sample containers upon transport to the laboratory (5 samples total).

Quality Control / Quality Assurance

A critical aspect of site assessments is the demonstration of the quality of the data used as the basis for the assessment. This is achieved through a Data Validation process which includes a review of the following data quality indicators, as described in the SAQP:

- QA documentation.
- Bias.
- Data Representativeness.
- Data Precision & Accuracy.
- Data Comparability.
- Data Set Completeness.

A detailed review of these aspects has been undertaken, the results of which are presented in Appendix E. A summary of the data validation from the QA/QC review is included in Section 4.4 below.

Assessment Criteria

1 Groundwater

The adopted assessment criteria for groundwater are detailed in Table 3-3.

Table 3-3 Criteria for Groundwater

E posure Scenario	Adopted Assessment Criteria		Guidance
	PFH S / PFOS	PFOA	
	µg/L		
Human Health – Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Ecological	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2019b).

Sur ace Water

The adopted assessment criteria for surface water are detailed in Table 3-4

Table 3-4 Criteria for Surface Water

E posure Scenario	Adopted Assessment Criteria		Guidance
	PFH S / PFOS	PFOA	
	µg/L		
Human Health – Surface Water Recreational	2[2]	10	HEPA 2020

Human Health – Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Ecological	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2019b).

Field Observations and Results

1 Conditions Impacting the Sampling Event

In the seven days prior to the sampling event, the regional area was experiencing a significant flooding event. 62.6 mm of rain was recorded at the nearest weather station (072150), located approximately 1 km south of the site. October 2022 rainfall was 145.8 mm, which is considerably higher than that recorded for October 2021 (44.2mm). Significant flooding was observed within the Monitoring Area, in particular around the Murrumbidgee River and its tributaries, and can potentially impact the groundwater and surface water sampling results.

No on-site activities with the potential to impact sample collection or the results were noted.

Groundwater

1 Summary o Field Observations

4.2.1.1 Water quality parameter field measurements

Stabilised water quality parameter field measurements, water colour and turbidity observations recorded during the groundwater sampling program are presented in field sampling record sheets, included in Appendix D. Water quality parameter field measurements were generally consistent with April/May 2022. Groundwater varied from clear to brown with low to high turbidity and no notable changes were recorded relative to previous monitoring events.

4.2.1.2 Groundwater Elevation and Migration

Groundwater elevation ranges encountered for the two aquifers during this sampling event are as follows:

- Shallow aquifer – from 167.809 mAHD (MW257) to 191.421 mAHD (MW311) for the Cowra Formation
- Deep aquifer – from 167.991 mAHD (MW256) to 188.167 mAHD (MW306) for the Lachlan Formation

Groundwater was noticeably higher in the wells in the north-west near the flooded Murrumbidgee River. Groundwater flow for both aquifers is interpreted to be both north-westerly from the wells in the south east and south easterly from the potentially flood affected wells near the Murrumbidgee River. Groundwater elevation contours and flow directions are shown in Figures 2a and 3a Appendix A. When the potentially flood impacted wells are removed, groundwater flow for both aquifers is interpreted to be north-westerly which is consistent with the flow of Kyeamba Creek and Marshalls Creek and with the previous monitoring events.

Groundwater elevation contours and flow directions without potentially flood impacted wells are shown in Figures 2b and 3b Appendix A. Gauging records are presented in Appendix D.

Groundwater Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, and are presented in Table B1, Appendix B, and summarised in Table 4-1 below. Of the 36 primary samples that were tested, PFOA was reported above the limit of reporting in 2 samples, and Sum of PFHxS and PFOS in 12 samples.

Table 4-1 Summary of Groundwater Results Exceeding Adopted Criteria

Analytes	Locations E ceeding Criteria	Adopted Criteria µg/L)	Ma Conc (µg/L)	No Analytical Results LOR	No Results Above Criteria	Signi icant Concentration Changes
PFOS	MW200, MW233	0.13[2]	0.28	7	2	-
PFOA	None	0.56[1]	0.1	2	0	-
Sum of PFHxS and PFOS	MW200, MW233, MW240, MW248, MW254, MW300, MW311	0.07[1]	0.92	12	7	MW311 (increase)

1. Drinking water assessment criteria
2. Ecological assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease
4. The most sensitive adopted guideline value for each analyte is displayed

Laboratory results have also been compared to available historical data. One location reported a significant change in concentration for this monitoring event.

> MW311: Sum of PFHxS and PFOS has increased by one order of magnitude from a previous result of 0.04 µg/L in March 2020 (last sampled) to 0.49 µg/L in this event.

All other concentrations reported during this event were generally consistent with previous sampling events (i.e. no significant concentration changes).

Table 4-2 below provides a summary of locations where a first-time detection of PFOS, Sum of PFHxS and PFOS or PFOA, or a new exceedance of guideline values, were reported. The laboratory reports are provided in Appendix C.

Table 4-2 Summary of Groundwater Results with First-time Detections or New Exceedances

Deviation Type	Monitoring Well	Sum o PFH S PFOS concentration µg/L		PFOA concentration µg/L		PFOS concentration µg/L	
		November 0	Previous Ma imum	November 0	Previous Ma imum	November 0	Previous Ma imum
First-time detection	MW243	0.01[1]	<0.01	<0.01	<0.01	0.01[1]	<0.01
New exceedance	MW311	**0**	0.04	<0.01	<0.01	<0.01	0.01

Note
Location with first-time detection of PFOS + PFHxS, PFOA or PFOS in latest monitoring round
Location with a new exceedance of the most sensitive adopted guideline value in latest monitoring round
Bold: Exceedance of adopted guideline values
1. Result recorded on quality control (duplicate or split) sample

Findings are summarised as follows:

> One groundwater sampling location (MW243) reported a first-time detection for PFOS and for Sum of PFHxS + PFOS

> One groundwater sampling location (MW311) reported a new exceedance for Sum of PFHxS + PFOS.

Summary o Monitoring Network Condition and Repairs

The monitoring network was observed to be generally in good condition.

The concrete base surrounding the MW244 was observed to have been cracked during the recent floods. The integrity of the well beneath the concrete did not appear to be impacted.

No other changes to the monitoring network condition were noted.

Sur ace Water

1 Summary o Field Observations

4.3.1.1 Water quality parameter field measurements

Stabilised water quality parameter field measurements, water colour and turbidity observations recorded during the surface water sampling program are presented in field sampling record sheets, included in Appendix D. Field measurements were generally consistent with historical observations. Surface water varied from clear to brown with generally low to medium turbidity. In general, water was clearer and slightly low turbid than the previous monitoring round in April/May 2022.

Sur ace Water Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, presented in Table B2, Appendix B, and summarised in Table 4-3 below. Of the 13 primary samples that were tested, PFOS was reported above the limit of reporting in 9 samples, and Sum of PFHxS and PFOS in 9 samples.

Table 4-3 Summary of Surface Water Results Exceeding Adopted Criteria

Analytes	Locations E ceeding Criteria	Adopted Criteria (µg/L)	Ma Conc (µg/L)	No Analytical Results LOR	No Results Above Criteria	Signi icant Concentration Changes
PFOS	SW104, SW206, SW218, SW228, SW289, SW310	0.13[2]	3.34	9	6	SW206 (increase)
PFOA	-	0.56[1]	0.11	6	-	-
Sum of PFHxS and PFOS	SW104, SW206, SW218, SW228, SW289, SW310	0.07[1]	4.88	9	6	SW206 (increase)

1. Drinking water assessment criteria
2. Ecological assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease
4. The most sensitive assessment criteria for each analyte has been adopted

Results have also been compared to available historical data. One location has reported a significant change in concentrations for this monitoring event.

- SW206: Sum of PFHxS and PFOS has increased by one order of magnitude from a previous result of 0.23 µg/L in May 2022 to 3.07 µg/L in this event.
- SW206: PFOS has increased by one order of magnitude from a previous result of 0.15 µg/L in May 2022 to 2.01 µg/L in this event.

All other concentrations reported during this event were generally consistent with previous sampling events.

Table 4-2 and Table 4-4 below provides a summary of locations where a first-time detection of PFOS, Sum of PFHxS and PFOS or PFOA, or a new exceedance of guideline values, were reported. The laboratory reports are provided in Appendix C.

Table 4-4 Summary of Surface Water Results with First-time Detections or New Exceedances

Deviation Type	Sur ace Water Location	Sum o PFH S PFOS concentration µg/L		PFOA concentration µg/L		PFOS concentration µg/L	
		November 0	Previous Ma imum	November 0	Previous Ma imum	November 0	Previous Ma imum
First-time detection	SW240	0.01	<0.01	<0.01	<0.01	0.01	<0.01
First-time detection	SW288	0.02	<0.01	<0.01	<0.01	0.02	<0.01

Note
Location with first-time detection of PFOS + PFHxS, PFOA or PFOS in latest monitoring round
Location with a new exceedance of the most sensitive adopted guideline values in latest monitoring round
Bold: Exceedance of adopted guideline values
2. Result recorded on quality control (duplicate or split) sample

Findings are summarised as follows:

> Two surface water sampling locations (SW240 and SW288) reported a first-time detection for Sum of PFHxS + PFOS.

Data alidation

The data validation process has concluded that there are no significant systematic errors in the data collection process. Therefore, the data set used as the basis for the surface water and groundwater assessment is considered valid and complete. A detailed Data Quality Review is included in Appendix E.

Risk Pro ile

The risk profile for the site is detailed in the latest Annual Interpretive Report provided by Cardno (Reference: DEF19008, *'PFAS OMP Annual Interpretive Report -, April and October 2021, Sampling Events RAAF Base Wagga'*. Please refer to this for a detailed discussion.

Summary and Conclusions

Cardno conducted the November 2022 biannual groundwater and surface water monitoring event at RAAF Base Wagga as part of the PFAS OMP. On-site and off-site sampling and testing was undertaken at 36 groundwater monitoring wells and 13 surface water locations.

Groundwater levels were gauged in all accessible wells before sampling. Groundwater was interpreted to flow in a north-westerly direction when potentially flood impacted wells were not considered, this is consistent with local drainage patterns and consistent with previous monitoring events.

The results of the November 2022 monitoring event do not indicate any changes in the risk profile associated with Defence's historical use of AFFF since the previous monitoring event in April/May 2022.

Table 5-1 Summary of Results

Activity	Details
Deviations from OMP SAQP	> Six groundwater wells were not sampled due to the wells being dry (MW301, MW303, MW305, MW307, MW309 and MW313). > Three groundwater wells were not sampled as they were inaccessible due to flooding (MW213, MW251 and MW252).
Groundwater Analytical Results	> 36 groundwater samples were collected in total. > Seven samples reported Sum of PFOS and PFHxS concentrations above the adopted human health criteria (MW200, MW233, MW240, MW248, MW254, MW300 and MW311). > Two samples reported PFOS concentration above the adopted ecological criteria (MW200, MW233). > One groundwater sampling location reported a first-time detection for Sum of PFHxS and PFOS (MW243). The first-time detection was reported equal to the LOR of 0.01 µg/L in the field split sample. Both the primary and blind replicate samples reported concentrations below the LOR of 0.01 µg/L. > One groundwater sampling location reported a new exceedance for Sum of PFHxS and PFOS (MW311). > One sample reported an order of magnitude increase in Sum of PFHxS and PFOS results compared to the previous time it was sampled in March 2020 (MW311). > All other groundwater results reported during this event were generally consistent with previous sampling events.

Activity	Details
Surface Water Analytical Results	> 13 surface water samples were collected in total. > Six samples reported Sum of PFOS and PFHxS concentrations above the adopted human health criteria (SW104, SW206, SW218, SW228, SW289 and SW310). > Six samples reported PFOS concentrations above the adopted human health criteria (SW104, SW206, SW218, SW228, SW289 and SW310). > Two surface water sampling locations reported first-time detections for Sum of PFHxS and PFOS (SW240 and SW288). The first-time detection at SW240 was equal to the LOR of 0.01 µg/L. > One sample reported an order of magnitude increase in Sum of PFHxS and PFOS results compared to the previous event (SW206). > One sample reported an order of magnitude increase in PFOS results compared to the previous event (SW206). > All other surface water results reported during this event were generally consistent with the previous monitoring event.
Next Scheduled Monitoring Event	> The next OMP monitoring event is scheduled for April 2023. > SAQP to be reviewed and updated as required prior to the next monitoring event. > Field parameters at MW244 will be monitored closely during the next monitoring event to assess if fresh water ingress may be occurring at the damaged well.

References

General Re erences

1. ANZECC and ARMCANZ (2000) Australian Water Quality Guidelines for Fresh and Marine Water Quality.
2. Department of Defence (2019a), Contamination Management Manual (DCMM), August 2019.
3. Department of Defence (2019b), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring.
4. Defence (2021) Defence OMP Factual Report Preparation Guidance, Revised May 2021.
5. Environmental Protection Agency (United States EPA; 2002) EPA/240/R-02/004 Guidance on Environmental Data Verification and Data Validation, November 2002.
6. The Heads of EPAs Australia and New Zealand (HEPA; 2020) PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020.
7. National Environment Protection Council (NEPC; 1999) National Environmental Protection (Assessment of Site Contamination) Measure (as amended), registered May 2013.
8. National Health and Medical Research Council (2011 – updated 2018) National Water Quality Management Strategy Australian Drinking Water Guidelines, 6 August 2018.
9. Nation Health and Medical Research Council (NHMR; 2019) Guidance on Per and Poly-fluoroalkyl Substances (PFAS) in Recreational Water, August 2019.
10. Standards Australia/Standards New Zealand (1998) AS5667.1:1998 Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.
11. Standards Australia (1999) AS4482.2-1999 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 – Non-volatile and semi-volatile compounds.
12. US EPA (2000) Guidance for the Data Quality Objectives Process (EPA QA/G-4), United States Environmental Protection Agency.
13. US EPA (2002) Guidance on Environmental Data Verification and Data Validation, Reference: EPA/240/R-02/004, United States Environmental Protection Agency, November 2002.

Site Speci ic Re erences

14. Jacobs (2018a) *Comprehensive Investigation of Per- And Poly- Fluoroalkyl Substances (PFAS) at RAAF Base Wagga. Detailed Site Investigation*, June 2018.
15. Jacobs (2018b) *Human Health and Ecological Risk Assessment for the RAAF Base Wagga PFAS Investigation*, 6 November 2018.
16. Jacobs (2019a) *RAAF Base Wagga; PFAS Management Area Plan*, September 2019.
17. Jacobs (2019b) *PFAS Ongoing Monitoring Plan*, September 2019.
18. Jacobs (2020) *RAAF Base Wagga Comprehensive PFAS Investigation - Ongoing Monitoring Program Groundwater Well Installation Report.* Prepared for Department of Defence, December 2020.
19. Cardno (2022) *PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP),* RAAF Base Wagga. Prepared for Department of Defence, October 2022.

APPENDIX

A

FIGURES

Cardno

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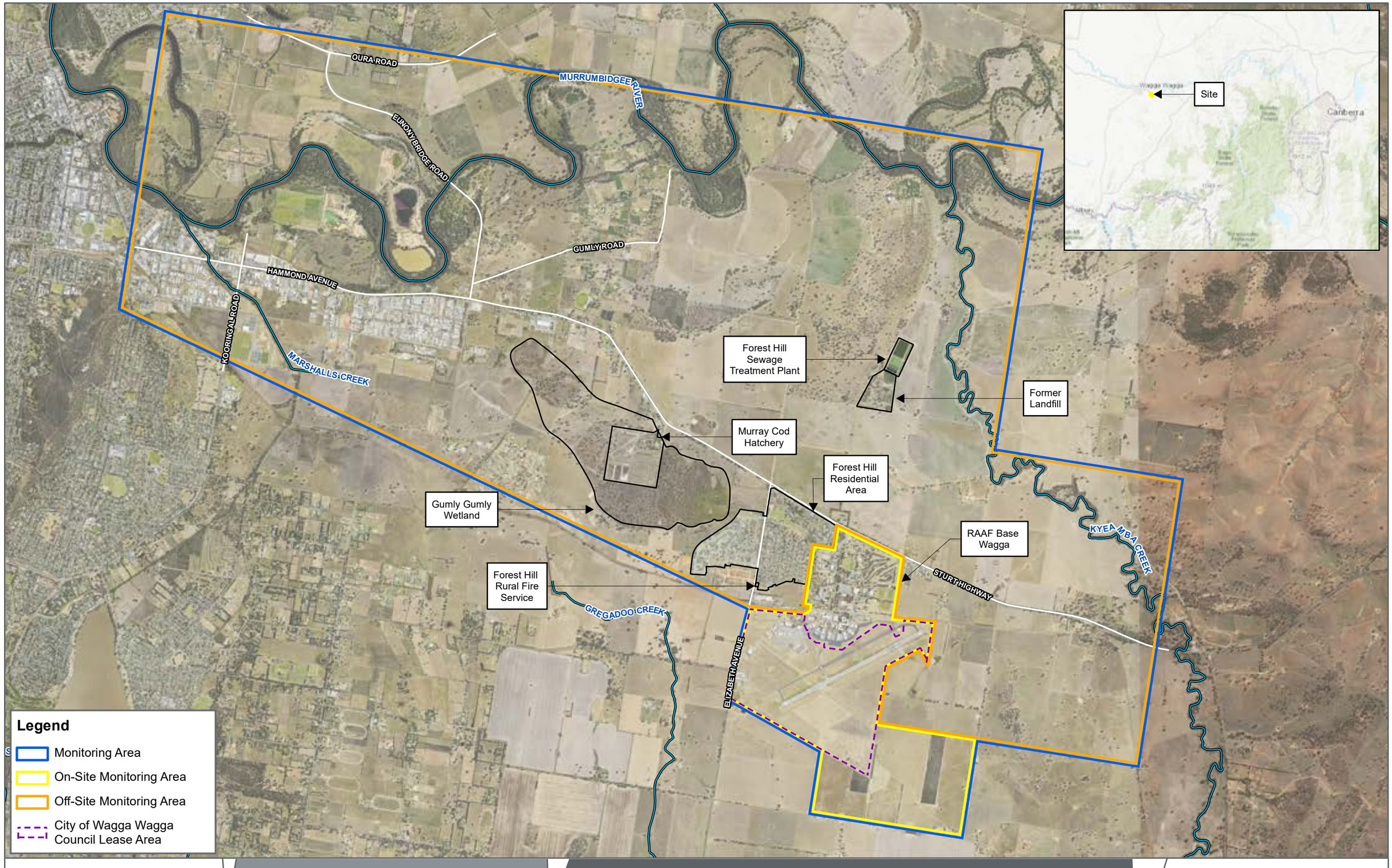

FIGURE 1

1:40,000 Scale at A3

Metres

0 1,000 2,000

Site Locality Plan

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2022-06-07 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-032-SiteLocalityPlan_WW_.mxd 07
Aerial Imagery Supplied by Metromap (February, 2022)

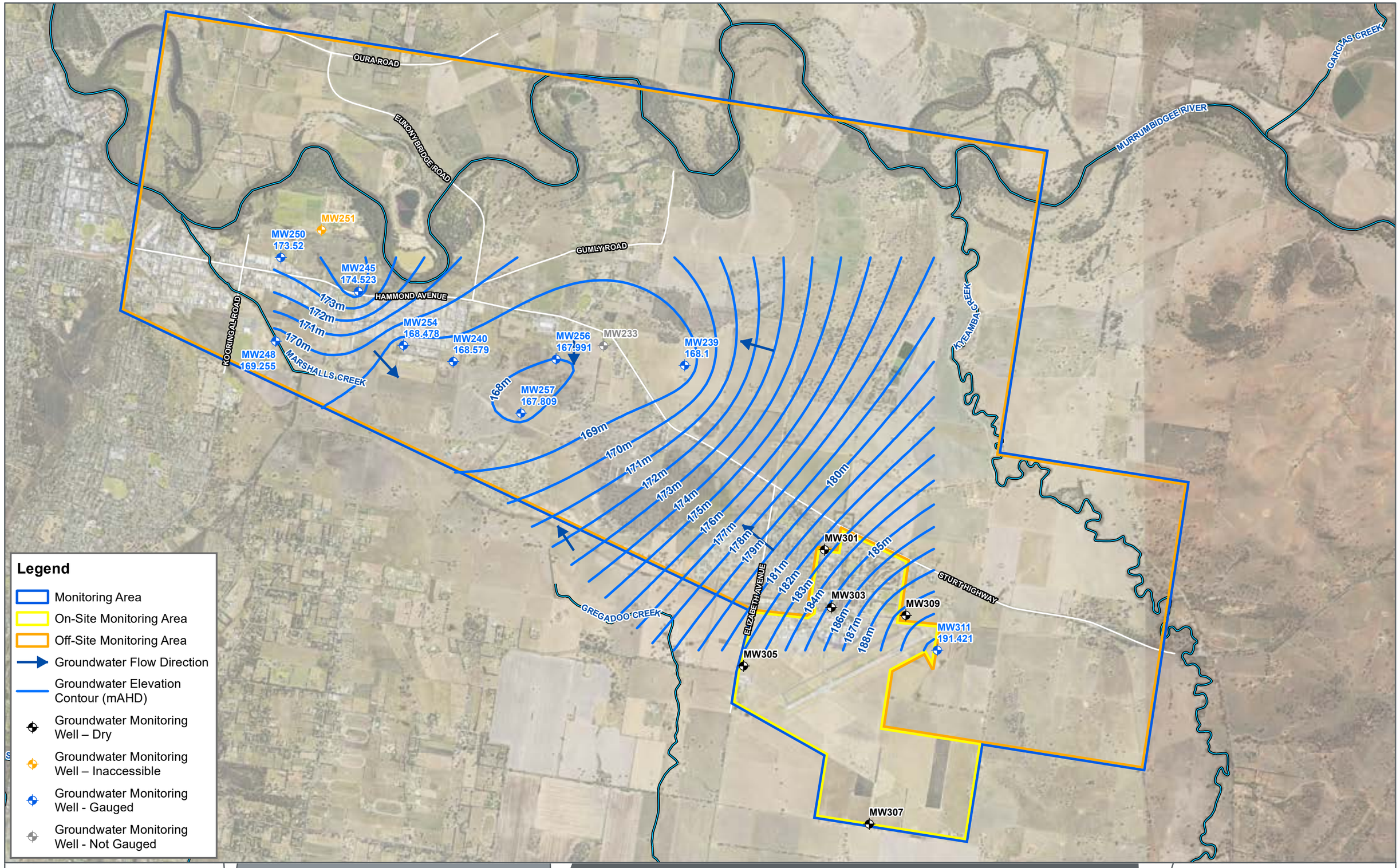

FIGURE 2A

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Cowra Aquifer (November, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

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Map Produced by Cardno now Stantec
Date: 2023-1 n1-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0263-GWContoursSA_CowraE6_WW.mxd 01
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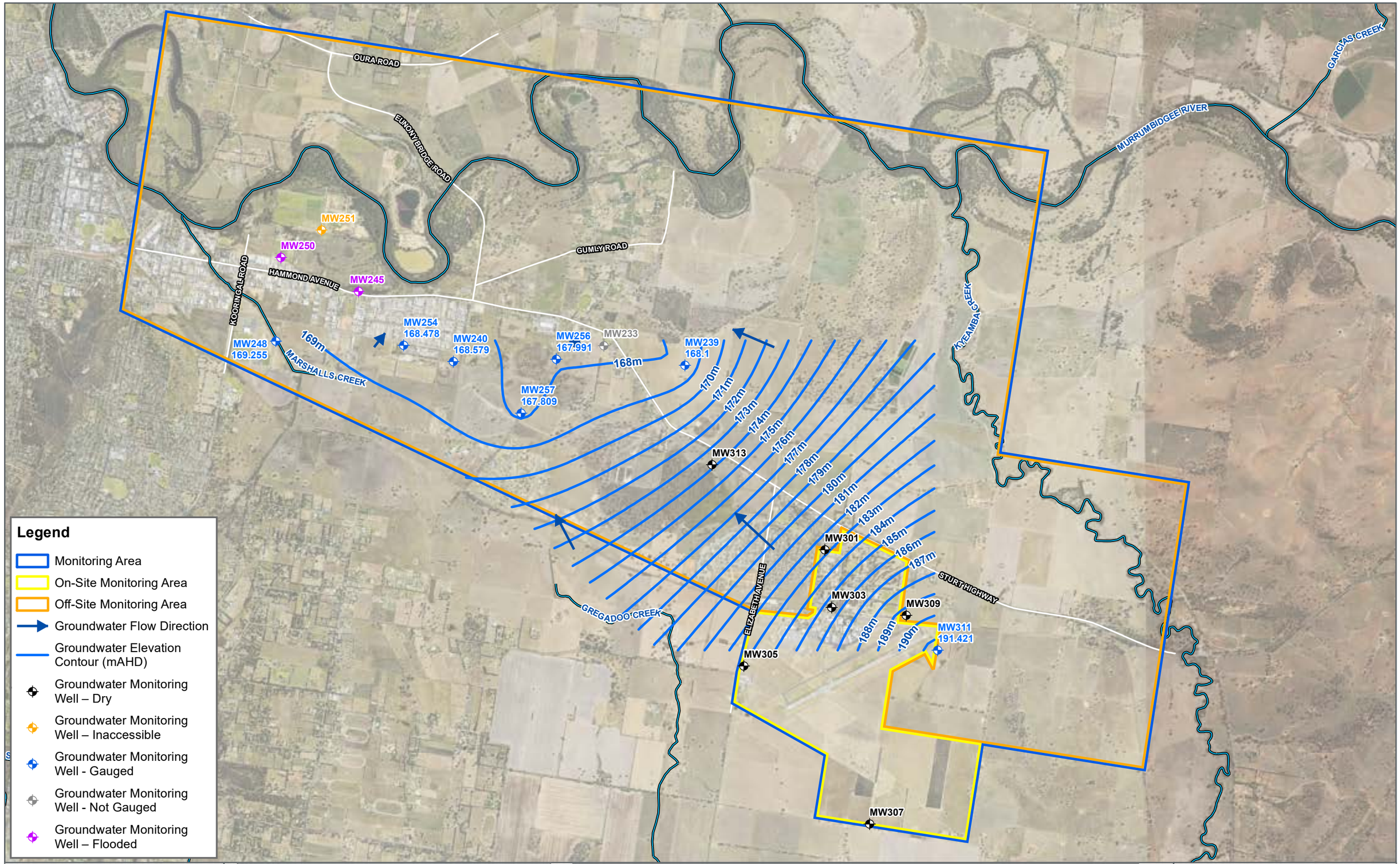

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Groundwater Flow Direction
- Groundwater Elevation Contour (mAHD)
- Groundwater Monitoring Well – Dry
- Groundwater Monitoring Well – Inaccessible
- Groundwater Monitoring Well - Gauged
- Groundwater Monitoring Well - Not Gauged
- Groundwater Monitoring Well – Flooded

FIGURE 2B

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours Without Flood Impacted Wells - Cowra Aquifer (November, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

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Map Produced by Cardno now Stantec
Date: 2023-1 n1-24 | Project: DEF19008
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Map: DEF19008-GS-0264-GWContoursSA_CowraE6_WW.mxd 01
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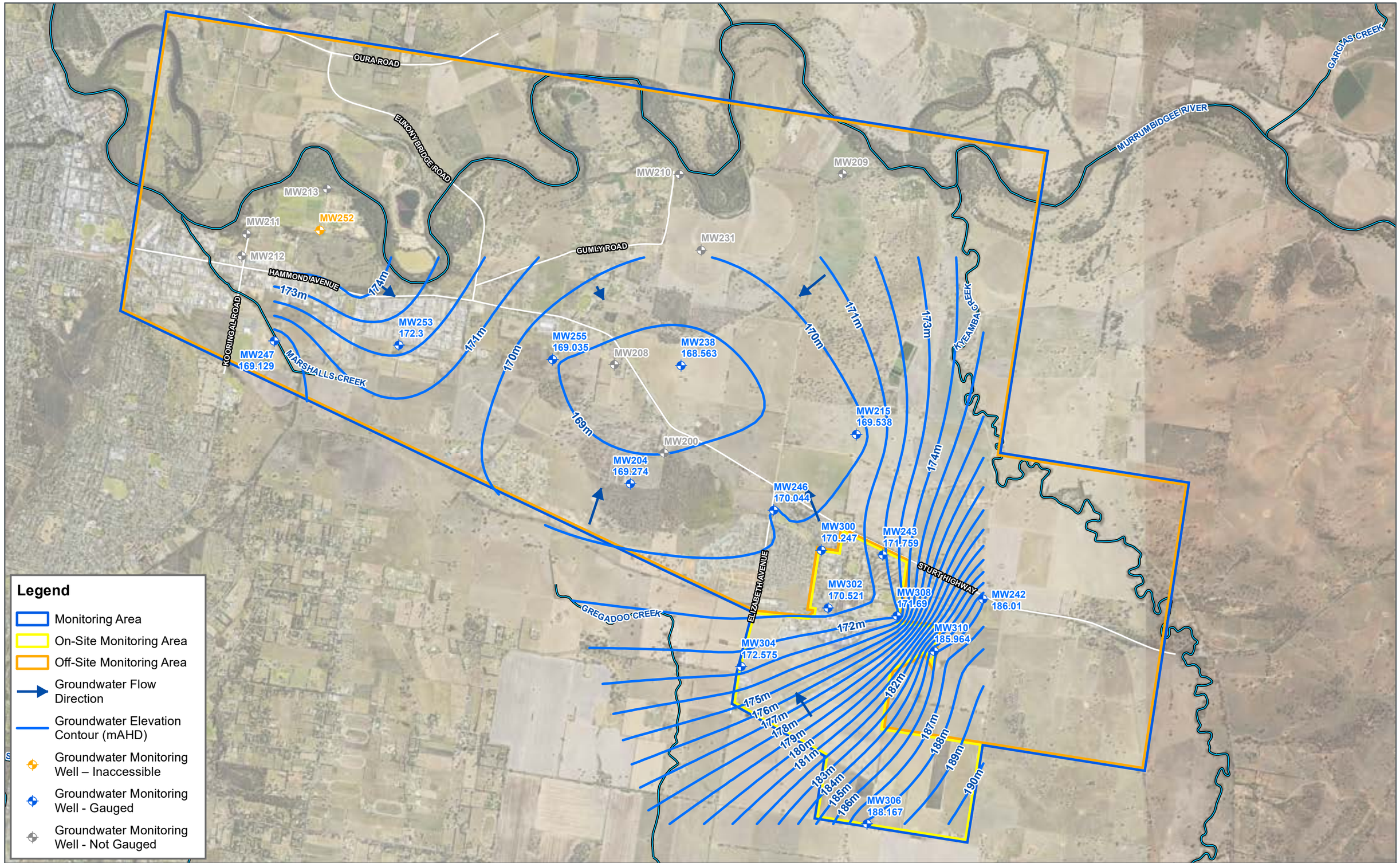

FIGURE 3A

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Lachlan Aquifer (November, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

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Map Produced by Cardno now Stantec
Date: 2023-01-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0265-GWContoursDA_LachlanE6_WW.mxd 02
Aerial Imagery Supplied by Metromap (Aprill, 2021)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GARCIAS CREEK
MURRUMBIDGEE RIVER
KYEAMBA CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY

MW213
MW211
MW252
MW249
MW212
MW244
MW253
172.3
MW247
169.129
MW255
169.035
MW208
MW238
168.563
MW210
MW209
MW231
MW215
169.538
MW200
MW204
169.274
MW246
170.044
MW300
170.247
MW243
171.759
MW302
170.521
MW308
171.69
MW242
186.01
MW310
185.964
MW304
172.575
MW306
188.167

170m
171m
172m
173m
174m
175m
176m
177m
178m
179m
180m
181m
182m
183m
184m
185m
186m
187m
188m
189m
190m

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Groundwater Flow Direction
- Groundwater Elevation Contour (mAHD)
- Groundwater Monitoring Well – Inaccessible
- Groundwater Monitoring Well - Gauged
- Groundwater Monitoring Well - Not Gauged
- Groundwater Monitoring Well – Flooded

FIGURE 3B

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours Without Flood Impacted Wells - Lachlan Aquifer (November, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

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Map Produced by Cardno now Stantec
Date: 2023-01-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0266-GWContoursDA_LachlanE6_WW.mxd 02
Aerial Imagery Supplied by Metromap (Aprill, 2021)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GARCIAS CREEK
MURRUMBIDGEE RIVER
KYEAMBA CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STUART HIGHWAY

MW213
MW211
MW251
MW212
MW250
MW249
MW244
MW245
MW248
MW247
MW253
MW254
MW240
MW255
MW256
MW233
MW208
MW238
MW239
MW257
MW210
MW209
MW231
MW215
MW214
MW200
MW204
MW246
MW301
MW243
MW300
MW302
MW303
MW308
MW242
MW241
MW309
MW310
MW311
MW304
MW305
MW306
MW307

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- First Time Detection
- First Time Exceedance of Assessment Criteria
- Dry / Insufficient water
- Sampled, 'No New Detection Or Exceedance'
- Unable to be sampled

FIGURE 4

1:40,000 Scale at A3

Metres

0 1,000 2,000

PFAS Results Summary - Groundwater (November, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-01-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0267-GW_PFAS_SummaryE6_WW.mxd 01
Aerial Imagery Supplied by Metromap (November, 2020)

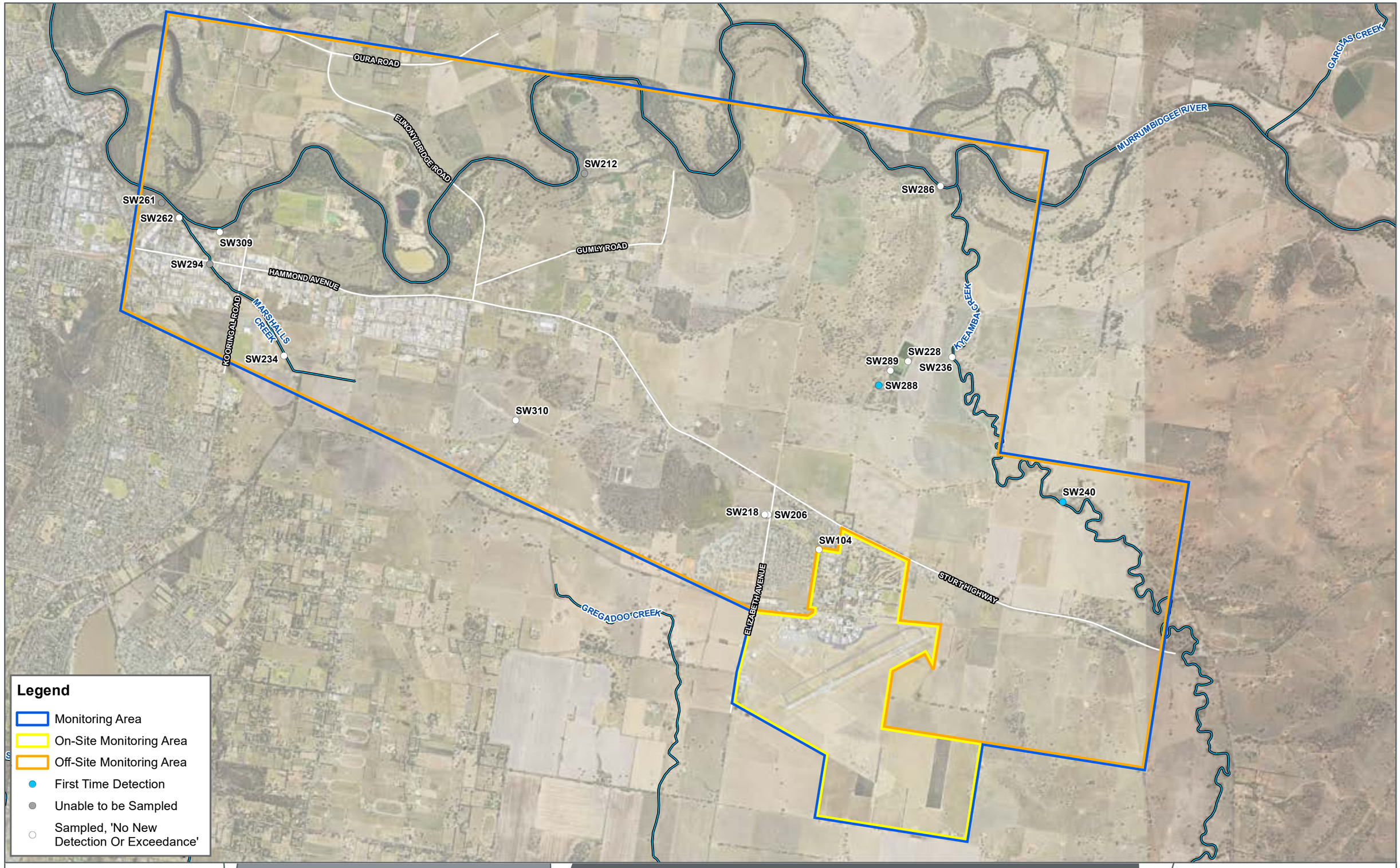

FIGURE 5

1:40,000 Scale at A3

Metres

0 800 1,600

PFAS Results Summary - Surface Water (November, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-01-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0268-SW_PFAS_SummaryE6_WW.mxd 01
Aerial Imagery Supplied by Nearmap (April, 2021)

APPENDIX

B

DATA ASSESSMENT TABLES

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								Perfluorocarbons																												
								Perfluorooctane sulfonic acid PFOS	Perfluorooctanoate PFOA	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid PFBS	Perfluoropentane sulfonic acid PFPeS	Perfluorohexane sulfonic acid PFHxS	Perfluoroheptane sulfonic acid PFHpS	Perfluorodecanesulfonic 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	Perfluorooctane sulfonamide FOSA	N-Methyl perfluorooctane sulfonamide MeFOSA	N-methylperfluoro-1-octane sulfonamido-ethanol N-MeFOSE	N-Ethyl perfluorooctane sulfonamide EtFOSA	N-Ethyl perfluorooctane sulfonamidoethanol EtFOSE	N-Methyl perfluorooctane sulfonamidoacetic acid MeFOSAA	N-Ethyl perfluorooctane sulfonamidoacetic acid EtFOSAA	Fluorotelomer sulfonic acid FTS	Fluorotelomer Sulfonate FtS	Fluorotelomer sulfonate FtS	Fluorotelomer sulfonic acid 10 FTS	Sum of PFAS	Sum of enHealth PFAS PFHxS PFOS PFOA
								µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR								0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water									**0**	**0 0**																												
PFAS NEMP 2.0 Table 1 Health Recreational Water									*10*	*2*																												
PFAS NEMP 2.0 Table 5 Freshwater 95%								0.13	220																													
Location Code	**Location Type**	**Sampled Date Time**	**Field ID**	**Sample Type**	**Lab Report Number**																																	
MW200	Off-base	7/07/2017	0906_GW200_D_07072017	Normal	ES1716876	1.36	0.08	***3.36***	0.34	0.29	2	0.08	<0.02	<0.1	0.1	0.32	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.62	-
	Off-base	25/03/2020	0906_MW200_20200325	Normal	ES2011455	0.75	0.05	**1**	0.18	0.19	1.15	0.04	<0.02	<0.1	0.05	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.7	-
	Off-base	30/09/2020	0906_MW200_20200930	Normal	ES2034893	0.6	0.04	**1**	0.14	0.18	0.96	0.05	<0.02	<0.1	0.04	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.3	-
	Off-base	23/04/2021	0906_MW200_20210423	Normal	ES2116296	0.39	0.04	**1**	0.14	0.15	1	<0.02	<0.02	<0.1	0.05	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.04	-
	Off-base	21/10/2021	0906_MW200_20211021	Normal	ES2139300	0.31	0.02	**0**	0.1	0.1	0.55	0.03	<0.02	<0.1	0.03	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.29	-
	Off-base	3/05/2022	0906_MW200_20220503	Normal	EM2208337	0.28	0.03	**0**	0.09	0.1	0.64	0.02	<0.02	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.33	-
	Off-base	8/11/2022	0906_MW200_20221108	Normal	EM2222380	0.28	0.02	**0**	0.1	0.1	0.64	0.02	<0.02	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.33	-
MW204	Off-base	7/07/2017	0906_GW204_D_07072017	Normal	ES1716876	0.03	<0.01	0.07	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
	Off-base		0906_QC101_07072017	Field_D	ES1716876	0.04	<0.01	**0 0**	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
	Off-base		0906_QC201_07072017	Interlab_D	553701	0.02	<0.01	-	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-
	Off-base	18/01/2018	0906_MW204_D_180118	Normal	ES1802488	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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
	Off-base		0906_QC101_180118	Field_D	ES1802488	0.02	<0.01	0.04	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base		0906_QC201_180118	Interlab_D	581448	0.01	<0.01	0.04	<0.01	<0.01	0.03	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	Off-base	20/02/2018	0906_MW204_D_180220	Normal	ES1805693	0.03	<0.01	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	30/03/2020	0906_MW204_20200330	Normal	ES2011455	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW204_20201001	Normal	ES2034893	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW204_20210423	Normal	ES2116296	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW204_20211021	Normal	ES2139300	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW204_20220503	Normal	EM2208337	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW204_20221109	Normal	EM2222380	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW209	Off-base	7/09/2017	0906_GW209_D_170907	Normal	EM1712263	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC101_170907	Field_D	EM1712263	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC201_170907	Interlab_D	562566	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	Off-base	12/01/2018	0906_MW209_D_180112	Normal	ES1801990	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	31/03/2020	0906_MW209_20200331	Normal	ES2011456	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_MW209_20200930	Normal	ES2034898	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW209_20210422	Normal	ES2116325	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW209_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW209_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW209_20221109	Normal	EM2222392	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW210	Off-base	20/06/2017	0906_0S002_170620	Normal	ES1715329	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC101_170620	Field_D	ES1715329	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC201_170620	Interlab_D	551365	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-
	Off-base	18/01/2018	0906_MW210_D_180112	Normal	ES1802470	0.03	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	21/02/2018	0906_MW210_D_180221	Normal	ES1805664	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	17/07/2018	0906_MW210_D_180717	Normal	EM1811457	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC101_180717	Field_D	EM1811457	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC201_180717	Interlab_D	608455	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	26/03/2020	0906_MW210_20200326	Normal	ES2011461	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW210_20201001	Normal	ES2034897	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW210_20210423	Normal	ES2116321	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW210_20211021	Normal	ES2139302	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW210_20220503	Normal	EM2208335	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW210_20221108	Normal	EM2222395	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW211	Off-base	20/06/2017	0906_EWB1_170620	Normal	ES1715334	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/12/2017	0906_EWB1_171204	Normal	ES1731229	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_MW211_20200327	Normal	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_MW211_20200928	Normal	ES2034885	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW211_20210420	Normal	ES2116324	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW211_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW211_20221108	Normal	EM2222397	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

						Perfluorocarbons																																
						Perfluorooctane sulfonic acid PFOS	Perfluorooctanoate PFOA	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid PFBS	Perfluoropentane sulfonic acid PFPeS	Perfluorohexane sulfonic acid PFHxS	Perfluoroheptane sulfonic acid PFHpS	Perfluorodecanesulfonic 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	Perfluorooctane sulfonamide FOSA	N-Methyl perfluorooctane sulfonamide MeFOSA	N-methylperfluoro-1-octanesulfonamidoethanol N-MeFOSE	N-Ethyl perfluorooctane sulfonamide EtFOSA	N-Ethyl perfluorooctane sulfonamidoethanol EtFOSE	N-Methyl perfluorooctanesulfonamidoacetic acid MeFOSAA	N-Ethyl perfluorooctanesulfonamidoacetic acid EtFOSAA	Fluorotelomer sulfonic acid FTS	Fluorotelomer Sulfonate FtS	Fluorotelomer sulfonate FtS	Fluorotelomer sulfonic acid 10 FTS	Sum of PFAS	Sum of enHealth PFAS PFHxS PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																														
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																														
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																															
MW212	Off-base	20/06/2017	0906_EWB2_170620	Normal	ES1715334	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/12/2017	0906_EWB2_171204	Normal	ES1731229	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_MW212_20200327	Normal	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_MW212_20200928	Normal	ES2034885	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW212_20210420	Normal	ES2116324	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW212_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW212_20220502	Normal	EM2208334	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW212_20221109	Normal	EM2222397	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW213	Off-base	20/06/2017	0906_EWB3_170620	Normal	ES1715334	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/12/2017	0906_EWB3_171204	Normal	ES1731229	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_MW213_20200327	Normal	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC101_20200327	Field_D	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC201_20200327	Interlab_D	712442	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base		0906_MW213_20200928	Normal	ES2034885	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_QC101_20200928	Field_D	ES2034862-AA	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC201_20200928	Interlab_D	749083	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	20/04/2021	0906_MW213_20210420	Normal	ES2116324	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW213_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC104_20211020	Field_D	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC204_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	2/05/2022	0906_MW213_20220502	Normal	EM2208334	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW214	Off-base	20/06/2017	0906_GW047279_170620	Normal	ES1715334	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	18/01/2018	0906_MW214_D_180118	Normal	ES1802545	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	31/03/2020	0906_MW214_20200331	Normal	ES2011568	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW214_20201001	Normal	ES2034891	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/04/2021	0906_MW214_20210427	Normal	ES2116327	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW214_20211021	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/05/2022	0906_MW214_20220503	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	7/11/2022	0906_MW214_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW215	Off-base	20/06/2017	0906_GW047281_170620	Normal	ES1715334	0.06	<0.01	0.06	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
	Off-base	16/01/2018	0906_MW215_D_180116	Normal	ES1802545	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW231	Off-base	12/01/2018	0906_MW231_D_180112	Normal	ES1802473	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	26/03/2020	0906_MW231_20200326	Normal	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	26/03/2020	0906_MW231_20200326	Normal	ES2011456	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_MW231_20200930	Normal	ES2034898	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW231_20210423	Normal	ES2116325	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906_MW231_20211022	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/05/2022	0906_MW231_20220504	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW231_20221109	Normal	EM2222392	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW233	Off-base	20/02/2018	0906_MW233_I_180220	Normal	ES1805656	0.08	<0.01	**0 1**	<0.02	<0.02	0.1	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.2	-
	Off-base	25/03/2020	0906_MW233_20200325	Normal	ES2011451	0.18	<0.01	**0**	0.02	0.19	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-
	Off-base	30/09/2020	0906_MW233_20200930	Normal	ES2034890	0.25	<0.01	**0**	0.02	0.03	0.19	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	-
	Off-base	22/04/2021	0906_MW233_20210422	Normal	ES2116319	0.17	<0.01	**0**	0.02	0.02	0.21	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-
	Off-base	19/10/2021	0906_MW233_20211019	Normal	ES2139304	0.28	<0.01	**0**	0.03	0.04	0.24	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-
	Off-base	2/05/2022	0906_MW233_20220502	Normal	EM2208333	0.2	<0.01	**0**	0.02	0.02	0.19	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-
	Off-base	7/11/2022	0906_MW233_20221107	Normal	EM2222376	0.24	<0.01	**0**	0.03	0.03	0.23	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.57	-
MW235	Off-base	11/01/2018	0906_MW235_D_180111	Normal	ES1802460	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/12/2019	0906_MW235_D_191219	Normal	ES1942606-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	27/03/2020	0906_MW235_20200327	Normal	ES2011450	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_MW235_20200930	Normal	ES2034899	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW235_20210420	Normal	ES2115488	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW235_20211020	Normal	ES2139305	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/05/2022	0906_MW235_20220501	Normal	EM2208341	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	7/11/2022	0906_MW235_20221107	Normal	EM2222377	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

						Per luorocarbons																																				
						Per luorooctane sul onic acid PFOS	Per luorooctanoate PFOA	Sum o PFH S and PFOS	Per luorobutane sul onic acid PFBS	Per luoropentane sul onic acid PFPeS	Per luorohe ane sul onic acid PFH S	Per luoroheptane sul onic acid PFHpS	Per luorodecanesul onic acid PFDS	Per luorobutanoic acid PFBA	Per luoropentanoic acid PFPeA	Per luorohe anoic acid PFH A	Per luoroheptanoic acid PFHpA	Per luorononanoic acid PFNA	Per luorodecanoic acid PFDA	Per luoroundecanoic acid PFUnDA	Per luorododecanoic acid PFDoDA	Per luorotridecanoic acid PFTrDA	Per luorotetradecanoic acid PFTeDA	Per luorooctane sul onamide FOSA	N-Methyl per luorooctane sul onamide MeFOSA	- N-methylper luoro-1-octane sul onamido -ethanol N-MeFOSE	N-Ethyl per luorooctane sul onamide EtFOSA	N-Ethyl per luorooctane sul onamidoethanol EtFOSE	N-Methyl per luorooctane sul onamidoacetic acid MeFOSAA	N-Ethyl per luorooctane sul onamidoacetic acid EtFOSAA	Fluorotelomer sul onic acid FTS	Fluorotelomer Sul onate FtS	Fluorotelomer sul onate FtS	Fluorotelomer sul onic acid 10 FTS	Sum o PFAS	Sum o onHealth PFAS PFH S PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																																		
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																																		
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																																			
MW238	Off-base	12/12/2019	0906_MW238_I_191212	Normal	ES1941492-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	30/03/2020	0906_MW238_20200330	Normal	ES2011456	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_MW238_20200930	Normal	ES2034898	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW238_20210423	Normal	ES2116325	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW238_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW238_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	8/11/2022	0906_MW238_20221108	Normal	EM2222392	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW239	Off-base	12/12/2019	0906_MW239_S_191212	Normal	ES1941492-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	30/03/2020	0906_MW239_20200330	Normal	ES2011456	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW239_20201001	Normal	ES2034898	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW239_20210423	Normal	ES2116325	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW239_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW239_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW239_20221108	Normal	EM2222392	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW240	Off-base	12/12/2019	0906_MW240_D_191212	Normal	ES1941492-AD	0.05	<0.01	**0**	0.04	-	0.21	-	-	<0.1	<0.02	0.06	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	12/12/2019	0906_QC101_191212	Field_D	ES1941492-AD	0.04	<0.01	**0**	0.05	-	0.29	-	-	<0.1	<0.02	0.08	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	19/12/2019	0906_MW240_I_191219	Normal	ES1942606-AB	0.02	<0.01	**0 1**	0.03	-	0.17	-	-	<0.1	<0.02	0.04	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base		0906_QC101_191219	Field_D	ES1942606-AB	0.02	<0.01	**0 1**	0.03	-	0.17	-	-	<0.1	<0.02	0.05	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base		0906_QC201_191219	Interlab_D	695221	0.01	<0.01	**0 1**	0.02	0.01	0.11	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.19	0.00012
	Off-base	1/04/2020	0906_MW240_20200330	Normal	ES2011453	0.01	<0.01	**0 11**	<0.02	<0.02	0.1	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-
	Off-base	30/09/2020	0906_MW240_20200930	Normal	ES2034866	0.06	0.02	**0 1**	0.04	0.05	0.35	<0.02	<0.02	<0.1	0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-
	Off-base	20/04/2021	0906_MW240_20210420	Normal	ES2116333	0.04	0.01	**0**	0.04	0.03	0.23	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.42	-
	Off-base	19/10/2021	0906_MW240_20211019	Normal	ES2139237	0.04	<0.01	**0 1**	0.02	0.02	0.15	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	-
	Off-base	1/05/2022	0906_MW240_20220501	Normal	EM2208150	0.04	<0.01	**0 1**	<0.02	0.02	0.15	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25	-
	Off-base	7/11/2022	0906_MW240_20221107	Normal	EM2222399	0.04	<0.01	**0 1**	0.02	0.02	0.17	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.3	-
MW241	Off-base	18/03/2020	0906_MW241_D_200318	Normal	ES2009949	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	31/03/2020	0906_MW241_20200331	Normal	ES2011462	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.15	<0.05	<0.05	0.15	-
	Off-base	1/10/2020	0906_MW241_20201001	Normal	ES2034889	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW241_20210422	Normal	ES2116320	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.12	<0.05	<0.05	0.12	-
	Off-base	24/10/2021	0906_MW241_20211024	Normal	ES2139236	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW241_20220502	Normal	EM2208340	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW241_20221108	Normal	EM2222383	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW242	Off-base	12/03/2020	0906_MW242_I_200312	Normal	ES2008845	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	31/03/2020	0906_MW242_20200331	Normal	ES2011462	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW242_20201001	Normal	ES2034889	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW242_20210422	Normal	ES2116320	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906_MW242_20211022	Normal	ES2139236	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW242_20220502	Normal	EM2208340	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW242_20221108	Normal	EM2222383	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW243	On-base	10/03/2020	0906_MW243_I_200310	Normal	ES2008845	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC201_200310	Interlab_D	707955	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	30/03/2020	0906_MW243_20200330	Normal	ES2011457	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/10/2020	0906_MW243_20201001	Normal	ES2034862-AB	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_MW243_20210423	Normal	ES2116327	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	23/04/2021	0906_QC106_20210423	Field_D	ES2116327	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC206_20210423	Interlab_D	792771	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	20/10/2021	0906_MW243_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	2/05/2022	0906_MW243_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC203_20221107	Interlab_D	940477	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00001
	On-base	7/11/2022	0906_MW243_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC103_20221107	Field_D	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

						Perfluorocarbons																																		
						Perfluorooctanesulfonic acid PFOS	Perfluorooctanoate PFOA	Sum of PFHxS and PFOS	Perfluorobutanesulfonic acid PFBS	Perfluoropentanesulfonic acid PFPeS	Perfluorohexanesulfonic acid PFHxS	Perfluoroheptanesulfonic acid PFHpS	Perfluorodecanesulfonic 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	Perfluorooctanesulfonamide FOSA	N-Methyl perfluorooctanesulfonamide MeFOSA	N-methylperfluoro-1-octanesulfonamido-ethanol N-MeFOSE	N-Ethyl perfluorooctanesulfonamide EtFOSA	N-Ethyl perfluorooctanesulfonamidoethanol EtFOSE	N-Methyl perfluorooctanesulfonamidoacetic acid MeFOSAA	N-Ethyl perfluorooctanesulfonamidoacetic acid EtFOSAA	Fluorotelomer sulfonic acid FTS	Fluorotelomer Sulfonate FtS	Fluorotelomer sulfonate FtS	Fluorotelomer sulfonic acid 10 FTS	Sum of PFAS	Sum of enHealth PFAS PFH S PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																																
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																																
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																																	
MW244	Off-base	13/03/2020	0906_MW244_I_200313	Normal	ES2009442	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/04/2020	0906_MW244_20200401	Normal	ES2011562	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW244_20201001	Normal	ES2034866	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW244_20210420	Normal	ES2116333	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906_MW244_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW244_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW244_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW245	Off-base	13/03/2020	0906_MW245_S_200313	Normal	ES2009442	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.02	-	
	Off-base	1/04/2020	0906_MW245_20200401	Normal	ES2011562	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.02	-	
	Off-base	1/10/2020	0906_MW245_20201001	Normal	ES2034866	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.03	-	
	Off-base	20/04/2021	0906_MW245_20210420	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.02	-	
	Off-base	19/10/2021	0906_MW245_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/04/2022	0906_MW245_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW245_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW246	Off-base	22/06/2020	0906_MW246_I_200622	Normal	ES2021594	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/07/2020	0906_QC202_200730	Normal	735782	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001	
	Off-base	30/07/2020	0906_MW246_I_200730	Normal	ES2026752	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW246_20210420	Normal	ES2116333	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW246_20211020	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/05/2022	0906_MW246_20220501	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	7/11/2022	0906_MW246_20221107	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW247	Off-base	30/07/2020	0906_MW247_I_200730	Normal	ES2026752	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/04/2021	0906_MW247_20210427	Normal	ES2116333	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW247_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW247_20220502	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW247_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW248	Off-base	30/07/2020	0906_MW248_S_200730	Normal	ES2026752	0.09	0.01	**0 1**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.04	0.04	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.28	-	
	Off-base	27/04/2021	0906_MW248_20210427	Normal	ES2116333	0.07	<0.01	**0 1**	<0.02	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.14	-	
	Off-base	20/10/2021	0906_MW248_20211020	Normal	ES2139237	0.08	0.01	**0 1**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.03	0.03	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.24	-	
	Off-base	2/05/2022	0906_MW248_20220502	Normal	EM2208150	0.06	<0.01	**0 1**	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.12	-	
	Off-base	9/11/2022	0906_MW248_20221109	Normal	EM2222399	0.07	<0.01	**0 1**	<0.02	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.2	-	
MW249	Off-base	30/07/2020	0906_MW249_I_200730	Normal	ES2026752	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/04/2021	0906_MW249_20210428	Normal	ES2116333	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW249_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/04/2022	0906_MW249_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW249_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW250	Off-base	30/07/2020	0906_MW250_S_200730	Normal	ES2026752	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.08	-	
	Off-base	2/09/2020	0906_MW250_S_200902	Normal	ES2031377	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.07	-	
	Off-base		0906_QC202_200902	Interlab_D	742937	0.06	<0.01	**0 1**	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.14	0.0001	
	Off-base		0906_MW250_20210428	Normal	ES2116333	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.08	-	
	Off-base	28/04/2021	0906_QC107_20210428	Field_D	ES2116333	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.08	-	
	Off-base		0906_QC207_20210428	Interlab_D	792804	<0.01	<0.01	0.02	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00002	
	Off-base	19/10/2021	0906_MW250_20211019	Normal	ES2139237	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.04	-	
	Off-base	9/11/2022	0906_MW250_20221109	Normal	EM2222399	<0.01	<0.01	0.01	<0.02	<0.02	0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.01	-	
MW251	Off-base	30/07/2020	0906_QC201_200730	Normal	735782	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001	
	Off-base	30/07/2020	0906_MW251_S_200730	Normal	ES2026752	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW251_20210422	Normal	ES2118542	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW251_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/04/2022	0906_MW251_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW252	Off-base	30/07/2020	0906_MW252_I_200730	Normal	ES2026752	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW252_20210422	Normal	ES2118542	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906_MW252_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/04/2022	0906_MW252_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

						Perfluorocarbons																																
						Perfluorooctane sulfonic acid PFOS	Perfluorooctanoate PFOA	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid PFBS	Perfluoropentane sulfonic acid PFPeS	Perfluorohexane sulfonic acid PFHxS	Perfluoroheptane sulfonic acid PFHpS	Perfluorodecanesulfonic 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	Perfluorooctane sulfonamide FOSA	N-Methyl perfluorooctane sulfonamide MeFOSA	N-Methylperfluoro-1-octanesulfonamidoethanol N-MeFOSE	N-Ethyl perfluorooctane sulfonamide EtFOSA	N-Ethyl perfluorooctane sulfonamidoethanol EtFOSE	N-Methyl perfluorooctanesulfonamidoacetic acid MeFOSAA	N-Ethyl perfluorooctanesulfonamidoacetic acid EtFOSAA	Fluorotelomer sulfonic acid FTS	Fluorotelomer Sulfonate FtS	Fluorotelomer sulfonate FtS	Fluorotelomer sulfonic acid 10 FTS	Sum of PFAS	Sum of enHealth PFAS PFHxS PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																														
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																														
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																															
MW253	Off-base	30/07/2020	0906_MW253_I_200730	Normal	ES2026752	0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	20/04/2021	0906_MW253_20210420	Normal	ES2116333	<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base	19/10/2021	0906_MW253_20211019	Normal	ES2139237	0.02	<0.01	0.05	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base		0906_QC102_20211019	Field_D	ES2139231	0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base		0906_QC202_20211019	Interlab_D	837704	0.02	<0.01	0.06	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00006
	Off-base	30/04/2022	0906_MW253_20220430	Normal	EM2208150	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	7/11/2022	0906_MW253_20221107	Normal	EM2222399	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
MW254	Off-base	30/07/2020	0906_MW254_S_200730	Normal	ES2026752	<0.01	**0.14**	**0 1**	0.02	0.03	0.15	<0.02	<0.02	<0.1	**0.04**	0.07	**0.06**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-
	Off-base	20/04/2021	0906_MW254_20210420	Normal	ES2116333	<0.01	**0.14**	**0 1**	0.04	0.03	0.19	<0.02	<0.02	<0.1	0.03	0.06	**0.05**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	-
	Off-base	19/10/2021	0906_MW254_20211019	Normal	ES2139237	<0.01	0.08	**0 1**	0.02	0.02	0.13	<0.02	<0.02	<0.1	0.02	0.04	**0.04**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.43	-
	Off-base		0906_QC101_20211019	Field_D	ES2139231	<0.01	0.12	**0 1**	0.02	0.02	0.14	<0.02	<0.02	<0.1	0.03	0.05	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-
	Off-base		0906_QC201_20211019	Interlab_D	837704	<0.01	0.13	**0 1**	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.03	0.05	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.44	0.00027
	Off-base	30/04/2022	0906_MW254_20220430	Normal	EM2208150	0.13	0.25	**0**	0.03	0.03	0.2	<0.02	<0.02	<0.1	0.08	0.09	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.89	-
	Off-base	7/11/2022	0906_MW254_20221107	Normal	EM2222399	0.02	0.1	**0 1**	<0.02	0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.04	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.33	-
MW255	Off-base	30/07/2020	0906_MW255_I_200730	Normal	ES2026752	<0.01	0.02	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
	Off-base	22/04/2021	0906_MW255_20210422	Normal	ES2116333	0.04	<0.01	**0 1**	0.02	<0.02	0.1	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.16	-
	Off-base		0906_MW255_02072021	Normal	ES2124834	0.04	<0.01	**0 1**	<0.02	<0.02	0.08	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-
	Off-base	2/07/2021	0906_QC101_02072021	Field_D	ES2124834	0.03	<0.01	**0 11**	<0.02	-	0.08	-	-	<0.1	<0.02	0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base		0906_QC201_210702	Interlab_D	808916	0.04	<0.01	**0 1**	-	-	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	0.00013
	Off-base	19/10/2021	0906_MW255_20211019	Normal	ES2139237	0.01	<0.01	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	30/04/2022	0906_MW255_20220430	Normal	EM2208150	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
	Off-base		0906_QC206_20221108	Interlab_D	940477	0.04	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00004
	Off-base	8/11/2022	0906_MW255_20221108	Normal	EM2222399	0.02	<0.01	0.07	<0.02	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
	Off-base		0906_QC106_20221108	Field_D	EM2222404	0.02	<0.01	0.07	<0.02	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
MW256	Off-base		0906_MW256_S_200910	Normal	ES2032277	0.04	<0.01	**0**	0.05	0.05	0.28	<0.02	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-
	Off-base	10/09/2020	0906_QC101_200910	Field_D	ES2032277	0.02	<0.01	**0**	0.06	-	0.3	-	-	<0.1	<0.02	0.1	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base		0906_QC201_200910	Interlab_D	744316	<0.01	<0.01	**0 1**	-	-	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	0.00021
	Off-base	22/04/2021	0906_MW256_20210422	Normal	ES2116333	0.07	<0.01	**0**	0.07	0.04	0.23	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.46	-
	Off-base	19/10/2021	0906_MW256_20211019	Normal	ES2139237	0.01	<0.01	**0 1**	<0.02	<0.02	0.09	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-
	Off-base	2/05/2022	0906_MW256_20220502	Normal	EM2208150	<0.01	<0.01	0.06	<0.02	<0.02	0.06	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
	Off-base	8/11/2022	0906_MW256_20221108	Normal	EM2222399	<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
MW257	Off-base	10/09/2020	0906_MW257_S_200910	Normal	ES2032277	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW257_20220502	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW257_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW300	On-base	12/01/2018	0906_MW300_D_180112	Normal	ES1802545	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base	13/04/2018	0906_MW300_D_180413	Normal	EM1806331	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/03/2020	0906_MW300_20200330	Normal	ES2011457	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base	29/09/2020	0906_MW300_20200929	Normal	ES2034862-AB	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base		0906_MW300_20210422	Normal	ES2116327	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base	22/04/2021	0906_QC105_20210422	Field_D	ES2116327	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base		0906_QC205_20210422	Interlab_D	792803	<0.01	<0.01	0.02	0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00002
	On-base		0906_MW300_20211020	Normal	ES2139228	<0.01	<0.01	0.05	0.04	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.18	-
	On-base	20/10/2021	0906_QC106_20211020	Field_D	ES2139231	<0.01	<0.01	0.05	0.04	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-
	On-base		0906_QC206_20211020	Interlab_D	837704	<0.01	<0.01	0.07	0.04	0.02	0.07	<0.01	<0.01	<0.05	**0.01**	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.17	0.00007
	On-base		0906_MW300_20220501	Normal	EM2208338	<0.01	<0.01	**0 1**	0.05	0.03	0.1	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.22	-
	On-base	1/05/2022	0906_QC102_20220501	Field_D	EM2208338	<0.01	<0.01	**0 1**	0.06	0.03	0.1	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-
	On-base		0906_QC202_20220501	Interlab_D	889634	<0.01	<0.01	**0 1**	0.08	0.03	0.13	<0.01	<0.01	<0.05	0.02	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.34	0.00013
	On-base	7/11/2022	0906_MW300_20221107	Normal	EM2222404	<0.01	<0.01	**0 1**	0.1	0.04	0.13	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.35	-
MW302	On-base	12/01/2018	0906_MW302_D_180112	Normal	ES1802545	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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
	On-base	11/04/2018	0906_MW302_D_180411	Normal	EM1806331	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/03/2020	0906_MW302_20200330	Normal	ES2011457	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_MW302_20200929	Normal	ES2034862-AB	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	29/09/2020	0906_QC102_20200929	Field_D	ES2034862-AB	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC202_20200929	Interlab_D	749220	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001

						Per luorocarbons																														
						Per luorooctane sul onic acid PFOS	Per luorooctanoate PFOA	Sum o PFH S and PFOS	Per luorobutane sul onic acid PFBS	Per luoropentane sul onic acid PFPeS	Per luorohe ane sul onic acid PFH S	Per luoroheptane sul onic acid PFHpS	Per luorodecanesul onic acid PFDS	Per luorobutanoic acid PFBA	Per luoropentanoic acid PFPeA	Per luorohe anoic acid PFH A	Per luoroheptanoic acid PFHpA	Per luorononanoic acid PFNA	Per luorodecanoic acid PFDA	Per luoroundecanoic acid PFUnDA	Per luorododecanoic acid PFDoDA	Per luorotridecanoic acid PFTrDA	Per luorotetradecanoic acid PFTeDA	Per luorooctane sul onamide FOSA	N-Methyl per luorooctane sul onamide MeFOSA	- N-methylper luoro-1-octane sul onamido -ethanol N-MeFOSE	N-Ethyl per luorooctane sul onamide EtFOSA	N-Ethyl per luorooctane sul onamidoethanol EtFOSE	N-Methyl per luorooctane sul onamidoacetic acid MeFOSAA	N-Ethyl per luorooctane sul onamidoacetic acid EtFOSAA	Fluorotelomer sul onic acid FTS	Fluorotelomer Sul onate FtS	Fluorotelomer sul onate FtS	10 Fluorotelomer sul onic acid 10 FTS	Sum o PFAS	Sum o enHealth PFAS PFH S PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																												
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																												
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																													
	On-base		0906_MW302_20210421	Normal	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	21/04/2021	0906_QC103_20210421	Field_D	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC203_20210421	Interlab_D	792803	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base		0906_MW302_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	20/10/2021	0906_QC107_20211020	Field_D	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC207_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base		0906_MW302_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_QC105_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC205_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base		0906_QC204_20221107	Interlab_D	940477	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	7/11/2022	0906_MW302_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC104_20221107	Field_D	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW304	On-base	16/01/2018	0906_MW304_D_180116	Normal	ES1802545	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	<0.02	<0.05	<0.00005	<0.05	0.15	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.24	-
	On-base	13/04/2018	0906_MW304_D_180413	Normal	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	31/03/2020	0906_MW304_20200331	Normal	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.06	-
	On-base	29/09/2020	0906_MW304_20200929	Normal	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	28/04/2021	0906_MW304_20210428	Normal	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	20/10/2021	0906_MW304_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_MW304_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_QC104_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC204_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	7/11/2022	0906_MW304_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW306	On-base	16/01/2018	0906_MW306_D_180116	Normal	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.08	-
	On-base	12/04/2018	0906_MW306_D_180412	Normal	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/03/2020	0906_MW306_20200330	Normal	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	29/09/2020	0906_MW306_20200929	Normal	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/04/2021	0906_MW306_20210422	Normal	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/10/2021	0906_MW306_20211022	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	2/05/2022	0906_MW306_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	7/11/2022	0906_MW306_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW308	On-base		0906_MW308_D_180115	Normal	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	15/01/2018	0906_QC103_180115	Field_D	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC203_180115	Interlab_D	581313	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	On-base	11/04/2018	0906_MW308_D_180411	Normal	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/03/2020	0906_MW308_20200330	Normal	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	29/09/2020	0906_MW308_20200929	Normal	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	21/04/2021	0906_MW308_20210421	Normal	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/04/2021	0906_MW308_20210422	Normal	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	21/10/2021	0906_MW308_20211021	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_MW308_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_QC103_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC203_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base		0906_QC205_20221107	Interlab_D	940477	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	7/11/2022	0906_MW308_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC105_20221107	Field_D	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW309	On-base	21/04/2021	0906_MW309_20210421	Normal	ES2116327	0.04	0.03	0.04	<0.02	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.1	-
MW310	On-base	16/01/2018	0906_MW310_D_180116	Normal	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	12/04/2018	0906_MW310_D_180412	Normal	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	31/03/2020	0906_MW310_20200331	Normal	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/09/2020	0906_MW310_20200930	Normal	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/04/2021	0906_MW310_20210422	Normal	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/10/2021	0906_MW310_20211022	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	2/05/2022	0906_MW310_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	8/11/2022	0906_MW310_20221108	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW311	On-base		0906_QC201_180115	Interlab_D	581313	<0.01	<0.01	0.04	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	On-base	15/01/2018	0906_MW311_I_180115	Normal	ES1802545	0.01	<0.01	0.04	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	On-base		0906_QC101_180115	Field_D	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	31/03/2020	0906_MW311_20200331	Normal	ES2011457	<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	On-base	8/11/2022	0906_MW311_20221108	Normal	EM2222404	<0.01	<0.01	**0**	0.05	0.06	0.49	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.6	-
MW312	Off-base	16/01/2018	0906_MW312_D_180115	Normal	ES1802566	0.02	<0.01	**0 1**	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.1	-
	Off-base	13/04/2018	0906_MW312_D_180413	Normal	EM1806331	0.02	<0.01	**0 0**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
	Off-base	1/04/2020	0906_MW312_200401	Normal	ES2011454	0.01	<0.01	0.07	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
	Off-base	1/10/2020	0906_MW312_20201001	Normal	ES2034888	0.01	<0.01	0.06	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
	Off-base	21/10/2021	0906_MW312_20211021	Normal	ES2139399	0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	3/05/2022	0906_MW312_20220503	Normal	EM2208339	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW312_20221108	Normal	EM2222499	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

Per luorocarbons

Location Code	Location Type	Sampled Date Time	Field ID	Sample Type	Lab Report Number	Per luorooctane sul onic acid PFOS	Per luorooctanoate PFOA	Sum o PFH S and PFOS	Per luorobutane sul onic acid PFBS	Per luoropentane sul onic acid PFPeS	Per luorohe ane sul onic acid PFH S	Per luoroheptane sul onic acid PFHpS	Per luorodecanesul onic acid PFDS	Per luorobutanoic acid PFBA	Per luoropentanoic acid PFPeA	Per luorohe anoic acid PFH A	Per luoroheptanoic acid PFHpA	Per luorononanoic acid PFNA	Per luorodecanoic acid PFDA	Per luoroundecanoic acid PFUnDA	Per luorododecanoic acid PFDoDA	Per luorotridecanoic acid PFTrDA	Per luorotetradecanoic acid PFTeDA	Per luorooctane sul onamide FOSA	N-Methyl per luorooctane sul onamide MeFOSA	- N-methylper luoro-1-octane sul onamido - ethanol N-MeFOSE	N-Ethyl per luorooctane sul onamide EtFOSA	N-Ethyl per luorooctane sul onamidoethanol EtFOSE	N-Methyl per luorooctane sul onamidoacetic acid MeFOSAA	N-Ethyl per luorooctane sul onamidoacetic acid EtFOSAA	Fluorotelomer sul onic acid FTS	Fluorotelomer Sul onate FtS	Fluorotelomer sul onate FtS	10 Fluorotelomer sul onic acid 10 FTS	Sum o PFAS	Sum o enHealth PFAS PFH S PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																												
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																												
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																													
SW104	On-base	4/12/2017	0906 SW104 171204	Normal	ES1731266	0.27	0.02	0	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.39	-
	On-base	16/08/2018	0906 SW104 180816	Normal	ES1824412	0.05	<0.01	0 1	<0.02	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.17	-
	On-base	17/10/2018	0906 SW104 181017	Normal	ES1831100	0.38	0.02	0	0.03	<0.02	0.29	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.75	-
	On-base	25/03/2020	0906 SW104 20200325	Normal	ES2011457	0.09	<0.01	0 1	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15	-
	On-base	2/09/2020	0906 SW104 200904	Normal	ES2031377	2.83	0.13	4.27	0.17	0.16	1.44	0.09	<0.02	<0.1	0.15	0.44	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.48	-
	On-base		0906 QC201 200904	Interlab D	742937	2.3	0.1	3.29	0.13	0.13	0.99	0.06	<0.01	0.06	0.1	0.41	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	4.4	0.00339
	On-base	29/09/2020	0906 SW104 20200929	Normal	ES2034862-AB	2.8	0.17	4.61	0.21	0.23	1.81	0.12	<0.02	<0.1	0.17	0.59	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	6.18	-
	On-base	21/04/2021	0906 QC202 20210421	Interlab D	792803	0.27	0.02	0 1	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.51	0.00043
	On-base		0906 QC102 20210421	Field D	ES2116327	0.26	0.02	0	0.03	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	0.63	-
	On-base		0906 SW104 20210421	Normal	ES2116327	0.28	0.02	0	0.04	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.68	-
	On-base	20/10/2021	0906 QC105 20211020	Field D	ES2139231	0.4	0.01	0	0.04	0.03	0.25	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.79	-
	On-base		0906 QC205 20211020	Interlab D	837704	0.61	0.02	0 1	0.04	0.03	0.3	0.02	<0.01	<0.05	0.02	0.07	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.14	0.00093
	On-base		0906 SW104 20211020	Normal	ES2139228	0.41	0.01	0	0.05	0.04	0.22	<0.02	<0.02	<0.1	0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.82	-
	On-base	1/05/2022	0906 QC101 20220501	Field D	EM2208338	0.58	0.01	0	0.03	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.89	-
	On-base		0906 QC201 20220501	Interlab D	889634	0.83	0.02	1 0	0.03	0.02	0.26	0.02	<0.01	<0.05	0.03	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.28	0.00111
	On-base		0906 SW104 20220501	Normal	EM2208338	0.63	0.01	0	0.03	<0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.91	-
	On-base	5/11/2022	0906 QC202 20221105	Interlab D	940477	3.1	0.04	4.7	0.17	0.18	1.6	0.12	<0.01	0.1	0.13	0.41	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	0.01	<0.01	5.98	0.00474
	On-base		0906 QC102 20221105	Field D	EM2222404	3.19	0.1	4.63	0.2	0.18	1.44	0.09	<0.04	<0.2	0.1	0.35	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.09	<0.04	<0.09	<0.00009	<0.09	<0.09	<0.04	<0.04	<0.05	0.05	<0.05	<0.05	5.74	-
	On-base		0906 SW104 20221105	Normal	EM2222404	3.34	0.11	4.88	0.19	0.19	1.54	0.08	<0.04	<0.2	0.1	0.37	0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.09	<0.04	<0.09	<0.00009	<0.09	<0.09	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	5.97	-
SW206	Off-base	20/06/2017	0906 SW001 170620	Normal	ES1715334	0.23	<0.01	0	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.36	-
	Off-base	7/07/2017	0906 SW001 07072017	Normal	ES1716880	0.27	0.01	0	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.37	-
	Off-base	13/12/2017	0906 SW206 171213	Normal	ES1732701	0.57	0.02	1 0	0.05	0.04	0.52	<0.02	<0.02	<0.1	0.03	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.32	-
	Off-base	25/03/2020	0906 SW206 20200325	Normal	ES2011453	0.38	0.01	0	<0.02	<0.02	0.16	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.59	-
	Off-base	1/10/2020	0906 SW206 20201001	Normal	ES2034866	1.21	0.06	1	0.07	0.08	0.66	0.04	<0.02	<0.1	0.08	0.21	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.44	-
	Off-base	20/04/2021	0906 SW206 20210420	Normal	ES2116333	0.13	0.01	0	0.03	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.31	-
	Off-base	21/10/2021	0906 SW206 20211021	Normal	ES2139237	0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	3/05/2022	0906 SW206 20220503	Normal	EM2208150	0.15	<0.01	0	0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25	-
	Off-base	4/11/2022	0906 SW206 20221104	Normal	EM2222399	2.01	0.09	3.07	0.18	0.12	1.06	0.06	<0.02	<0.1	0.1	0.29	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.96	-
SW212	Off-base	11/12/2017	0906 SW212 171211	Normal	ES1731989	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	18/06/2018	0906 SW212 180619	Normal	ES1818232	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	15/08/2019	0906 SW212 190815	Normal	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906 SW212 20200327	Normal	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906 SW212 20200930	Normal	ES2034866	0.09	<0.01	0 0	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09	-
	Off-base	30/09/2020	0906 SW212 20200930 Dup	Normal	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906 SW212 20210423	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906 SW212 20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906 SW212 20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW218	Off-base	17/01/2018	0906 SW218 180117	Normal	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	25/03/2020	0906 SW218 20200325	Normal	ES2011453	0.03	<0.01	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	1/10/2020	0906 QC204 20201001	Interlab D	749074	0.04	<0.01	0	0.04	0.03	0.19	0.01	<0.01	<0.05	0.04	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.47	0.00023
	Off-base		0906 QC104 20201001	Field D	ES2034866	0.06	0.01	0	0.08	0.05	0.3	<0.02	<0.02	<0.1	0.05	0.13	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.71	-
	Off-base		0906 SW218 20201001	Normal	ES2034866	0.1	0.02	0	0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72	-
	Off-base	20/04/2021	0906 SW218 20210420	Normal	ES2116333	0.01	<0.01	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	21/10/2021	0906 SW218 20211021	Normal	ES2139237	0.27	0.01	0 1	0.04	0.04	0.24	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66	-
	Off-base	3/05/2022	0906 SW218 20220503	Normal	EM2208150	0.24	0.01	0	0.03	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-
	Off-base	4/11/2022	0906 SW218 20221104	Normal	EM2222399	0.63	0.04	0	0.04	0.04	0.34	<0.02	<0.02	<0.1	0.04	0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.25	-
SW228	Off-base	7/12/2017	0906 SW228 171207	Normal	ES1731266	2.9	0.17	4.33	0.21	0.19	1.43	0.1	<0.02	<0.1	0.14	0.51	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	0.06	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.77	-
	Off-base	12/04/2018	0906 SW228 180412	Normal	EM1806331	0.3	0.04	0	0.02	0.02	0.23	<0.02	<0.02	<0.1	0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.73	-
	Off-base	7/08/2018	0906 SW228 A 180807	Normal	EM1812664	0.49	0.03	0	<0.02	0.02	0.47	0.02	<0.02	<0.1	<0.02	0.09	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	-
	Off-base	7/08/2018	0906 SW228 B 180807	Normal	EM1812664	0.49	0.03	0	<0.02	0.02	0.49	0.02	<0.02	<0.1	<0.02	0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.17	-
	Off-base	4/04/2019	0906 QC201 190408	Interlab D	650878	0.6	0.05	1 1	0.05	0.06	0.56	0.03	<0.01	<0.05	0.07	0.24	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.7	0.00121
	Off-base		0906 QC101 190408	Field D	ES1911335	0.81	0.06	1 1	0.1	0.09	0.6	0.04	<0.02	<0.1	0.11	0.43	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.28	-
	Off-base		0906 SW228 190408	Normal	ES1911335	0.77	0.06	1	0.1	0.08	0.62	0.04	<0.02	<0.1	0.12	0.43	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	2.31	-
	Off-base	27/03/2020	0906 SW228 20200327	Normal	ES2011453	0.73	0.05	1	0.05	0.06	0.52	0.03	<0.02	<0.1	0.07	0.25	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.79	-
	Off-base		0906 QC102 20200327	Field D	ES2011453	0.77	0.05	1 1	0.04	0.06	0.54	0.03	<0.02	<0.1	0.08	0.26	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.85	-
	Off-base		0906 QC202 20200327	Interlab D	712445	0.63	0.03	1 0	0.04	0.05	0.41	0.02	<0.01	<0.05	0.05	0.16	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.43	0.00107
	Off-base	1/10/2020	0906 SW228 20201001	Normal	ES2034866	2.15	0.09	3.32	0.11	0.14	1.17	0.08	<0.02	<0.1	0.1	0.4	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.28	-
	Off-base	27/04/2021	0906 SW228 20210427	Normal	ES2116333	1.1	0.06	2.19	0.19	0.1	1.09	0.06	<0.02	<0.1	0.1	0.48	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.22	-
	Off-base	21/10/2021	0906 SW228 20211021	Normal	ES2139237	1.41	0.06	2.13	0.1	0.09	0.72	0.06	<0.02	<0.1	0.09	0.32	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.88	-
	Off-base	3/05/2022	0906 SW228 20220503	Normal	EM2208150	0.86	0.04	1 1	0.14	0.06	0.55	0.04	<0.02	<0.1	0.05	0.2	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.96	-
	Off-base	9/11/2022	0906 SW228 20221109	Normal	EM2222399	1.17	0.06	1	0.06	0.08	0.76	0.05	<0.02	<0.1	0.06	0.27	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.54	-
SW234	Off-base	11/12/2017	0906 SW234 171211	Normal	ES1731989	0.22	0.03	0	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.41	-
	Off-base	18/06/2018	0906 SW234 180618	Normal	ES1818232	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.08	-
	Off-base	27/03/2020	0906 SW234 20200327	Normal	ES2011453	<0.01	0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	<0.05	<0.05	0.25	-
	Off-base	29/09/2020	0906 SW234 20200929	Normal	ES2034866	0.28	0.02	0	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.11	<0.05	<0.05	0.6	-
	Off-base	20/04/2021	0906 SW234 20210420	Normal	ES2116333	0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.34	<0.05	<0.05	0.42	-
	Off-base	19/10/2021	0906 SW234 20211019	Normal	ES2139237	0.04	<0.01	0.04	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base	2/05/2022	0906 QC107 20220502	Field D	EM2208150	0.02	<0.01	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.23	<0.05	<0.05	0.25	-
	Off-base		0906 SW234 20220502	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.22	<0.05	<0.05	0.22	-
	Off-base		0906 QC207 20220502	Interlab D	889634	0.02	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	0.28	<0.01	<0.01	0.34	0.00002
	Off-base	8/11/2022	0906 SW234 20221108	Normal	EM2222399	0.02	<0.01	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
SW236	Off-base	15/12/2017	0906 SW236 171215	Normal	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/10/2020	0906 SW236 20201002	Normal	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906 SW236 20210422	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906 SW236 20211022	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906 SW236 20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/11/2022	0906 SW236 20221104	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

						Per luorocarbons																														
						Per luorooctane sul onic acid PFOS	Per luorooctanoate PFOA	Sum o PFH S and PFOS	Per luorobutane sul onic acid PFBS	Per luoropentane sul onic acid PFPeS	Per luorohe ane sul onic acid PFH S	Per luoroheptane sul onic acid PFHpS	Per luorodecanesul onic acid PFDS	Per luorobutanoic acid PFBA	Per luoropentanoic acid PFPeA	Per luorohe anoic acid PFH A	Per luoroheptanoic acid PFHpA	Per luorononanoic acid PFNA	Per luorodecanoic acid PFDA	Per luoroundecanoic acid PFUnDA	Per luorododecanoic acid PFDoDA	Per luorotridecanoic acid PFTrDA	Per luorotetradecanoic acid PFTeDA	Per luorooctane sul onamide FOSA	N-Methyl per luorooctane sul onamide MeFOSA	- N-methylper luoro-1-octane sul onamido - ethanol N-MeFOSE	N-Ethyl per luorooctane sul onamide EtFOSA	N-Ethyl per luorooctane sul onamidoethanol EtFOSE	N-Methyl per luorooctane sul onamidoacetic acid MeFOSAA	N-Ethyl per luorooctane sul onamidoacetic acid EtFOSAA	Fluorotelomer sul onic acid FTS	Fluorotelomer Sul onate FtS	Fluorotelomer sul onate FtS	10 Fluorotelomer sul onic acid 10 FTS	Sum o PFAS	Sum o enHealth PFAS PFH S PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																												
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																												
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																													
Location Code	**Location Type**	**Sampled Date Time**	**Field ID**	**Sample Type**	**Lab Report Number**																															
SW240	Off-base	20/12/2017	0906 QC201 171220	Interlab D	580967	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	Off-base		0906 QC101 171220	Field D	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906 QC201 171220	Field D	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906 SW240 171220	Normal	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/10/2020	0906 SW240 20201002	Normal	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906 SW240 20210422	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906 SW240 20211022	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906 SW240 20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/11/2022	0906 SW240 20221104	Normal	EM2222399	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
SW261	Off-base	16/01/2018	0906 SW261 180116	Normal	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/04/2018	0906 SW261 180403	Normal	ES1810698	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	18/06/2018	0906 SW261 180618	Normal	ES1818232	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	15/08/2019	0906 SW261 190815	Normal	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906 SW261 20200327	Normal	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906 SW261 20200928	Normal	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906 SW261 20210420	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906 QC103 20211019	Field D	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906 QC203 20211019	Interlab D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base		0906 SW261 20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/04/2022	0906 SW261 20220428	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW262	Off-base	16/01/2018	0906 SW262 180116	Normal	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	18/06/2018	0906 SW262 180618	Normal	ES1818232	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.08	-
	Off-base	27/03/2020	0906 SW262 20200327	Normal	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906 SW262 20200928	Normal	ES2034866	0.05	<0.01	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	20/04/2021	0906 SW262 20210420	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906 SW262 20211019	Normal	ES2139237	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
	Off-base	28/04/2022	0906 SW262 20220428	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906 SW262 20221108	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW286	Off-base	8/04/2018	0906 SW286 180408	Normal	ES1810698	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	15/08/2019	0906 SW286 190815	Normal	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906 SW286 20200327	Normal	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/10/2020	0906 SW286 20201002	Normal	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906 SW286 20210422	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906 SW286 20211022	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906 SW286 20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906 SW286 20221108	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW288	Off-base	12/04/2018	0906 SW288 180412	Normal	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	15/08/2018	0906 SW288 180815	Normal	ES1824412	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906 QC201 180816	Interlab D	613110	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base		0906 QC101 180816	Field D	ES1824412	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	16/08/2018	0906 SW288 180816	Normal	ES1824412	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/04/2019	0906 SW288 190408	Normal	ES1911335	<0.01	<0.01	<0.01	<0.02	<0.02	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base	27/03/2020	0906 SW288 20200327	Normal	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906 SW288 20201001	Normal	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/04/2021	0906 SW288 20210427	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906 SW288 20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906 SW288 20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906 SW288 20221109	Normal	EM2222399	0.02	<0.01	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
SW289	Off-base	12/04/2018	0906 QC201 180412	Interlab D	594506	0.18	0.03	0	0.02	0.02	0.19	0.01	<0.01	<0.05	0.02	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.54	-
	Off-base		0906 QC101 180412	Field D	EM1806331	0.21	0.03	0	<0.02	0.02	0.22	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.55	-
	Off-base		0906 SW289 180412	Normal	EM1806331	0.2	0.03	0	<0.02	<0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-
	Off-base	4/04/2019	0906 SW289 190408	Normal	ES1911335	0.42	0.03	0	0.05	0.04	0.32	0.02	<0.02	<0.1	0.06	0.18	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	-
	Off-base	27/03/2020	0906 SW289 20200327	Normal	ES2011453	0.79	0.03	1	0.03	0.04	0.45	0.02	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.48	-
	Off-base	1/10/2020	0906 SW289 20201001	Normal	ES2034866	0.05	0.01	0	0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66	-
	Off-base	27/04/2021	0906 SW289 20210427	Normal	ES2116333	0.24	0.02	0	<0.02	<0.02	0.34	<0.02	<0.02	<0.1	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.7	-
	Off-base	21/10/2021	0906 SW289 20211021	Normal	ES2139237	1.15	0.04	1	0.11	0.07	0.69	0.06	<0.02	<0.1	0.06	0.22	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.42	-
	Off-base	3/05/2022	0906 SW289 20220503	Normal	EM2208150	0.65	0.02	0	0.04	0.03	0.29	0.02	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	-
	Off-base	9/11/2022	0906 SW289 20221109	Normal	EM2222399	1.54	0.08	***2.68***	0.17	0.11	1.14	0.08	<0.02	<0.1	0.08	0.35	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.59	-
SW294	Off-base	18/06/2018	0906 SW294 180618	Normal	ES1818232	0.01	0.07	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
	Off-base	15/08/2019	0906 SW294 190815	Normal	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906 SW294 20200327	Normal	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906 SW294 20200928	Normal	ES2034866	0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
	Off-base	20/04/2021	0906 SW294 20210420	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	19/10/2021	0906 SW294 20211019	Normal	ES2139237	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
	Off-base	28/04/2022	0906 SW294 20220428	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	<0.05	<0.05	0.18	-
SW309	Off-base	15/08/2019	0906 SW309 190815	Normal	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906 SW309 20200327	Normal	ES2011459	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906 SW309 20200928	Normal	ES2034885	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906 SW309 20210420	Normal	ES2116324	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906 SW309 20211019	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906 SW309 20220502	Normal	EM2208334	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906 SW309 20221108	Normal	EM2222397	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW310	Off-base	27/03/2020	0906 SW310 20200327	Normal	ES2011453	0.58	0.02	0	0.02	0.02	0.24	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.92	-
	Off-base	29/09/2020	0906 SW310 20200929	Normal	ES2034866	1.6	0.05	***2.11***	0.07	0.05	0.51	0.03	<0.02	<0.1	0.06	0.16	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.56	-
	Off-base	21/04/2021	0906 QC204 20210421	Interlab D	792774	1	0.03	1	0.05	0.02	0.36	0.02	<0.01	<0.05	0.04	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.63	0.00139
	Off-base		0906 QC104 20210421	Field D	ES2116333	0.92	0.03	1	0.06	0.03	0.43	<0.02	<0.02	<0.1	0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.57	-
	Off-base		0906 SW310 20210421	Normal	ES2116333	0.85	0.02	1	0.1	0.03	0.38	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.46	-
	Off-base	19/10/2021	0906 SW310 20211019	Normal	ES2139237	1.21	0.02	1	0.04	0.02	0.26	0.02	<0.02	<0.1	0.03	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.67	-
	Off-base	30/04/2022	0906 SW310 20220430	Normal	EM2208150	0.04	<0.01	0.04	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base	4/11/2022	0906 QC201 20221104	Interlab D	940477	0.71	<0.01	0	0.01	<0.01	0.12	<0.01	<0.01	<0.05	0.02	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.9	0.00083
	Off-base		0906 SW310 20221104	Normal	EM2222399	0.55	0.01	0	<0.02	<0.02	0.13	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72	-
	Off-base		0906 QC101 20221104	Field D	EM2222404	0.48	0.01	0 0	<0.02	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-

Notes
Denotes first time detection above LOR in latest monitoring round
Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

	Lab Report Number		EM2222399	EM2222404		EM2222399	940477		
	Field ID		0906_SW310_20221104	0906_QC101_20221104	**RPD**	0906_SW310_20221104	0906_QC201_20221104	**RPD**	
	Sampled Date		4/11/2022	4/11/2022		4/11/2022	4/11/2022		
ChemName		**Unit**	**LOR**						
Sum of WA DWER PFAS (n=10)*		ug/L	0.01	0.72	0.64	12	0.72	0.9	22
Perfluorocarbons									
Perfluorooctane sulfonic acid (PFOS)		µg/L	0.01	0.55	0.48	14	0.55	0.71	25
Perfluorooctanoate (PFOA)		µg/L	0.01	0.01	0.01	0	0.01	<0.01	0
Sum of PFHxS and PFOS		µg/L	0.01	0.68	0.60	13	0.68	0.83	20
Perfluorononanesulfonic acid (PFNS)		UG/L						<0.01	
Perfluorobutane sulfonic acid (PFBS)		µg/L	0.01	<0.02	<0.02	0	<0.02	0.01	0
Perfluoropentane sulfonic acid (PFPeS)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)		µg/L	0.01	0.13	0.12	8	0.13	0.12	8
Perfluoroheptane sulfonic acid (PFHpS)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)		µg/L	0.05	<0.1	<0.1	0	<0.1	<0.05	0
Perfluoropentanoic acid (PFPeA)		µg/L	0.01	<0.02	<0.02	0	<0.02	0.02	0
Perfluorohexanoic acid (PFHxA)		µg/L	0.01	0.03	0.03	0	0.03	0.04	29
Perfluoropropanesulfonic acid (PFPrS)		UG/L						<0.01	
Perfluoroheptanoic acid (PFHpA)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)		µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0
Perfluorooctane sulfonamide (FOSA)		µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)		µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)		mg/L	0.00005	<0.00005	<0.00005	0	<0.00005	<0.00005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)		µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)		µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)		µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)		µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)		µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)		µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)		µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)		µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0
Sum of PFAS		µg/L	0.01	0.72	0.64	12	0.72	0.9	22

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

		EM2222404 0906_SW104_20221105 5/11/2022 14:24	EM2222404 0906_QC102_20221105 5/11/2022 14:24	RPD	EM2222404 0906_SW104_20221105 5/11/2022 14:24	940477 0906_QC202_20221105 5/11/2022	RPD	EM2222404 0906_MW243_20221107 7/11/2022 14:24	EM2222404 0906_QC103_20221107 7/11/2022 14:24	RPD	EM2222404 0906_MW243_20221107 7/11/2022 14:24
ChemName	**Unit**										
Sum of WA DWER PFAS (n=10)*	ug/L	5.70	5.47	4	5.70	5.62	1	<0.01	<0.01	0	<0.01
Perfluorocarbons											
Perfluorooctane sulfonic acid (PFOS)	µg/L	3.34	3.19	5	3.34	3.1	7	<0.01	<0.01	0	<0.01
Perfluorooctanoate (PFOA)	µg/L	0.11	0.10	10	0.11	0.04	**93**	<0.01	<0.01	0	<0.01
Sum of PFHxS and PFOS	µg/L	4.88	4.63	5	4.88	4.7	4	<0.01	<0.01	0	<0.01
Perfluorononanesulfonic acid (PFNS)	UG/L					<0.01					
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.19	0.20	5	0.19	0.17	11	<0.02	<0.02	0	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.19	0.18	5	0.19	0.18	5	<0.02	<0.02	0	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	1.54	1.44	7	1.54	1.6	4	<0.01	<0.01	0	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.08	0.09	12	0.08	0.12	**40**	<0.02	<0.02	0	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.04	<0.04	0	<0.04	<0.01	0	<0.02	<0.02	0	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	<0.2	<0.2	0	<0.2	0.10	0	<0.1	<0.1	0	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	0.10	0.10	0	0.10	0.13	26	<0.02	<0.02	0	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.37	0.35	6	0.37	0.41	10	<0.02	<0.02	0	<0.02
Perfluoropropanesulfonic acid (PFPrS)	UG/L					0.06					
Perfluoroheptanoic acid (PFHpA)	µg/L	0.05	0.04	22	0.05	0.06	18	<0.02	<0.02	0	<0.02
Perfluorononanoic acid (PFNA)	µg/L	<0.04	<0.04	0	<0.04	<0.01	0	<0.02	<0.02	0	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	<0.04	<0.04	0	<0.04	<0.01	0	<0.02	<0.02	0	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.04	<0.04	0	<0.04	<0.01	0	<0.02	<0.02	0	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.04	<0.04	0	<0.04	<0.01	0	<0.02	<0.02	0	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.04	<0.04	0	<0.04	<0.01	0	<0.02	<0.02	0	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.09	<0.09	0	<0.09	<0.01	0	<0.05	<0.05	0	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.04	<0.04	0	<0.04	<0.05	0	<0.02	<0.02	0	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.09	<0.09	0	<0.09	<0.05	0	<0.05	<0.05	0	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	<0.00009	<0.00009	0	<0.00009	<0.00005	0	<0.00005	<0.00005	0	<0.00005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.09	<0.09	0	<0.09	<0.05	0	<0.05	<0.05	0	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.09	<0.09	0	<0.09	<0.05	0	<0.05	<0.05	0	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.04	<0.04	0	<0.04	<0.05	0	<0.02	<0.02	0	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.04	<0.04	0	<0.04	<0.05	0	<0.02	<0.02	0	<0.02
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.05	0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.05	<0.05	0	<0.05	0.01	0	<0.05	<0.05	0	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05
Sum of PFAS	µg/L	5.97	5.74	4	5.97	5.98	0	<0.01	<0.01	0	<0.01

***RPDs have only been considered where a concentration is greater than 1 times th**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for**
*****Interlab Duplicates are matched on a per compound basis as methods vary bet**

		940477 0906_QC203_20221107 7/11/2022	RPD	EM2222404 0906_MW302_20221107 7/11/2022 14:24	EM2222404 0906_QC104_20221107 7/11/2022 14:24	RPD	EM2222404 0906_MW302_20221107 7/11/2022 14:24	940477 0906_QC204_20221107 7/11/2022	RPD	EM2222404 0906_MW308_20221107 7/11/2022 14:24	EM2222404 0906_QC105_20221107 7/11/2022 14:24	RPD
ChemName	**Unit**											
Sum of WA DWER PFAS (n=10)*	ug/L	<0.05	0	<0.01	<0.01	0	<0.01	<0.05	0	<0.01	<0.01	0
Perfluorocarbons												
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctanoate (PFOA)	µg/L	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorononanesulfonic acid (PFNS)	UG/L	<0.01						<0.01				
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.1	0
Perfluoropentanoic acid (PFPeA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoropropanesulfonic acid (PFPrS)	UG/L	<0.01						<0.01				
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorononanoic acid (PFNA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
Sum of PFAS	µg/L	<0.1	0	<0.01	<0.01	0	<0.01	<0.1	0	<0.01	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times th**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for**
*****Interlab Duplicates are matched on a per compound basis as methods vary bet**

		EM2222404 0906_MW308_20221107 7/11/2022 14:24	940477 0906_QC205_20221107 7/11/2022	RPD	EM2222399 0906_MW255_20221108 8/11/2022 13:49	EM2222404 0906_QC106_20221108 8/11/2022 14:24	RPD	EM2222399 0906_MW255_20221108 8/11/2022 13:49	940477 0906_QC206_20221108 8/11/2022	RPD
ChemName	**Unit**									
Sum of WA DWER PFAS (n=10)*	ug/L	<0.01	<0.05	0	0.07	0.07	0	0.07	0.06	15
Perfluorocarbons										
Perfluorooctane sulfonic acid (PFOS)	µg/L	<0.01	<0.01	0	0.02	0.02	0	0.02	0.04	**67**
Perfluorooctanoate (PFOA)	µg/L	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	<0.01	<0.01	0	0.07	0.07	0	0.07	0.04	**55**
Perfluorononanesulfonic acid (PFNS)	UG/L		<0.01						<0.01	
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.01	<0.01	0	0.05	0.05	0	0.05	<0.01	**133**
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	<0.1	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0
Perfluoropentanoic acid (PFPeA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	0.02	0
Perfluoropropanesulfonic acid (PFPrS)	UG/L		<0.01						<0.01	
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Sum of PFAS	µg/L	<0.01	<0.1	0	0.07	0.07	0	0.07	<0.1	0

***RPDs have only been considered where a concentration is greater than 1 times th**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for**
*****Interlab Duplicates are matched on a per compound basis as methods vary bet**

Lab Report Number	EM2222404	EM2222404	EM2222404	EM2222404
Field ID	0906_QC301_20221104	0906_QC302_20221105	0906_QC303_20221107	0906_QC304_20221108
Sampled Date	4/11/2022 14:24	5/11/2022 14:24	7/11/2022 14:24	8/11/2022 14:24
Sample Type	Rinsate	Rinsate	Rinsate	Rinsate

ChemName	Unit	LOR				
Sum of WA DWER PFAS (n=10)*	ug/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluorocarbons						
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoate (PFOA)	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
Perfluorobutane sulfonic acid (PFBS)	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
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	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
Perfluoropentanoic acid (PFPeA)	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
Perfluoroheptanoic acid (PFHpA)	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
Perfluorodecanoic acid (PFDA)	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
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	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
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
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 sulfonate (8:2 FtS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01

		EM2222404 0906_QC305_20221109 9/11/2022 14:24 Rinsate	EM2222404 0906_QC501_20221104 4/11/2022 14:24 Trip_B	EM2222404 0906_QC502_20221105 5/11/2022 14:24 Trip_B	EM2222404 0906_QC503_20221107 7/11/2022 14:24 Trip_B	EM2222404 0906_QC504_20221108 8/11/2022 14:24 Trip_B	EM2222404 0906_QC505_20221109 9/11/2022 14:24 Trip_B
ChemName	**Unit**						
Sum of WA DWER PFAS (n=10)*	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorocarbons							
Perfluorooctane sulfonic acid (PFOS)	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoate (PFOA)	µg/L	<0.01	<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	<0.01
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.02	<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	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.02	<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	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	<0.02	<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	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.02	<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	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	<0.02	<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	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.02	<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	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.05	<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	<0.05
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum of PFAS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

APPENDIX

C

LABORATORY CERTIFICATES

Cardno

now

Stantec

Cardno

145

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]

Phone: [redacted] Fax: +61 3 8415 7788 Mobile: +61 4 2087 7350

Address [redacted]

PM Email: [redacted]

Results Email (please email results to all listed):

[redacted]

Project Number: NSW_0906_PFASOMP

Laboratory (name, phone,fax no & contact person) : Eurofins

Attn [redacted]

Sample ID	Laboratory ID	Container	Sampling Da	Sampling Time	Sample Matrix: Water	Soil				Sample preservation: Ice				Analysis: Per- and Polyfluoroalkyl Substances (PFASs)											HOLD
0906_QC201_20221104		2	4/11		X									X											
0906_QC202_20221105		2	5/11		X									X											
0906_QC203_20221107		2	7/11		X									X											
0906_QC204_20221107		2	7/11		X									X											
0906_QC205_20221107		2	7/11		X									X											
0906_QC206_20221108		2	8/11		X									X											

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples

Sampler name: (print and signature)

Date:

	Date	Time		Date	Time
Relinquished by (Sampler) (print and signature) [redacted]	11/11		Received by (Courier) (print and signature) [redacted]	11/11	4pm
Relinquished by (print and signature) [redacted] (ACJ)	11/11		Received by (print and signature)	Date	Time
Relinquished by (print and signature)	Date	Time	Received by (print and signature)	Date	Time

8.6°
Ice

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

940477

eurofins | Environment Testing

www.eurofins.com.au EnviroSales@eurofins.com

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IANZ# 1327

Christchurch
43 Detroit Drive
Rolleston,
Christchurch 7675
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IANZ# 1290

Sample Receipt Advice

Company name:	Stantec Australia Pty Ltd (VIC)
Contact name:	[redacted]
Project name:	Not provided
Project ID:	NSW_0906_PFASOMP
Turnaround time:	5 Day
Date/Time received	Nov 11, 2022 4:00 PM
Eurofins reference	940477

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted] **on phone :** [redacted] **or by email:** [redacted]

Results will be delivered electronically via email to [redacted]) - [redacted]

Note: A copy of these results will also be delivered to the general Stantec Australia Pty Ltd (VIC) email address.

Global Leader - Results you can trust

eurofins

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

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43 Detroit Drive
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Christchurch 7675
Tel: 0800 856 450
IANZ# 1290

Company Name: Stantec Australia Pty Ltd (VIC)
Address: [redacted]
Melbourne
VIC 3000

Project Name:
Project ID: NSW_0906_PFASOMP

Order No.:
Report #: 940477
Phone:
Fax:

Received: Nov 11, 2022 4:00 PM
Due: Nov 24, 2022
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC202_20221105	Nov 05, 2022		Water	M22-No0029867	X
2	0906_QC203_20221107	Nov 07, 2022		Water	M22-No0029868	X
3	0906_QC204_20221107	Nov 07, 2022		Water	M22-No0029869	X
4	0906_QC205_20221107	Nov 07, 2022		Water	M22-No0029870	X
Test Counts						4

Stantec Australia Pty Ltd
[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **940477-W-V3**
Project name
Project ID NSW_0906_PFASOMP
Received Date Nov 11, 2022

Client Sample ID			**0906_QC202_20221105**	**0906_QC203_20221107**	**0906_QC204_20221107**	**0906_QC205_20221107**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**M22-No0029867**	**M22-No0029868**	**M22-No0029869**	**M22-No0029870**
Date Sampled			**Nov 05, 2022**	**Nov 07, 2022**	**Nov 07, 2022**	**Nov 07, 2022**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	0.10	< 0.05	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	0.13	< 0.01	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.41	< 0.01	< 0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	0.06	< 0.01	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	0.04	< 0.01	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	90	90	95	96
13C5-PFPeA (surr.)	1	%	94	99	109	106
13C5-PFHxA (surr.)	1	%	99	102	109	108
13C4-PFHpA (surr.)	1	%	97	95	102	103
13C8-PFOA (surr.)	1	%	133	136	142	145
13C5-PFNA (surr.)	1	%	83	83	86	87
13C6-PFDA (surr.)	1	%	67	88	79	88
13C2-PFUnDA (surr.)	1	%	51	83	74	80
13C2-PFDoDA (surr.)	1	%	43	89	71	69
13C2-PFTeDA (surr.)	1	%	56	116	91	93
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	79	97	98	97
D3-N-MeFOSA (surr.)	1	%	123	133	110	138

Client Sample ID			0906_QC202_20221105	0906_QC203_20221107	0906_QC204_20221107	0906_QC205_20221107
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M22-No0029867	M22-No0029868	M22-No0029869	M22-No0029870
Date Sampled			Nov 05, 2022	Nov 07, 2022	Nov 07, 2022	Nov 07, 2022
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D5-N-EtFOSA (surr.)	1	%	112	115	108	127
D7-N-MeFOSE (surr.)	1	%	69	133	89	116
D9-N-EtFOSE (surr.)	1	%	58	106	91	99
D5-N-EtFOSAA (surr.)	1	%	71	114	96	112
D3-N-MeFOSAA (surr.)	1	%	73	100	96	107
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	0.17	< 0.01	< 0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	0.06	< 0.01	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	0.18	< 0.01	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	1.6	< 0.01	< 0.01	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	0.12	< 0.01	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	[N09]3.1	0.01	< 0.01	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	123	116	124	128
18O2-PFHxS (surr.)	1	%	94	96	100	100
13C8-PFOS (surr.)	1	%	107	97	98	97
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	103	76	90	89
13C2-6:2 FTSA (surr.)	1	%	109	129	124	170
13C2-8:2 FTSA (surr.)	1	%	84	92	91	95
13C2-10:2 FTSA (surr.)	1	%	52	98	74	84
PFASs Summations						
Sum (PFHxS + PFOS)*	0.01	ug/L	4.7	0.01	< 0.01	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	3.14	0.01	< 0.01	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	4.74	0.01	< 0.01	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	5.62	< 0.05	< 0.05	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	5.98	< 0.1	< 0.1	< 0.1

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	Nov 24, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	Nov 24, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	Nov 24, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	Nov 24, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	Nov 12, 2022	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Project Name:
Project ID: NSW_0906_PFASOMP

Order No.:
Report #: 940477
Phone:
Fax:

Received: Nov 11, 2022 4:00 PM
Due: Nov 24, 2022
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC202_20221105	Nov 05, 2022		Water	M22-No0029867	X
2	0906_QC203_20221107	Nov 07, 2022		Water	M22-No0029868	X
3	0906_QC204_20221107	Nov 07, 2022		Water	M22-No0029869	X
4	0906_QC205_20221107	Nov 07, 2022		Water	M22-No0029870	X
Test Counts						4

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Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg milligrams per kilogram
mg/L milligrams per litre
µg/L micrograms per litre
ppm parts per million
ppb parts per billion
% Percentage
org/100 mL Organisms per 100 millilitres
NTU Nephelometric Turbidity Units
MPN/100 mL Most Probable Number of organisms per 100 millilitres
CFU Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR: No Limit

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

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	104			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	100			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	88			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	75			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	77			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	75			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	77			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	76			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	84			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	110			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	85			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	100			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	135			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	128			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	86			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	112			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	90			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	102			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	80			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	89			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	96			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	82			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	81			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	88			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	86			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	87			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	102			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	98			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	101			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	M22-No0029791	NCP	%	102			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M22-No0029791	NCP	%	74			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M22-No0029791	NCP	%	83			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M22-No0029791	NCP	%	93			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M22-No0029791	NCP	%	n/a			50-150	Fail	
Perfluorononanoic acid (PFNA)	M22-No0029791	NCP	%	88			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M22-No0029791	NCP	%	88			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	M22-No0029791	NCP	%	97			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	M22-No0029791	NCP	%	98			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M22-No0029791	NCP	%	105			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M22-No0029791	NCP	%	95			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	M22-No0029791	NCP	%	105			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M22-No0029791	NCP	%	106			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M22-No0029791	NCP	%	104			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M22-No0029791	NCP	%	113			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M22-No0029791	NCP	%	110			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M22-No0029791	NCP	%	79			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M22-No0029791	NCP	%	72			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M22-No0029791	NCP	%	69			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	M22-No0029791	NCP	%	84			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M22-No0029791	NCP	%	72			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M22-No0029791	NCP	%	86			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M22-No0029791	NCP	%	86			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M22-No0029791	NCP	%	104			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M22-No0043229	NCP	%	58			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M22-No0029791	NCP	%	80			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M22-No0029791	NCP	%	73			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M22-No0029791	NCP	%	73			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M22-No0029791	NCP	%	85			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M22-No0029791	NCP	%	87			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	M22-No0029790	NCP	ug/L	0.09	0.11	14	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M22-No0029790	NCP	ug/L	0.12	0.12	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M22-No0029790	NCP	ug/L	0.22	0.22	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M22-No0029790	NCP	ug/L	0.32	0.32	2.1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M22-No0029790	NCP	ug/L	0.24	0.25	3.7	30%	Pass	
Perfluorononanoic acid (PFNA)	M22-No0029790	NCP	ug/L	0.18	0.18	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M22-No0029790	NCP	ug/L	0.16	0.18	16	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	M22-No0029790	NCP	ug/L	0.02	0.04	40	30%	Fail	Q15
Perfluorododecanoic acid (PFDoDA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	M22-No0029790	NCP	ug/L	0.17	0.20	19	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M22-No0029790	NCP	ug/L	0.03	0.03	15	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M22-No0029790	NCP	ug/L	0.01	0.01	2.4	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M22-No0029790	NCP	ug/L	0.03	0.03	11	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M22-No0029790	NCP	ug/L	0.13	0.15	10	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M22-No0029790	NCP	ug/L	0.03	0.03	8.4	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M22-No0039406	NCP	ug/L	11	11	2.7	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

This report has been revised (V2) following repeat analysis. PFAS results for sample 0906_QC203_20221107 have now been replaced by the repeat results.

V3: This is a split report with 948319 as requested by MB 8/12/22

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

[redacted] Analytical Services Manager

[redacted] Senior Analyst-PFAS

[redacted]

General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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

Cardno

145

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed): [redacted]
Project Number: NSW_0906_PFASOMP
Laboratory (name, phone,fax no & contact person) : Eurofins
Attn [redacted] 03 8564 5933

Sample ID	Laboratory ID	Container	Sampling Da	Sampling Time	Sample Matrix: Water	Soil	Sample preservation: Ice	Analysis: Per- and Polyfluoroalkyl Substances (PFASs)	HOLD
0906_QC201_20221104		2	4/11		X			X	
0906_QC202_20221105		2	5/11		X			X	
0906_QC203_20221107		2	7/11		X			X	
0906_QC204_20221107		2	7/11		X			X	
0906_QC205_20221107		2	7/11		X			X	
0906_QC206_20221108		2	8/11		X			X	

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples

Sampler name: (print and signature)

Relinquished by (Sampler) (print and signature) [redacted]	Date 11/11	Time	Received by (print and signature) [redacted]	Date 11/11	Time [redacted]	Date:
Relinquished by (print and signature) [redacted]	Date 11/11	Time	Received by (print and signature)	Date		
Relinquished by (print and signature)	Date	Time	Received by (print and signature)	Date	Time	

8.6°
Ice

Please supply results electronically in spreadsheet and ESDAT files.
Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

940477

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Sample Receipt Advice

Company name:	Stantec Australia Pty Ltd (VIC)
Contact name:	[redacted]
Project name:	Not provided
Project ID:	NSW_0906_PFASOMP
Turnaround time:	5 Day
Date/Time received	Nov 11, 2022 4:00 PM
Eurofins reference	948319

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted]

Results will be delivered electronically via email to [redacted]) - [redacted]

Note: A copy of these results will also be delivered to the general Stantec Australia Pty Ltd (VIC) email address.

Global Leader - Results you can trust

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IANZ# 1290

Company Name: Stantec Australia Pty Ltd (VIC)
Address: [redacted]
Melbourne
VIC 3000

Project Name:
Project ID: NSW_0906_PFASOMP

Order No.:
Report #: 948319
Phone:
Fax:

Received: Nov 11, 2022 4:00 PM
Due: Dec 15, 2022
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC201_20221104	Nov 04, 2022		Water	M22-No0029866	X
2	0906_QC206_20221108	Nov 08, 2022		Water	M22-No0029871	X
Test Counts						2

Stantec Australia Pty Ltd
[redacted]
Melbourne
VIC 3000

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **948319-W**
Project name
Project ID NSW_0906_PFASOMP
Received Date Nov 11, 2022

Client Sample ID			**0906_QC201_20221104**	**0906_QC206_20221108**
Sample Matrix			**Water**	**Water**
Eurofins Sample No.			**M22-No0029866**	**M22-No0029871**
Date Sampled			**Nov 04, 2022**	**Nov 08, 2022**
Test/Reference	LOR	Unit		
Perfluoroalkyl carboxylic acids (PFCAs)				
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	0.02	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.04	0.02
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	89	83
13C5-PFPeA (surr.)	1	%	85	93
13C5-PFHxA (surr.)	1	%	96	101
13C4-PFHpA (surr.)	1	%	95	97
13C8-PFOA (surr.)	1	%	136	131
13C5-PFNA (surr.)	1	%	84	83
13C6-PFDA (surr.)	1	%	78	83
13C2-PFUnDA (surr.)	1	%	60	78
13C2-PFDoDA (surr.)	1	%	50	87
13C2-PFTeDA (surr.)	1	%	41	120
Perfluoroalkyl sulfonamido substances				
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	85	97
D3-N-MeFOSA (surr.)	1	%	89	128

Client Sample ID			0906_QC201_20221104	0906_QC206_20221108
Sample Matrix			Water	Water
Eurofins Sample No.			M22-No0029866	M22-No0029871
Date Sampled			Nov 04, 2022	Nov 08, 2022
Test/Reference	LOR	Unit		
Perfluoroalkyl sulfonamido substances				
D5-N-EtFOSA (surr.)	1	%	86	120
D7-N-MeFOSE (surr.)	1	%	70	133
D9-N-EtFOSE (surr.)	1	%	56	104
D5-N-EtFOSAA (surr.)	1	%	79	115
D3-N-MeFOSAA (surr.)	1	%	81	97
Perfluoroalkyl sulfonic acids (PFSAs)				
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	0.12	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	0.71	0.04
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	114	119
18O2-PFHxS (surr.)	1	%	96	93
13C8-PFOS (surr.)	1	%	85	97
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	166	78
13C2-6:2 FTSA (surr.)	1	%	152	110
13C2-8:2 FTSA (surr.)	1	%	114	90
13C2-10:2 FTSA (surr.)	1	%	61	101
PFASs Summations				
Sum (PFHxS + PFOS)*	0.01	ug/L	0.83	0.04
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	0.71	0.04
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	0.83	0.04
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	0.9	0.06
Sum of PFASs (n=30)*	0.1	ug/L	0.9	< 0.1

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	Nov 12, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	Nov 12, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	Nov 12, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	Nov 12, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	Nov 12, 2022	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Address: [redacted]
Melbourne
VIC 3000

Project Name:
Project ID: NSW_0906_PFASOMP

Order No.:
Report #: 948319
Phone:
Fax:

Received: Nov 11, 2022 4:00 PM
Due: Dec 15, 2022
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC201_20221104	Nov 04, 2022		Water	M22-No0029866	X
2	0906_QC206_20221108	Nov 08, 2022		Water	M22-No0029871	X
Test Counts						2

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg milligrams per kilogram
mg/L milligrams per litre
µg/L micrograms per litre
ppm parts per million
ppb parts per billion
% Percentage
org/100 mL Organisms per 100 millilitres
NTU Nephelometric Turbidity Units
MPN/100 mL Most Probable Number of organisms per 100 millilitres
CFU Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR: No Limit

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

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	124			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	88			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	85			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	79			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	107			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	94			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	92			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	104			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	102			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	112			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	101			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	95			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	134			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	105			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	130			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	114			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	83			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	84			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	71			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	97			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	78			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	78			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	76			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	91			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	105			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	91			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	75			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	70			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	83			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	94			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	M22-No0029791	NCP	%	102			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M22-No0029791	NCP	%	74			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M22-No0029791	NCP	%	83			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M22-No0029791	NCP	%	93			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M22-No0029791	NCP	%	n/a			50-150	Fail	
Perfluorononanoic acid (PFNA)	M22-No0029791	NCP	%	88			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M22-No0029791	NCP	%	88			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	M22-No0029791	NCP	%	97			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	M22-No0029791	NCP	%	98			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M22-No0029791	NCP	%	105			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M22-No0029791	NCP	%	95			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	M22-No0029791	NCP	%	105			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M22-No0029791	NCP	%	106			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M22-No0029791	NCP	%	104			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M22-No0029791	NCP	%	113			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M22-No0029791	NCP	%	110			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M22-No0029791	NCP	%	79			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M22-No0029791	NCP	%	72			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M22-No0029791	NCP	%	69			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	M22-No0029791	NCP	%	84			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M22-No0029791	NCP	%	72			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M22-No0029791	NCP	%	86			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M22-No0029791	NCP	%	86			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M22-No0029791	NCP	%	104			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M22-No0029791	NCP	%	120			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M22-No0029791	NCP	%	80			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M22-No0029791	NCP	%	73			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M22-No0029791	NCP	%	73			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M22-No0029791	NCP	%	85			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M22-No0029791	NCP	%	87			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	M22-No0029790	NCP	ug/L	0.09	0.11	14	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M22-No0029790	NCP	ug/L	0.12	0.12	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M22-No0029790	NCP	ug/L	0.22	0.22	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M22-No0029790	NCP	ug/L	0.32	0.32	2.1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M22-No0029790	NCP	ug/L	0.24	0.25	3.7	30%	Pass	
Perfluorononanoic acid (PFNA)	M22-No0029790	NCP	ug/L	0.18	0.18	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M22-No0029790	NCP	ug/L	0.16	0.18	16	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	M22-No0029790	NCP	ug/L	0.02	0.04	40	30%	Fail	
Perfluorododecanoic acid (PFDoDA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	M22-No0029790	NCP	ug/L	0.17	0.20	19	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M22-No0029790	NCP	ug/L	0.03	0.03	15	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M22-No0029790	NCP	ug/L	0.01	0.01	2.4	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M22-No0029790	NCP	ug/L	0.03	0.03	11	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M22-No0029790	NCP	ug/L	0.13	0.15	10	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M22-No0029790	NCP	ug/L	0.03	0.03	8.4	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M22-No0029790	NCP	ug/L	1.6	1.8	14	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

This is a split report with 940477 as requested by MB 8/12/22

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

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

Authorised by:

[redacted] Analytical Services Manager

[redacted] Senior Analyst-PFAS

[redacted]

[redacted]

General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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

Cardno

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]
Phone: [redacted]
Address [redacted]
PM Email: [redacted]
Results Email (please email results to all listed): [redacted]

Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone & contact person): [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	Water	Sample preservation: Ice/ Ice Bricks	Analysis: PFAS Standard Suite
0906_MW233_20221107	①	2	7/11/2022			x			x	x

Environmental Division Melbourne
Work Order Reference
EM2222376

Telephone : [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: (print and signature) [redacted] Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Lab): (print and signature) [redacted]	Date 11/11/22	Time 17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222376**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO5.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO5		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°c - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222376-001	07-Nov-2022 00:00	0906_MW233_20221107	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU T[redacted]x Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LABREPORTS

- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222376**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO5.xls	Issue Date	: 17-Nov-2022 12:31
Sampler	: MB		
Site	: Wagga-PO5		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW233_20221107	----	----	----	----
				Sampling date / time	07-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2222376-001	--------	--------	--------	--------	
				Result	----	----	----	----	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.03**	----	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.03**	----	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.23**	----	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.24**	----	----	----	----	
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	**0.04**	----	----	----	----	
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	0906_MW233_20221107	----	----	----	----
				Sampling date / time	07-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222376-001	--------	--------	--------	--------
					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		**0.57**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.47**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.54**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**99.0**	----	----	----	----
13C8-PFOA	----	0.02	%		**94.1**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EM2222376**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO5.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO5		
Quote number	: EN/024/		
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]	Senior Organic Chemist	[redacted]

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222376**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO5	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 1
Order number	: ----	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

- **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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / ***Container*** / Client Sample ID(s)	***Sample Date***	*Extraction / Preparation* ***Date extracted***	*Due for extraction*	*Evaluation*	*Analysis* ***Date analysed***	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW233_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW233_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW233_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW233_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW233_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]

Results Email (please email results to **all** listed):
[redacted]
- derp.labreports@esdat.com.au

Project Number: NSW_0906_PFASOMP **Site:**

Laboratory (name, phone & contact person): ALS [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water		Ice/ Ice Bricks				PFAS Standard Suite
0906_MW235_20221107	1	2	7/11/2022			x				x				x

Environmental Division
Melbourne
Work Order Reference
EM2222377

Telephone [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** (print and signature) [redacted] Date:11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s	Date 11/11/22	Time 17.20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222377**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted] VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO6.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO6		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222377-001	07-Nov-2022 00:00	0906_MW235_20221107	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

DERP LABREPORTS

- EDI Format - ESDAT (ESDAT) — Email
- Electronic SRN for ESdat (ESRN_ESDAT) — Email

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222377**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO6.xls	Issue Date	: 17-Nov-2022 15:56
Sampler	: MB		
Site	: Wagga-PO6		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW235_20221107	----	----	----	----
				Sampling date / time	07-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222377-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW235_20221107	----	----	----	----
				Sampling date / time	07-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222377-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
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	%		**90.1**	----	----	----	----
13C8-PFOA	----	0.02	%		**95.2**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222377**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO6.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO6		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222377**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO6	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 1
Order number	: ----	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

- **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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW235_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW235_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW235_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW235_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW235_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]

Results Email (please email results to **all** listed):
[redacted]
- derp.labreports@esdat.com.au

Project Number: NSW_0906_PFASOMP **Site:**

Laboratory (name, phone, & contact person): ALS [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Sample Matrix: Groundwater	Sample Matrix: Surface Water	Sample Matrix: Water	Sample preservation: Ice/ Ice Bricks	Analysis: PFAS Standard Suite
0906_MW200_20221108	1	2	8/11/2022			x			x	x
0906_MW204_20221109	2	2	9/11/2022			x			x	x

Environmental Division
Melbourne
Work Order Reference
EM2222380
Telephone [redacted]

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: (print and signature) [redacted] Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s[ignature]) [redacted]	Date 11/11/22	Time 17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222380**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted] VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO1.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO1		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222380-001	08-Nov-2022 00:00	0906_MW200_20221108	✓
EM2222380-002	09-Nov-2022 00:00	0906_MW204_20221109	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LABREPORTS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222380**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO1.xls	Issue Date	: 17-Nov-2022 12:31
Sampler	: MB		
Site	: Wagga-PO1		
Quote number	: EN/024/		
No. of samples received	: 2		
No. of samples analysed	: 2		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW200_20221108	0906_MW204_20221109	----	----	----
				Sampling date / time	08-Nov-2022 00:00	09-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2222380-001	EM2222380-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.10**	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.10**	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.64**	<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		**0.28**	<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		**0.14**	<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		**0.02**	<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	0906_MW200_20221108	0906_MW204_20221109	----	----	----
				Sampling date / time	08-Nov-2022 00:00	09-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2222380-001	EM2222380-002	--------	--------	--------
					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		**1.33**	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.92**	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.21**	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.6**	**90.6**	----	----	----
13C8-PFOA	----	0.02	%		**95.4**	**97.8**	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222380**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO1.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO1		
Quote number	: EN/024/		
No. of samples received	: 2		
No. of samples analysed	: 2		

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222380**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO1	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 2
Order number	: ----	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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW200_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW204_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW200_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW204_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW200_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW204_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW200_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW204_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW200_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW204_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed):
[redacted]
- derp.labreports@esdat.com.au
Project Number: NSW_0906_PFASOMP Site:
Laboratory (name, phone, & contact person): ALS
[redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Sample preservation: Ice/ Ice Bricks	Analysis: PFAS Standard Suite
0906_MW241_20221108	1	2	8/11/2022			x			x	x
0906_MW242_20221108	2	2	8/11/2022			x			x	x
						x				

Environmental Division Melbourne
Work Order Reference
EM2222383

Telephone : [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: (print and signature) Maya Brennan Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22	Time 17.20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Revision 1
Approved 23 May 2013

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2222383**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO8.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO8		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222383-001	08-Nov-2022 00:00	0906_MW241_20221108	✓
EM2222383-002	08-Nov-2022 00:00	0906_MW242_20221108	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ACCOUNTS ADDRESS
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LABREPORTS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222383**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO8.xls	Issue Date	: 17-Nov-2022 12:32
Sampler	: MB		
Site	: Wagga-PO8		
Quote number	: EN/024/		
No. of samples received	: 2		
No. of samples analysed	: 2		

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Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW241_20221108	0906_MW242_20221108	----	----	----
				Sampling date / time	08-Nov-2022 00:00	08-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2222383-001	EM2222383-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
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	0906_MW241_20221108	0906_MW242_20221108	----	----	----
				Sampling date / time	08-Nov-2022 00:00	08-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2222383-001	EM2222383-002	--------	--------	--------
					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		<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.3**	**94.6**	----	----	----
13C8-PFOA	----	0.02	%		**92.6**	**94.4**	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222383**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO8.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO8		
Quote number	: EN/024/		
No. of samples received	: 2		
No. of samples analysed	: 2		

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222383**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO8	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 2
Order number	: ----	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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW241_20221108, 0906_MW242_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW241_20221108, 0906_MW242_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW241_20221108, 0906_MW242_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW241_20221108, 0906_MW242_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW241_20221108, 0906_MW242_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet of

PM Name: [redacted]

Phone [redacted]

Address [redacted]

PM Email: [redacted]

Results Email (please email results to all listed):

[redacted]

- derp.labreports@esdat.com.au

Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone, & contact person): ALS

[redacted]

Environmental Division
Melbourne
Work Order Reference
EM2222392

Telephone [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Ice/ Ice Bricks	PFAS Standard Suite
0906_MW239_20221108	1	2	8/11/2022			x			x	x
0906_MW238_20221108	2	2	8/11/2022			x			x	x
0906_MW209_20221109	3	2	9/11/2022			x			x	x
0906_MW231_20221109	4	2	9/11/2022			x			x	x

Sample Matrix | Sample preservation | Analysis

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: (print and signature) Maya Brennan Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22	Time 17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222392**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: + [redacted]
Facsimile	: ----	Facsimile	: + [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COCWagga-PO2.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO2		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **17-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°C - 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
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222392-001	08-Nov-2022 00:00	0906_MW239_20221108	✓
EM2222392-002	08-Nov-2022 00:00	0906_MW238_20221108	✓
EM2222392-003	09-Nov-2022 00:00	0906_MW209_20221109	✓
EM2222392-004	09-Nov-2022 00:00	0906_MW231_20221109	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LABREPORTS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222392**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COCWagga-PO2.xls	Issue Date	: 17-Nov-2022 12:34
Sampler	: MB		
Site	: Wagga-PO2		
Quote number	: EN/024/		
No. of samples received	: 4		
No. of samples analysed	: 4		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW239_20221108	0906_MW238_20221108	0906_MW209_20221109	0906_MW231_20221109	----
				Sampling date / time	08-Nov-2022 00:00	08-Nov-2022 00:00	09-Nov-2022 00:00	09-Nov-2022 00:00	----
Compound	CAS Number	LOR	Unit		EM2222392-001	EM2222392-002	EM2222392-003	EM2222392-004	--------
					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: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW239_20221108	0906_MW238_20221108	0906_MW209_20221109	0906_MW231_20221109	----
				Sampling date / time	08-Nov-2022 00:00	08-Nov-2022 00:00	09-Nov-2022 00:00	09-Nov-2022 00:00	----
Compound	CAS Number	LOR	Unit		EM2222392-001	EM2222392-002	EM2222392-003	EM2222392-004	--------
					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	%		**91.1**	**90.3**	**96.4**	**101**	----
13C8-PFOA	----	0.02	%		**92.3**	**96.5**	**95.8**	**98.4**	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EM2222392**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COCWagga-PO2.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO2		
Quote number	: EN/024/		
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]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222392**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO2	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 4
Order number	: ----	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

- **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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW239_20221108, 0906_MW238_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW209_20221109, 0906_MW231_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW239_20221108, 0906_MW238_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW209_20221109, 0906_MW231_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW239_20221108, 0906_MW238_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW209_20221109, 0906_MW231_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW239_20221108, 0906_MW238_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW209_20221109, 0906_MW231_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW239_20221108, 0906_MW238_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)							
0906_MW209_20221109, 0906_MW231_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed):
[redacted]
- derp.labreports@esdat.com.au
Project Number: NSW_0906_PFASOMP Site:
Laboratory (name, phone, & contact person): ALS
[redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Ice/ Ice Bricks	PFAS Standard Suite
0906_MW210_20221108		2	8/11/2022			x			x	x

Sample Matrix | Sample preservation | Analysis

Environmental Division
Melbourne
Work Order Reference
EM2222395

Telephone : [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.		Sampler name: (print and signature)		Date:		
Relinquished by (Sampler): (print and signature)	Date	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22		Time 17.20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date		Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date		Time

Please supply results electronically in spreadsheet and ESDAT files.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222395**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO3.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO3		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222395-001	08-Nov-2022 00:00	0906_MW210_20221108	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LABREPORTS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222395**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO3.xls	Issue Date	: 17-Nov-2022 12:30
Sampler	: MB		
Site	: Wagga-PO3		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW210_20221108	----	----	----	----
				Sampling date / time	08-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222395-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW210_20221108	----	----	----	----
				Sampling date / time	08-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222395-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.2**	----	----	----	----
13C8-PFOA	----	0.02	%		**94.1**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222395**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO3.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO3		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222395**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO3	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 1
Order number	: ----	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

- **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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW210_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW210_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW210_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW210_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW210_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]

Phone: [redacted]

Address: [redacted]

PM Email: [redacted]

Results Email (please email results to **all** listed):

[redacted]

- derp.labreports@esdat.com.au

Project Number: NSW_0906_PFASOMP **Site:**

Laboratory (name, phone, & contact person): ALS

[redacted]

Environmental Division Melbourne

Work Order Reference

EM2222397

Telephone : [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Ice/ Ice Bricks	PFAS Standard Suite
0906_SW309_20221108	1	2	8/11/2022				x		x	x
0906_MW211_20221108	2	2	8/11/2022			x			x	x
0906_MW212_20221108	3	4	8/11/2022			x			x	x

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: (print and signature) Maya Brennan Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22	Time 17.20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

[redacted]

From: [redacted]
Sent: Friday, 11 November 2022 2:35 PM
To: [redacted]
Cc:
Subject: [EXTERNAL] - DEF19008 - Wagga/Kapooka/Bandiana sample collection
Attachments: COC Wagga - PO5.xls; COC Wagga - PO6.xls; COC Wagga - PO7.xls; COC Wagga - PO8.xls; COC Wagga - Base.xls; COC Wagga - PO1.xls; COC Wagga - PO2.xls; COC Wagga - PO3.xls; COC Wagga - PO4.xls

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.

Hey [redacted],

See attached Wagga ECOCs.

Thanks again,

[redacted]
Environmental Scientist

Phone: +61 3 9937 0780

[redacted]

Stantec Australia
Level 4, 501 Swanston Street Melbourne Victoria 3000 Australia

Cardno now Stantec

Stantec acknowledges the Traditional Owners of Country throughout Australia and recognises their continuing connection to lands, waters and communities. We pay our respect to Aboriginal and Torres Strait Islander cultures and to Elders past and present.

The content of this email is the confidential property of Stantec and should not be copied, modified, retransmitted, or used for any purpose except with Stantec's written authorization. If you are not the intended recipient, please delete all copies and notify us immediately.

Please consider the environment before printing this email.

From: [redacted]
Sent: Friday, 11 November 2022 12:20 PM
To: [redacted]
Cc: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 - Wagga/Kapooka/Bandiana sample collection

Hey Graeme,

Please see attached ECOC's for Kapooka.

Could we get a 5-day turn around on these.

I will send through the Wagga COCs shortly.

[redacted]

From: [redacted]
Sent: Friday, 11 November 2022 3:00 PM
To: COC Melbourne
Cc: [redacted]
Subject: STANTEC / CARDNO - DEF19008 - Wagga/Kapooka/Bandiana sample collection
Attachments: [EXTERNAL] - DEF190008 Bandiana Additional samples; RE: [EXTERNAL] - DEF19008 - Wagga/Kapooka/Bandiana sample collection; [EXTERNAL] - DEF19008 - Wagga/Kapooka/Bandiana sample collection

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: COC for incoming samples

Sample Receipt

9 eskies coming in from Stantec / Cardno this afternoon.

CoCs attached

Please note there are samples from 3 separate sites:

- 0445 – Bandiana
- 0315 – Kapooka
- 0906 – Wagga Wagga

- 3 eskies of Wagga samples
- 3 eskies of Kapooka samples
- 1 esky of Bandiana samples

All PFAS, approximately.....

- 0445 – Bandiana – 6 samples
- 0315 – Kapooka – 46 samples
- 0906 – Wagga Wagga – 64 samples

Also note that there are separate locations for each site (e.g. Bandiana has P01, Public Lands). Each COC should be a separate work order.

[redacted] - Client has specifically requested 5 day TAT on Kapooka samples if we need to put any on a longer TAT. Also probably need to keep some room for more urgent Coffey / Air Services samples that could still come in. We sent them 100 more bottles this arvo.

Kind Regards

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222397**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: + [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO4.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO4		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 3 / 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222397-001	08-Nov-2022 00:00	0906_SW309_20221108	✓
EM2222397-002	08-Nov-2022 00:00	0906_MW211_20221108	✓
EM2222397-003	08-Nov-2022 00:00	0906_MW212_20221109	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LABREPORTS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222397**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO4.xls	Issue Date	: 17-Nov-2022 12:32
Sampler	: MB		
Site	: Wagga-PO4		
Quote number	: EN/024/		
No. of samples received	: 3		
No. of samples analysed	: 3		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW211_20221108	0906_MW212_20221109	----	----	----
				Sampling date / time	08-Nov-2022 00:00	08-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2222397-002	EM2222397-003	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW211_20221108	0906_MW212_20221109	----	----	----
				Sampling date / time	08-Nov-2022 00:00	08-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2222397-002	EM2222397-003	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.0**	**96.2**	----	----	----
13C8-PFOA	----	0.02	%		**95.0**	**97.6**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_SW309_20221108	----	----	----	----
				Sampling date / time	08-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2222397-001	--------	--------	--------	--------	
				Result	----	----	----	----	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_SW309_20221108	----	----	----	----
				Sampling date / time	08-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222397-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
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	%		**94.1**	----	----	----	----
13C8-PFOA	----	0.02	%		**93.1**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222397**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: + [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO4.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO4		
Quote number	: EN/024/		
No. of samples received	: 3		
No. of samples analysed	: 3		

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Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222397**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO4	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, 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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_SW309_20221108, 0906_MW211_20221108, 0906_MW212_20221109	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_SW309_20221108, 0906_MW211_20221108, 0906_MW212_20221109	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_SW309_20221108, 0906_MW211_20221108, 0906_MW212_20221109	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_SW309_20221108, 0906_MW211_20221108, 0906_MW212_20221109	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_SW309_20221108, 0906_MW211_20221108, 0906_MW212_20221109	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet 1 of 2

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed):
[redacted]
- derp.labreports@esdat.com.au
Project Number: NSW_0906_PFASOMP Site:
Laboratory (name, phone, & contact person): ALS
[redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Ice/ Ice Bricks				PFAS Standard Suite												Comments
0906_MW245_20221109	1	2	9/11/2022			x			x				x												
0906_MW249_20221109	2	2	9/11/2022			x			x				x												
0906_MW255_20221108	3	2	8/11/2022			x			x				x												
0906_MW253_20221107	4	2	7/11/2022			x			x				x												Extra bottles for lab QC
0906_MW254_20221107	5	2	7/11/2022			x			x				x												
0906_MW240_20221107	6	2	7/11/2022			x			x				x												
0906_MW246_20221107	7	2	7/11/2022			x			x				x												
0906_MW247_20221109	8	2	9/11/2022			x			x				x												
0906_MW256_20221108	9	2	8/11/2022			x			x				x												
0906_MW257_20221109	10	2	9/11/2022			x			x				x												
0906_MW248_20221109	11	2	9/11/2022			x			x				x												
0906_MW244_20221109	12	2	9/11/2022			x			x				x												
0906_SW262_20221108	13	2	8/11/2022				x		x				x												
0906_SW310_20221104	14	2	4/11/2022				x		x				x												
0906_SW234_20221108	15	2	8/11/2022				x		x				x												
0906_SW240_20221104	16	2	4/11/2022				x		x				x												
0906_SW286_20221108	17	2	8/11/2022				x		x				x												
0906_SW289_20221109	18	2	9/11/2022				x		x				x												
0906_SW228_20221109	19	2	9/11/2022				x		x				x												
0906_SW236_20221104	20	2	4/11/2022				x		x				x												Extra bottles for lab QC

Environmental Division
Melbourne
Work Order Reference
EM2222399

Telephone : - [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** (print and signature) Maya Brennan Date: 11/11/22

Relinquished by (Sampler): (print and signature)	Date	Time	Received by (Courier/Lab): (print and s	Date	Time
Maya Brennan	11/11/22		[redacted]	14/11/22	17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Page of

Chain of Custody

Sheet 2 of 2

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed):
Project Num Site:
Laboratory (name, phone, & contact person): ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Ice/ Ice Blocks				PFAS Standard Suite											Comments
0906_SW288_20221109		22	9/11/2022				x		x				x											
0906_SW258_20221104		23	9/11/2022				x		x				x											
0906_SW266_20221104		23	9/11/2022				x		x				x											Extra bottles for lab QC
0906_MW292_20221108		24	9/11/2022			x			x				x											

Sampler: I attest that the proper field sampling procedures were used during this collection of | Sampler name: (print and signature) | Mass Sciences | Date: 11/1/22

Relinquished by (Sampler): (print and signature) Mass Sciences	Date 11/1/22	Time	Received by (Courier/Lab): (print and signature) [redacted]	Date	11/14/22	Time	17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date		Time	
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date		Time	

Please supply results electronically in spreadsheet and EDD/ET files.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222399**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]g	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: +[redacted]
Facsimile	: ----	Facsimile	: +[redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 3
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO7.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO7		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **17-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 24 / 24

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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222399-001	09-Nov-2022 00:00	0906_MW245_20221109	✓
EM2222399-002	09-Nov-2022 00:00	0906_MW249_20221109	✓
EM2222399-003	08-Nov-2022 00:00	0906_MW255_20221108	✓
EM2222399-004	07-Nov-2022 00:00	0906_MW253_20221107	✓
EM2222399-005	07-Nov-2022 00:00	0906_MW254_20221107	✓
EM2222399-006	07-Nov-2022 00:00	0906_MW240_20221107	✓
EM2222399-007	07-Nov-2022 00:00	0906_MW246_20221107	✓
EM2222399-008	09-Nov-2022 00:00	0906_MW247_20221109	✓
EM2222399-009	08-Nov-2022 00:00	0906_MW256_20221108	✓
EM2222399-010	09-Nov-2022 00:00	0906_MW257_20221109	✓
EM2222399-011	09-Nov-2022 00:00	0906_MW248_20221109	✓
EM2222399-012	09-Nov-2022 00:00	0906_MW244_20221109	✓
EM2222399-013	08-Nov-2022 00:00	0906_SW262_20221108	✓
EM2222399-014	04-Nov-2022 00:00	0906_SW310_20221104	✓
EM2222399-015	08-Nov-2022 00:00	0906_SW234_20221108	✓
EM2222399-016	04-Nov-2022 00:00	0906_SW240_20221104	✓
EM2222399-017	08-Nov-2022 00:00	0906_SW286_20221108	✓
EM2222399-018	09-Nov-2022 00:00	0906_SW289_20221109	✓
EM2222399-019	09-Nov-2022 00:00	0906_SW228_20221109	✓
EM2222399-020	04-Nov-2022 00:00	0906_SW236_20221104	✓
EM2222399-021	09-Nov-2022 00:00	0906_SW288_20221109	✓
EM2222399-022	04-Nov-2022 00:00	0906_SW218_20221104	✓
EM2222399-023	04-Nov-2022 00:00	0906_SW206_20221104	✓
EM2222399-024	09-Nov-2022 00:00	0906_MW250_20221109	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

DERP LABREPORTS

- EDI Format - ESDAT (ESDAT) — Email
- Electronic SRN for ESdat (ESRN_ESDAT) — Email

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222399**	Page	: 1 of 15
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO7.xls	Issue Date	: 18-Nov-2022 15:34
Sampler	: MB		
Site	: Wagga-PO7		
Quote number	: EN/024/		
No. of samples received	: 24		
No. of samples analysed	: 24		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW245_20221109	0906_MW249_20221109	0906_MW255_20221108	0906_MW253_20221107	0906_MW254_20221107
				Sampling date / time	09-Nov-2022 00:00	09-Nov-2022 00:00	08-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00
					EM2222399-001	EM2222399-002	EM2222399-003	EM2222399-004	EM2222399-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**0.02**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	**0.05**	**0.02**	**0.12**
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	**0.02**	<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	**0.04**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**0.03**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	**0.10**
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	0906_MW245_20221109	0906_MW249_20221109	0906_MW255_20221108	0906_MW253_20221107	0906_MW254_20221107
				Sampling date / time	09-Nov-2022 00:00	09-Nov-2022 00:00	08-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		EM2222399-001	EM2222399-002	EM2222399-003	EM2222399-004	EM2222399-005
					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	<0.01	**0.07**	**0.02**	**0.33**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.07**	**0.02**	**0.14**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**0.07**	**0.02**	**0.31**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.4**	**98.8**	**102**	**98.1**	**96.3**
13C8-PFOA	----	0.02	%		**101**	**95.2**	**99.0**	**99.6**	**101**

Analytical Results

Sub-Matrix: **GROUNDWATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW240_20221107	0906_MW246_20221107	0906_MW247_20221109	0906_MW256_20221108	0906_MW257_20221109
				Sampling date / time	07-Nov-2022 00:00	07-Nov-2022 00:00	09-Nov-2022 00:00	08-Nov-2022 00:00	09-Nov-2022 00:00
					EM2222399-006	EM2222399-007	EM2222399-008	EM2222399-009	EM2222399-010
					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		**0.17**	<0.01	<0.01	**0.04**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.04**	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.05**	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<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	0906_MW240_20221107	0906_MW246_20221107	0906_MW247_20221109	0906_MW256_20221108	0906_MW257_20221109
				Sampling date / time	07-Nov-2022 00:00	07-Nov-2022 00:00	09-Nov-2022 00:00	08-Nov-2022 00:00	09-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		EM2222399-006	EM2222399-007	EM2222399-008	EM2222399-009	EM2222399-010
					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	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**0.30**	<0.01	<0.01	**0.04**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.21**	<0.01	<0.01	**0.04**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.28**	<0.01	<0.01	**0.04**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**95.8**	**102**	**105**	**96.3**	**92.3**
13C8-PFOA	----	0.02	%		**99.4**	**101**	**98.8**	**99.5**	**100**

Analytical Results

Sub-Matrix: **GROUNDWATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW248_20221109	0906_MW244_20221109	0906_MW250_20221109	----	----
				Sampling date / time	09-Nov-2022 00:00	09-Nov-2022 00:00	09-Nov-2022 00:00	----	----
					EM2222399-011	EM2222399-012	EM2222399-024	--------	--------
					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		**0.05**	<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		**0.07**	<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		**0.03**	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.03**	<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: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW248_20221109	0906_MW244_20221109	0906_MW250_20221109	----	----
				Sampling date / time	09-Nov-2022 00:00	09-Nov-2022 00:00	09-Nov-2022 00:00	----	----
Compound	CAS Number	LOR	Unit		EM2222399-011	EM2222399-012	EM2222399-024	--------	--------
					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		**0.20**	<0.01	**0.01**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.12**	<0.01	**0.01**	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.18**	<0.01	**0.01**	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**100**	**101**	**91.1**	----	----
13C8-PFOA	----	0.02	%		**96.6**	**99.2**	**94.5**	----	----

Analytical Results

Sub-Matrix: **SURFACE WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW262_20221108	0906_SW310_20221104	0906_SW234_20221108	0906_SW240_20221104	0906_SW286_20221108
				Sampling date / time	08-Nov-2022 00:00	04-Nov-2022 00:00	08-Nov-2022 00:00	04-Nov-2022 00:00	08-Nov-2022 00:00
					EM2222399-013	EM2222399-014	EM2222399-015	EM2222399-016	EM2222399-017
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.13**	<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	**0.55**	**0.02**	**0.01**	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.03**	<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: SURFACE WATER (Matrix: WATER)				Sample ID	0906_SW262_20221108	0906_SW310_20221104	0906_SW234_20221108	0906_SW240_20221104	0906_SW286_20221108
				Sampling date / time	08-Nov-2022 00:00	04-Nov-2022 00:00	08-Nov-2022 00:00	04-Nov-2022 00:00	08-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		EM2222399-013	EM2222399-014	EM2222399-015	EM2222399-016	EM2222399-017
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
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	**0.72**	**0.02**	**0.01**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.68**	**0.02**	**0.01**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.72**	**0.02**	**0.01**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.4**	**110**	**96.4**	**102**	**103**
13C8-PFOA	----	0.02	%		**100**	**101**	**98.1**	**100**	**99.0**

Analytical Results

Sub-Matrix: **SURFACE WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW289_20221109	0906_SW228_20221109	0906_SW236_20221104	0906_SW288_20221109	0906_SW218_20221104
				Sampling date / time	09-Nov-2022 00:00	09-Nov-2022 00:00	04-Nov-2022 00:00	09-Nov-2022 00:00	04-Nov-2022 00:00
					EM2222399-018	EM2222399-019	EM2222399-020	EM2222399-021	EM2222399-022
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.17**	**0.06**	<0.02	<0.02	**0.04**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.11**	**0.08**	<0.02	<0.02	**0.04**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**1.14**	**0.76**	<0.01	<0.01	**0.34**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.08**	**0.05**	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**1.54**	**1.17**	<0.01	**0.02**	**0.63**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.08**	**0.06**	<0.02	<0.02	**0.04**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.35**	**0.27**	<0.02	<0.02	**0.10**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.04**	**0.03**	<0.02	<0.02	**0.02**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.08**	**0.06**	<0.01	<0.01	**0.04**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
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	0906_SW289_20221109	0906_SW228_20221109	0906_SW236_20221104	0906_SW288_20221109	0906_SW218_20221104
				Sampling date / time	09-Nov-2022 00:00	09-Nov-2022 00:00	04-Nov-2022 00:00	09-Nov-2022 00:00	04-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		EM2222399-018	EM2222399-019	EM2222399-020	EM2222399-021	EM2222399-022
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**3.59**	**2.54**	<0.01	**0.02**	**1.25**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**2.68**	**1.93**	<0.01	**0.02**	**0.97**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**3.40**	**2.41**	<0.01	**0.02**	**1.21**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**100**	**105**	**94.5**	**88.2**	**102**
13C8-PFOA	----	0.02	%		**102**	**100**	**97.6**	**96.7**	**94.9**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0906_SW206_20221104	----	----	----	----
				Sampling date / time	04-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222399-023	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.18**	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.12**	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**1.06**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.06**	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**2.01**	----	----	----	----
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		**0.10**	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.29**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.05**	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.09**	----	----	----	----
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	0906_SW206_20221104	----	----	----	----
				Sampling date / time	04-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222399-023	--------	--------	--------	--------
					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		**3.96**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**3.07**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**3.78**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**101**	----	----	----	----
13C8-PFOA	----	0.02	%		**95.2**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: **SURFACE WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EM2222399**	Page	: 1 of 10
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO7.xls	Issue Date	: 18-Nov-2022
Sampler	: MB		
Site	: Wagga-PO7		
Quote number	: EN/024/		
No. of samples received	: 24		
No. of samples analysed	: 24		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 4703149)									
EM2222399-004	0906_MW253_20221107	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2222399-007	0906_MW246_20221107	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4703161)									
EM2222399-020	0906_SW236_20221104	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: 4703149)									
EM2222399-004	0906_MW253_20221107	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

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: 4703149) - continued									
EM2222399-004	0906_MW253_20221107	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
EM2222399-007	0906_MW246_20221107	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: 4703161)									
EM2222399-020	0906_SW236_20221104	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: 4703149)									
EM2222399-004	0906_MW253_20221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703149) - continued									
EM2222399-004	0906_MW253_20221107	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
EM2222399-007	0906_MW246_20221107	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: 4703161)									
EM2222399-020	0906_SW236_20221104	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: 4703149)									
EM2222399-004	0906_MW253_20221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory 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: 4703149) - continued									
EM2222399-007	0906_MW246_20221107	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: 4703161)									
EM2222399-020	0906_SW236_20221104	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: 4703149)									
EM2222399-004	0906_MW253_20221107	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.03	40.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.02	0.03	40.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.02	0.03	40.0	No Limit
EM2222399-007	0906_MW246_20221107	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4703161)									
EM2222399-020	0906_SW236_20221104	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **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: 4703149)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	106	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	96.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	103	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	93.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	92.6	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703161)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.3	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	99.1	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	97.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	101	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	90.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703149)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	95.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	94.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	91.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.3	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	95.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.6	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	98.5	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	103	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703161)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	96.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	95.5	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	93.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	94.5	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.8	69.0	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: 4703161) - continued								
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	99.9	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.3	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	101	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703149)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.6	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.3	70.0	130
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	99.2	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703161)								
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	83.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	84.6	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.3	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	87.2	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	97.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703149)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	97.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	99.6	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	77.7	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703161)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	99.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	103	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	110	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	81.4	70.0	130
EP231P: PFAS Sums (QCLot: 4703149)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231P: PFAS Sums (QCLot: 4703149) - continued								
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4703161)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 4703149)							
EM2222399-004	0906_MW253_20221107	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	111	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	99.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	96.9	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	94.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	91.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	76.1	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703161)							
EM2222399-023	0906_SW206_20221104	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	99.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	98.2	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	103	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	85.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703149)							
EM2222399-004	0906_MW253_20221107	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.3	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	98.1	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	97.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.8	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: 4703149) - continued							
EM2222399-004	0906_MW253_20221107	EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	89.6	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	88.8	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	87.2	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	84.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	86.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703161)							
EM2222399-023	0906_SW206_20221104	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	83.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	93.7	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	87.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	91.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	92.0	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	83.4	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	76.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	78.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703149)							
EM2222399-004	0906_MW253_20221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	87.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.7	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	78.3	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	87.1	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	87.6	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	79.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.2	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703161)							
EM2222399-023	0906_SW206_20221104	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	82.3	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	79.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	71.3	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	75.6	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703161) - continued							
EM2222399-023	0906_SW206_20221104	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	91.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	96.7	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	82.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703149)							
EM2222399-004	0906_MW253_20221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	107	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	107	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	103	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	74.0	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703161)							
EM2222399-023	0906_SW206_20221104	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	96.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	97.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	101	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	72.0	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222399**	Page	: 1 of 6
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO7	Issue Date	: 18-Nov-2022
Sampler	: MB	No. of samples received	: 24
Order number	: ----	No. of samples analysed	: 24

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2222399--023	0906_SW206_20221104	**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	EM2222399--023	0906_SW206_20221104	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	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: **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)								
0906_SW310_20221104,	0906_SW240_20221104,	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
0906_SW236_20221104,	0906_SW218_20221104,							
0906_SW206_20221104								
HDPE (no PTFE) (EP231X)								
0906_MW253_20221107,	0906_MW254_20221107,	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
0906_MW240_20221107,	0906_MW246_20221107							
HDPE (no PTFE) (EP231X)								
0906_MW255_20221108,	0906_MW256_20221108,	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
0906_SW262_20221108,	0906_SW234_20221108,							
0906_SW286_20221108								
HDPE (no PTFE) (EP231X)								
0906_MW245_20221109,	0906_MW249_20221109,	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
0906_MW247_20221109,	0906_MW257_20221109,							
0906_MW248_20221109,	0906_MW244_20221109,							
0906_SW289_20221109,	0906_SW228_20221109,							
0906_SW288_20221109,	0906_MW250_20221109							

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) 0906_SW310_20221104, 0906_SW240_20221104, 0906_SW236_20221104, 0906_SW218_20221104, 0906_SW206_20221104	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW253_20221107, 0906_MW254_20221107, 0906_MW240_20221107, 0906_MW246_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW255_20221108, 0906_MW256_20221108, 0906_SW262_20221108, 0906_SW234_20221108, 0906_SW286_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW245_20221109, 0906_MW249_20221109, 0906_MW247_20221109, 0906_MW257_20221109, 0906_MW248_20221109, 0906_MW244_20221109, 0906_SW289_20221109, 0906_SW228_20221109, 0906_SW288_20221109, 0906_MW250_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_SW310_20221104, 0906_SW240_20221104, 0906_SW236_20221104, 0906_SW218_20221104, 0906_SW206_20221104	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW253_20221107, 0906_MW254_20221107, 0906_MW240_20221107, 0906_MW246_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW255_20221108, 0906_MW256_20221108, 0906_SW262_20221108, 0906_SW234_20221108, 0906_SW286_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW245_20221109, 0906_MW249_20221109, 0906_MW247_20221109, 0906_MW257_20221109, 0906_MW248_20221109, 0906_MW244_20221109, 0906_SW289_20221109, 0906_SW228_20221109, 0906_SW288_20221109, 0906_MW250_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_SW310_20221104, 0906_SW240_20221104, 0906_SW236_20221104, 0906_SW218_20221104, 0906_SW206_20221104	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW253_20221107, 0906_MW254_20221107, 0906_MW240_20221107, 0906_MW246_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW255_20221108, 0906_MW256_20221108, 0906_SW262_20221108, 0906_SW234_20221108, 0906_SW286_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW245_20221109, 0906_MW249_20221109, 0906_MW247_20221109, 0906_MW257_20221109, 0906_MW248_20221109, 0906_MW244_20221109, 0906_SW289_20221109, 0906_SW228_20221109, 0906_SW288_20221109, 0906_MW250_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_SW310_20221104, 0906_SW240_20221104, 0906_SW236_20221104, 0906_SW218_20221104, 0906_SW206_20221104	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW253_20221107, 0906_MW254_20221107, 0906_MW240_20221107, 0906_MW246_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW255_20221108, 0906_MW256_20221108, 0906_SW262_20221108, 0906_SW234_20221108, 0906_SW286_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW245_20221109, 0906_MW249_20221109, 0906_MW247_20221109, 0906_MW257_20221109, 0906_MW248_20221109, 0906_MW244_20221109, 0906_SW289_20221109, 0906_SW228_20221109, 0906_SW288_20221109, 0906_MW250_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-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	3	27	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	27	**7.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	27	**7.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	27	**7.41**	**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.

Cardno

Chain of Custody

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to **all** listed): [redacted]
- derp.labreports@esdat.com.au
Project Number: NSW_0906_PFASOMP Site:
Laboratory (name, phone, & contact person): ALS [redacted]

Environmental Division
Melbourne
Work Order Reference
EM2222404
Telephone [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	Water		Sample preservation: Ice/ Ice Bricks				Analysis: PFAS Standard Suite											
0906_SW104_20221105	1	x2	5/11/2022				x			x				x											
0906_MW308_20221107	2	x2	7/11/2022			x				x				x											
0906_MW302_20221107	3	x2	7/11/2022			x				x				x											
0906_MW306_20221107	4	x2	7/11/2022			x				x				x											
0906_MW214_20221107	5	x2	7/11/2022			x				x				x											
0906_MW304_20221107	6	x6	7/11/2022			x				x				x											
0906_MW243_20221107	7	x2	7/11/2022			x				x				x											
0906_MW300_20221107	8	x2 6	7/11/2022			x				x				x											
0906_MW310_20221108	9	x2	8/11/2022			x				x				x											
0906_MW311_20221108	10	x2	8/11/2022			x				x				x											
0906_QC101_20221104	11	x2	4/11/2022				x			x				x											
0906_QC102_20221105	12	x2	5/11/2022				x			x				x											
0906_QC301_20221104	13	x2	4/11/2022					x		x				x											
0906_QC501_20221104	14	x2	4/11/2022					x		x				x											
0906_QC103_20221107	15	x2	7/11/2022				x			x				x											
0906_QC104_20221107	16	x2	7/11/2022				x			x				x											
0906_QC105_20221107	17	x2	7/11/2022				x			x				x											
0906_QC302_20221105	18	x2	5/11/2022					x		x				x											
0906_QC502_20221105	19	x2	5/11/2022					x		x				x											
0906_QC303_20221107	20	x2	7/11/2022					x		x				x											
0906_QC503_20221107	21	x2	7/11/2022					x		x				x											

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: (print and signature) Maya Brennan Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22	Time 17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

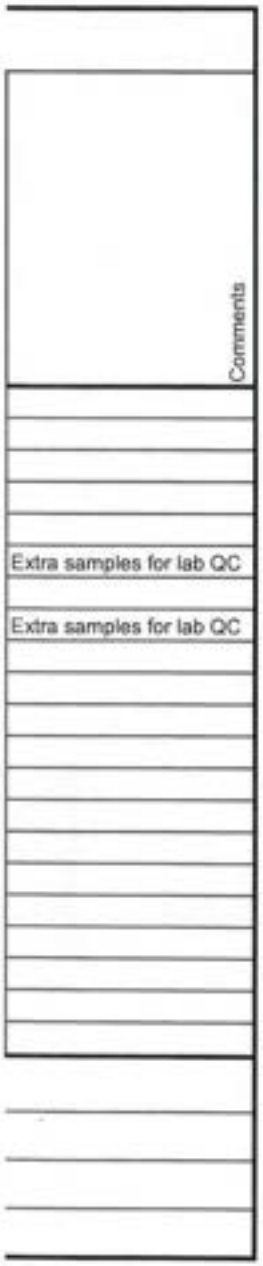
Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Revision 1
Approved 23 May 2013

COC Wagga - Base.xls

Printed 11/11/2022


Comments
Extra samples for lab QC
Extra samples for lab QC

Base.

Chain of Custody

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to **all** listed):
Project Num/ Site:
Laboratory (name, phone, & contact person): ALS

Sample ID	Laboratory ID	Container	Sampling		Sample Matrix					Sample preservation				Analysis												
			Date	Time	Sediment	Groundwater	Surface Water	Water		Ice/ Ice Bricks				PFAS Standard Suite												
0906_QC304_20221108		x2	8/11/2022	22				x						x												
0906_QC504_20221108		x2	8/11/2022	23				x						x												
0906_QC106_20221108		x2	8/11/2022	24			x							x												
0906_QC305_20221109		x2	9/11/2022	25				x						x												
0906_QC505_20221109		x2	9/11/2022	26				x						x												

Sampler: I attest that the proper field sampling procedures were used during the		**Sampler name:** (print and signature)	Maya Brennan	Date: 11/11/22	
Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/- Please circle

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2222404**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: +[redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 3
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-Base.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-Base		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°c - Ice present
Receipt Detail	:	No. of samples received / analysed	: 26 / 26

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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222404-001	05-Nov-2022 00:00	0906_SW104_20221105	✓
EM2222404-002	07-Nov-2022 00:00	0906_MW308_20221107	✓
EM2222404-003	07-Nov-2022 00:00	0906_MW302_20221107	✓
EM2222404-004	07-Nov-2022 00:00	0906_MW306_20221107	✓
EM2222404-005	07-Nov-2022 00:00	0906_MW214_20221107	✓
EM2222404-006	07-Nov-2022 00:00	0906_MW304_20221107	✓
EM2222404-007	07-Nov-2022 00:00	0906_MW243_20221107	✓
EM2222404-008	07-Nov-2022 00:00	0906_MW300_20221107	✓
EM2222404-009	08-Nov-2022 00:00	0906_MW310_20221108	✓
EM2222404-010	08-Nov-2022 00:00	0906_MW311_20221108	✓
EM2222404-011	04-Nov-2022 00:00	0906_QC101_20221104	✓
EM2222404-012	05-Nov-2022 00:00	0906_QC102_20221105	✓
EM2222404-013	04-Nov-2022 00:00	0906_QC301_20221104	✓
EM2222404-014	04-Nov-2022 00:00	0906_QC501_20221104	✓
EM2222404-015	07-Nov-2022 00:00	0906_QC103_20221107	✓
EM2222404-016	07-Nov-2022 00:00	0906_QC104_20221107	✓
EM2222404-017	07-Nov-2022 00:00	0906_QC105_20221107	✓
EM2222404-018	05-Nov-2022 00:00	0906_QC302_20221105	✓
EM2222404-019	05-Nov-2022 00:00	0906_QC502_20221105	✓
EM2222404-020	07-Nov-2022 00:00	0906_QC303_20221107	✓
EM2222404-021	07-Nov-2022 00:00	0906_QC503_20221107	✓
EM2222404-022	08-Nov-2022 00:00	0906_QC304_20221108	✓
EM2222404-023	08-Nov-2022 00:00	0906_QC504_20221108	✓
EM2222404-024	08-Nov-2022 00:00	0906_QC106_20221108	✓
EM2222404-025	09-Nov-2022 00:00	0906_QC305_20221109	✓
EM2222404-026	09-Nov-2022 00:00	0906_QC505_20221109	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)	Email
[redacted]	
- *AU Certificate of Analysis - NATA (COA)	Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email
- Chain of Custody (CoC) (COC)	Email
- EDI Format - ESDAT (ESDAT)	Email
- EDI Format - XTab (XTAB)	Email

DERP LAB REPORTS

- EDI Format - ESDAT (ESDAT)	Email
- Electronic SRN for ESdat (ESRN_ESDAT)	Email

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222404**	Page	: 1 of 15
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-Base.xls	Issue Date	: 08-Dec-2022 11:38
Sampler	: MB		
Site	: Wagga-Base		
Quote number	: EN/024/		
No. of samples received	: 26		
No. of samples analysed	: 25		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X: Samples (EM2222404) required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- 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 (21/11/22):This report was opened for amended following the request from B.W of Stantec to add samples 0906_QC501_20221015, 0906_QC502_20221015, 0906_QC503_20221015 from EM2220286 (#84-86). This request was later revoked by M.B of Stantec (23/11/22). Report rereleased unchanged.
- Amendment (8/12/22):This report has been amended following a request from M.B to transfer sample #24 (QC106) to EM2222399
- 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	0906_MW308_20221107	0906_MW302_20221107	0906_MW306_20221107	0906_MW214_20221107	0906_MW304_20221107
				Sampling date / time	07-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00
					EM2222404-002	EM2222404-003	EM2222404-004	EM2222404-005	EM2222404-006
					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**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW308_20221107	0906_MW302_20221107	0906_MW306_20221107	0906_MW214_20221107	0906_MW304_20221107
				Sampling date / time	07-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00
					EM2222404-002	EM2222404-003	EM2222404-004	EM2222404-005	EM2222404-006
					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	%		**102**	**91.3**	**88.0**	**92.2**	**108**
13C8-PFOA	----	0.02	%		**95.1**	**93.4**	**93.6**	**96.0**	**100**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0906_MW243_20221107	0906_MW300_20221107	0906_MW310_20221108	0906_MW311_20221108	----
			Sampling date / time	07-Nov-2022 00:00	07-Nov-2022 00:00	08-Nov-2022 00:00	08-Nov-2022 00:00	----
Compound	CAS Number	LOR	Unit	EM2222404-007	EM2222404-008	EM2222404-009	EM2222404-010	--------
				Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	**0.10**	<0.02	**0.05**	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	**0.04**	<0.02	**0.06**	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	**0.13**	<0.01	**0.49**	----
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	**0.06**	<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: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW243_20221107	0906_MW300_20221107	0906_MW310_20221108	0906_MW311_20221108	----
				Sampling date / time	07-Nov-2022 00:00	07-Nov-2022 00:00	08-Nov-2022 00:00	08-Nov-2022 00:00	----
Compound	CAS Number	LOR	Unit		EM2222404-007	EM2222404-008	EM2222404-009	EM2222404-010	--------
					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	**0.35**	<0.01	**0.60**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.13**	<0.01	**0.49**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.31**	<0.01	**0.54**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**87.5**	**94.1**	**97.2**	**96.0**	----
13C8-PFOA	----	0.02	%		**91.1**	**96.0**	**96.4**	**95.8**	----

Analytical Results

Sub-Matrix: **SURFACE WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW104_20221105	0906_QC101_20221104	0906_QC102_20221105	0906_QC103_20221107	0906_QC104_20221107
				Sampling date / time	05-Nov-2022 00:00	04-Nov-2022 00:00	05-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00
					EM2222404-001	EM2222404-011	EM2222404-012	EM2222404-015	EM2222404-016
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.19**	<0.02	**0.20**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.19**	<0.02	**0.18**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**1.54**	**0.12**	**1.44**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.08**	<0.02	**0.09**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**3.34**	**0.48**	**3.19**	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.2	<0.1	<0.2	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.10**	<0.02	**0.10**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.37**	**0.03**	**0.35**	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.05**	<0.02	**0.04**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.11**	**0.01**	**0.10**	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.09	<0.05	<0.09	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.09	<0.05	<0.09	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.09	<0.05	<0.09	<0.05	<0.05

Analytical Results

Sub-Matrix: **SURFACE WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW104_20221105	0906_QC101_20221104	0906_QC102_20221105	0906_QC103_20221107	0906_QC104_20221107
				Sampling date / time	05-Nov-2022 00:00	04-Nov-2022 00:00	05-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00
					EM2222404-001	EM2222404-011	EM2222404-012	EM2222404-015	EM2222404-016
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.09	<0.05	<0.09	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.09	<0.05	<0.09	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.04	<0.02	<0.04	<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		**5.97**	**0.64**	**5.74**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**4.88**	**0.60**	**4.63**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**5.70**	**0.64**	**5.47**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**102**	**90.7**	**100**	**99.8**	**98.3**
13C8-PFOA	----	0.02	%		**90.5**	**90.7**	**83.8**	**95.7**	**100**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0906_QC105_20221107	----	----	----	----
				Sampling date / time	07-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222404-017	--------	--------	--------	--------
					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	0906_QC105_20221107	----	----	----	----
				Sampling date / time	07-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222404-017	--------	--------	--------	--------
					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	%		**89.3**	----	----	----	----
13C8-PFOA	----	0.02	%		**98.1**	----	----	----	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC301_20221104	0906_QC501_20221104	0906_QC302_20221105	0906_QC502_20221105	0906_QC303_20221107
				Sampling date / time	04-Nov-2022 00:00	04-Nov-2022 00:00	05-Nov-2022 00:00	05-Nov-2022 00:00	07-Nov-2022 00:00
					EM2222404-013	EM2222404-014	EM2222404-018	EM2222404-019	EM2222404-020
					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: WATER (Matrix: WATER)				Sample ID	0906_QC301_20221104	0906_QC501_20221104	0906_QC302_20221105	0906_QC502_20221105	0906_QC303_20221107
				Sampling date / time	04-Nov-2022 00:00	04-Nov-2022 00:00	05-Nov-2022 00:00	05-Nov-2022 00:00	07-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		EM2222404-013	EM2222404-014	EM2222404-018	EM2222404-019	EM2222404-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<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	%		**100**	**93.6**	**89.8**	**99.9**	**102**
13C8-PFOA	----	0.02	%		**95.2**	**93.8**	**98.2**	**95.0**	**102**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC503_20221107	0906_QC304_20221108	0906_QC504_20221108	0906_QC305_20221109	0906_QC505_20221109
				Sampling date / time	07-Nov-2022 00:00	08-Nov-2022 00:00	08-Nov-2022 00:00	09-Nov-2022 00:00	09-Nov-2022 00:00
					EM2222404-021	EM2222404-022	EM2222404-023	EM2222404-025	EM2222404-026
					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: WATER (Matrix: WATER)				Sample ID	0906_QC503_20221107	0906_QC304_20221108	0906_QC504_20221108	0906_QC305_20221109	0906_QC505_20221109
				Sampling date / time	07-Nov-2022 00:00	08-Nov-2022 00:00	08-Nov-2022 00:00	09-Nov-2022 00:00	09-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		EM2222404-021	EM2222404-022	EM2222404-023	EM2222404-025	EM2222404-026
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<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	%		**107**	**98.7**	**98.7**	**104**	**91.7**
13C8-PFOA	----	0.02	%		**99.0**	**102**	**99.3**	**97.5**	**98.3**

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: **SURFACE WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222404**	Page	: 1 of 10
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-Base.xls	Issue Date	: 08-Dec-2022
Sampler	: MB		
Site	: Wagga-Base		
Quote number	: EN/024/		
No. of samples received	: 26		
No. of samples analysed	: 25		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 4703667)									
EM2222404-006	0906_MW304_20221107	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
EM2222404-008	0906_MW300_20221107	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.13	0.14	0.0	0% - 50%
		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	0.10	0.10	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
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4704849)									
EM2222407-026	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.10	0.10	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.13	0.14	12.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703667)									
EM2222404-006	0906_MW304_20221107	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

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: 4703667) - continued									
EM2222404-006	0906_MW304_20221107	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
EM2222404-008	0906_MW300_20221107	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	0.06	0.06	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: 4704849)									
EM2222407-026	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: 4703667)									
EM2222404-006	0906_MW304_20221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703667) - continued									
EM2222404-006	0906_MW304_20221107	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
EM2222404-008	0906_MW300_20221107	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: 4704849)									
EM2222407-026	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: 4703667)									
EM2222404-006	0906_MW304_20221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory 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: 4703667) - continued									
EM2222404-008	0906_MW300_20221107	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: 4704849)									
EM2222407-026	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: 4703667)									
EM2222404-006	0906_MW304_20221107	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EM2222404-008	0906_MW300_20221107	EP231X: Sum of PFAS	----	0.01	µg/L	0.35	0.36	2.8	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.13	0.14	7.4	0% - 50%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.31	0.32	3.2	0% - 20%
EP231P: PFAS Sums (QC Lot: 4704849)									
EM2222407-026	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.23	0.26	12.2	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.23	0.24	4.3	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.23	0.26	12.2	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: 4703667)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	93.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	98.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	102	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	101	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	96.9	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4704849)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	101	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	95.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	93.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	97.7	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	97.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.6	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703667)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	98.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	95.9	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	97.9	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	95.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	106	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4704849)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	93.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.0	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	96.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	101	69.0	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: 4704849) - continued								
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	96.3	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703667)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	99.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	117	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.5	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	93.3	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	95.3	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	85.9	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4704849)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	114	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	105	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.6	70.0	130
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	91.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703667)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	102	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	108	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	75.8	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4704849)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	97.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	103	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	103	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	81.7	70.0	130
EP231P: PFAS Sums (QCLot: 4703667)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231P: PFAS Sums (QCLot: 4703667) - continued								
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4704849)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 4703667)							
EM2222404-006	0906_MW304_20221107	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	102	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	90.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	92.0	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	91.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	85.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	84.2	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4704849)							
EM2222407-026	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	102	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	90.1	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	95.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	99.2	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	98.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	93.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703667)							
EM2222404-006	0906_MW304_20221107	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	73.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	89.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	86.6	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	87.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	91.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.5	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	93.7	71.0	129

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703667) - continued							
EM2222404-006	0906_MW304_20221107	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	85.8	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	79.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	75.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4704849)							
EM2222407-026	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	74.0	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	79.8	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	91.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.9	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	92.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	92.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.2	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	84.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	91.6	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703667)							
EM2222404-006	0906_MW304_20221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.2	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	88.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	84.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	75.2	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	81.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	84.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	66.1	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4704849)							
EM2222407-026	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	94.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	92.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	83.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	93.6	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	90.9	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4704849) - continued							
EM2222407-026	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	75.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703667)							
EM2222404-006	0906_MW304_20221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	91.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	98.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	108	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	77.8	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4704849)							
EM2222407-026	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	98.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	107	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	93.6	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	78.3	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222404**	Page	: 1 of 6
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: +[redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-Base	Issue Date	: 08-Dec-2022
Sampler	: MB	No. of samples received	: 26
Order number	: ----	No. of samples analysed	: 25

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **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	3	33	9.09	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0906_QC101_20221104, 0906_QC501_20221104	0906_QC301_20221104,	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_SW104_20221105, 0906_QC302_20221105,	0906_QC102_20221105, 0906_QC502_20221105	**05-Nov-2022**	**15-Nov-2022**	04-May-2023	✓	**15-Nov-2022**	04-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_MW308_20221107, 0906_MW306_20221107, 0906_MW304_20221107, 0906_MW300_20221107, 0906_QC104_20221107,	0906_MW302_20221107, 0906_MW214_20221107, 0906_MW243_20221107, 0906_QC103_20221107, 0906_QC105_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC303_20221107,	0906_QC503_20221107	**07-Nov-2022**	**16-Nov-2022**	06-May-2023	✓	**16-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_20221108,	0906_MW311_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_20221108,	0906_QC504_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20221109,	0906_QC505_20221109	**09-Nov-2022**	**16-Nov-2022**	08-May-2023	✓	**16-Nov-2022**	08-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_QC101_20221104,	0906_QC301_20221104,	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
0906_QC501_20221104								
HDPE (no PTFE) (EP231X)								
0906_SW104_20221105,	0906_QC102_20221105,	**05-Nov-2022**	**15-Nov-2022**	04-May-2023	✓	**15-Nov-2022**	04-May-2023	✓
0906_QC302_20221105,	0906_QC502_20221105							
HDPE (no PTFE) (EP231X)								
0906_MW308_20221107,	0906_MW302_20221107,	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
0906_MW306_20221107,	0906_MW214_20221107,							
0906_MW304_20221107,	0906_MW243_20221107,							
0906_MW300_20221107,	0906_QC103_20221107,							
0906_QC104_20221107,	0906_QC105_20221107							
HDPE (no PTFE) (EP231X)								
0906_QC303_20221107,	0906_QC503_20221107	**07-Nov-2022**	**16-Nov-2022**	06-May-2023	✓	**16-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_20221108,	0906_MW311_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_20221108,	0906_QC504_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20221109,	0906_QC505_20221109	**09-Nov-2022**	**16-Nov-2022**	08-May-2023	✓	**16-Nov-2022**	08-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0906_QC101_20221104,	0906_QC301_20221104,	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
0906_QC501_20221104								
HDPE (no PTFE) (EP231X)								
0906_SW104_20221105,	0906_QC102_20221105,	**05-Nov-2022**	**15-Nov-2022**	04-May-2023	✓	**15-Nov-2022**	04-May-2023	✓
0906_QC302_20221105,	0906_QC502_20221105							
HDPE (no PTFE) (EP231X)								
0906_MW308_20221107,	0906_MW302_20221107,	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
0906_MW306_20221107,	0906_MW214_20221107,							
0906_MW304_20221107,	0906_MW243_20221107,							
0906_MW300_20221107,	0906_QC103_20221107,							
0906_QC104_20221107,	0906_QC105_20221107							
HDPE (no PTFE) (EP231X)								
0906_QC303_20221107,	0906_QC503_20221107	**07-Nov-2022**	**16-Nov-2022**	06-May-2023	✓	**16-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_20221108,	0906_MW311_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_20221108,	0906_QC504_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20221109,	0906_QC505_20221109	**09-Nov-2022**	**16-Nov-2022**	08-May-2023	✓	**16-Nov-2022**	08-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0906_QC101_20221104,	0906_QC301_20221104,	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
0906_QC501_20221104								
HDPE (no PTFE) (EP231X)								
0906_SW104_20221105,	0906_QC102_20221105,	**05-Nov-2022**	**15-Nov-2022**	04-May-2023	✓	**15-Nov-2022**	04-May-2023	✓
0906_QC302_20221105,	0906_QC502_20221105							
HDPE (no PTFE) (EP231X)								
0906_MW308_20221107,	0906_MW302_20221107,	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
0906_MW306_20221107,	0906_MW214_20221107,							
0906_MW304_20221107,	0906_MW243_20221107,							
0906_MW300_20221107,	0906_QC103_20221107,							
0906_QC104_20221107,	0906_QC105_20221107							
HDPE (no PTFE) (EP231X)								
0906_QC303_20221107,	0906_QC503_20221107	**07-Nov-2022**	**16-Nov-2022**	06-May-2023	✓	**16-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_20221108,	0906_MW311_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_20221108,	0906_QC504_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20221109,	0906_QC505_20221109	**09-Nov-2022**	**16-Nov-2022**	08-May-2023	✓	**16-Nov-2022**	08-May-2023	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0906_QC101_20221104,	0906_QC301_20221104,	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
0906_QC501_20221104								
HDPE (no PTFE) (EP231X)								
0906_SW104_20221105,	0906_QC102_20221105,	**05-Nov-2022**	**15-Nov-2022**	04-May-2023	✓	**15-Nov-2022**	04-May-2023	✓
0906_QC302_20221105,	0906_QC502_20221105							
HDPE (no PTFE) (EP231X)								
0906_MW308_20221107,	0906_MW302_20221107,	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
0906_MW306_20221107,	0906_MW214_20221107,							
0906_MW304_20221107,	0906_MW243_20221107,							
0906_MW300_20221107,	0906_QC103_20221107,							
0906_QC104_20221107,	0906_QC105_20221107							
HDPE (no PTFE) (EP231X)								
0906_QC303_20221107,	0906_QC503_20221107	**07-Nov-2022**	**16-Nov-2022**	06-May-2023	✓	**16-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_20221108,	0906_MW311_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_20221108,	0906_QC504_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20221109,	0906_QC505_20221109	**09-Nov-2022**	**16-Nov-2022**	08-May-2023	✓	**16-Nov-2022**	08-May-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	3	33	**9.09**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	33	**6.06**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	33	**6.06**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	33	**6.06**	**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.

Cardno

Chain of Custody

Sheet 1 of 2

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed): [redacted]
- derp.labreports@esdat.com.au
Project Number: NSW_0906_PFASOMP Site:
Laboratory (name, phone, & contact person): ALS [redacted]

Environmental Division
Melbourne
Work Order Reference
EM2222404
Telephone [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Ice/ Ice Bricks	PFAS Standard Suite
0906_SW104_20221105	1	x2	5/11/2022				x		x	x
0906_MW308_20221107	2	x2	7/11/2022			x			x	x
0906_MW302_20221107	3	x2	7/11/2022			x			x	x
0906_MW306_20221107	4	x2	7/11/2022			x			x	x
0906_MW214_20221107	5	x2	7/11/2022			x			x	x
0906_MW304_20221107	6	x6	7/11/2022			x			x	x
0906_MW243_20221107	7	x2	7/11/2022			x			x	x
0906_MW300_20221107	8	x2 6	7/11/2022			x			x	x
0906_MW310_20221108	9	x2	8/11/2022			x			x	x
0906_MW311_20221108	10	x2	8/11/2022			x			x	x
0906_QC101_20221104	11	x2	4/11/2022				x		x	x
0906_QC102_20221105	12	x2	5/11/2022				x		x	x
0906_QC301_20221104	13	x2	4/11/2022					x	x	x
0906_QC501_20221104	14	x2	4/11/2022					x	x	x
0906_QC103_20221107	15	x2	7/11/2022				x		x	x
0906_QC104_20221107	16	x2	7/11/2022				x		x	x
0906_QC105_20221107	17	x2	7/11/2022				x		x	x
0906_QC302_20221105	18	x2	5/11/2022					x	x	x
0906_QC502_20221105	19	x2	5/11/2022					x	x	x
0906_QC303_20221107	20	x2	7/11/2022					x	x	x
0906_QC503_20221107	21	x2	7/11/2022					x	x	x

SCANNED

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** (print and signature) Maya Brennan Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22	Time 17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222499**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]g	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: +[redacted]
Facsimile	: ----	Facsimile	: +[redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	:	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: Wagga-PO9.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO9		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 16-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°C
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222499-001	08-Nov-2022 00:00	0906_MW312_20221108	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ACCOUNTS ADDRESS
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LAB REPORTS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222499**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	:	Date Analysis Commenced	: 15-Nov-2022
C-O-C number	: Wagga-PO9.xls	Issue Date	: 21-Nov-2022 16:04
Sampler	: MB		
Site	: Wagga-PO9		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW312_20221108	----	----	----	----
				Sampling date / time	08-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222499-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW312_20221108	----	----	----	----
				Sampling date / time	08-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222499-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.1**	----	----	----	----
13C8-PFOA	----	0.02	%		**98.3**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222499**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	:	Date Analysis Commenced	: 15-Nov-2022
C-O-C number	: Wagga-PO9.xls	Issue Date	: 21-Nov-2022
Sampler	: MB		
Site	: Wagga-PO9		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 4706376)									
EM2222447-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.06	0.05	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.21	0.22	0.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4706376)									
EM2222447-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4706376)									
EM2222447-001	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

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: 4706376) - continued									
EM2222447-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4706376)									
EM2222447-001	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: 4706376)									
EM2222447-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.30	0.30	0.0	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.27	0.27	0.0	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.30	0.30	0.0	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4706376)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	99.1	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	96.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	98.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	89.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4706376)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	95.9	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	95.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	95.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	96.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.9	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	103	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4706376)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	101	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	108	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	98.5	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	79.1	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4706376)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	97.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	104	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4706376) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	71.9	70.0	130
EP231P: PFAS Sums (QCLot: 4706376)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222499**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO9	Issue Date	: 21-Nov-2022
Sampler	: MB	No. of samples received	: 1
Order number	:	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

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / ***Container*** / Client Sample ID(s)	***Sample Date***	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW312_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW312_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW312_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW312_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW312_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-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	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	9	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

APPENDIX

D

FIELD RECORDS & CALIBRATION CERTIFICATES

Cardno

now

Stantec

Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Duplicate Samples	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)	Aquifer
MW200	Off-site	540489.09	6111231.75	8/11/2022	-	183.137	-	-	Clear	Low	No well present, sample taken from aqua pond fill point.	-	19.1	3.72	1210	786.5	6.62	92.6	Lachlan
MW204	Off-site	540107.16	6110883.61	8/11/2022	36.4	183.024	14.845	168.179	Clear	Low	Black sediment in base of sleeve, no odour	-	18.4	0.81	414.5	269.4	6.97	-69.9	Lachlan
MW208	Off-site	539924.30	6112236.46	-	-	-	-	-	-	-	Not sampled - no access	-	-	-	-	-	-	-	Lachlan
MW209	Off-site	542521.77	6114403.23	9/11/2022	-	-	16.733	-	Clear	Low	Sampled from outflow pipe, well depth in excess of 100m, water clear, no odour, no particulates	-	18.8	6.32	285.9	185.8	6.65	45.8	Lachlan
MW210	Off-site	540664.20	6114397.70	7/11/2022	-	-		-	Clear	Low	Ran for 5 mins then sampled.	-	16	6.81	193.2	125.6	6.32	172.9	Lachlan
MW211	On-site	535735.79	6113725.27	7/11/2022	-	181.707		-	Clear	Low	Pump left running for 5 minutes prior to sampling. Sampled using the tap.	-	18.3	0.91	219.7	142.8	6.13	142.9	Lachlan
MW212	On-site	535681.87	6113475.53	7/11/2022	-	181.215		-	Clear	Low	Pump left running for 5 minutes prior to sampling. Sampled using the tap.	-	20.6	1.81	379.1	246.4	7.02	-135.9	Lachlan
MW213	On-site	536651.55	6114239.35	-	-	180.533	-	-	-	-	Not sampled - bore uder water and not operational	-	-	-	-	-	-	-	Lachlan
MW214	On-site	542678.11	6111434.75	7/11/2022	-	186.043		-			Keys required from Downer on base. Sampled from tap after a few mins running. Water colour brown then grey when turned on, turned clear	-	21.3	2.27	513	333.5	5.12	32.6	Lachlan
MW215	On-site	542678.11	6111434.75	-	49.02	-	-	-	-	-	Not sampled- data logger only	-	-	-	-	-	-	-	Lachlan
MW231	On-site	540910.71	6113541.05	9/11/2022	-	-		-	Brown	High	Sample taken from bore pump. Water initially brown allowed to run for 5 minutes prior to sampling. When sampled water was clear, no odour, no particulates	-	20	5.75	448.6	291.6	6.52	30.3	Lachlan
MW233	Off-site	539802.59	6112448.66	6/11/2022	-	-		-	Clear	Low	Pump left running 5 minutes prior to sampling. Sample taken from tap attached to bore.	-	21.2	0.44	915	594.8	7.07	-182.7	Cowra
MW235	Off-site	[redacted]	[redacted]	6/11/2022	NM	-		-	Clear	Low	No odour	-	18.8	1.57	138.6	90.09	6.39	113.3	Lachlan
MW238	Off-site	540682.06	6112227.81	8/11/2022	56.17	182.88	14.317	168.563	Clear	Low	No odour	-	20.5	0.84	706	458.9	6.36	152.2	Lachlan
MW239	Off-site	540678.34	6112216.01	8/11/2022	20.95	182.8	14.7	168.1	Brown	High	No odour, sediment in base of sleeve	-	19.3	5.88	1627	1058	6.69	159.4	Cowra
MW240	Off-site	538090.54	6112266.06	6/11/2022	27.56	182.54	13.961	168.579	Cloudy	Moderate	No odour, sediment in base of sleeve	-	20.2	2.8	587	381.6	6.4	152.6	Cowra
MW241	Off-site	544118.31	6109524.74	8/11/2022	75.6	200.07	13.81	186.26			-	-	20.4	0.4	1164	756.6	11.09	-145.2	Lachlan
MW242	Off-site	544118.75	6109538.52	8/11/2022	62.48	199.89	13.88	186.01	Cloudy	Moderate	No odour	-	20.9	0.27	530	344.5	7.19	34.3	Lachlan
MW243	On-site	542979.06	6110074.36	6/11/2022	53.62	211.48	39.721	171.759	Clear	Low	No odour	0906_QC103_20221107 & 0906_QC203_20221107	19.9	1.86	1133	736.5	6.23	191.8	Lachlan
MW244	Off-site	536997.10	6113055.36	8/11/2022	60.25	180.37	6.109	174.261	Cloudy	Moderate	No odour	-	19.3	1	202.1	131.4	6.43	130.7	Lachlan
MW245	Off-site	537011.85	6113066.50	8/11/2022	20.96	180.37	5.847	174.523	Cloudy	Moderate	No odour	-	18.6	0.47	339	220.4	6.04	141.6	Cowra
MW246	Off-site	541737.871	6110580.212	6/11/2022	48.91	189.563	19.425	170.138	Clear	Low	No odour	Internal lab QC	19.7	0.51	391.1	254.2	6.4	55.2	Lachlan
MW247	Off-site	536050.951	6112506.299	9/11/2022	35.41	181.343	13.182	168.161	Cloudy	Modeate	No odour, sediment in base of sleeve	-	22.5	1.06	1058	687.7	6.98	-22.2	Cowra
MW248	Off-site	536049.397	6112509.06	9/11/2022	25.17	181.361	13.046	168.315	Cloudy	Moderate	No odour, sediment in base of sleeve	-	22.3	1.49	2151	1398	6.45	84.2	Lachlan
MW249	Off-site	536082.812	6113454.968	8/11/2022	NM	180.008	5.17	174.838	Clear	Low	No odour	-	17.4	1.42	221.8	144.2	6.26	166.8	Cowra
MW250	Off-site	536087.341	6113452.451	8/11/2022	NM	179.936	6.416	173.52	Clear	Low	No odour	-	16.7	3.44	636	413.4	6.42	166.8	Lachlan
MW251	Off-site	536569.189	6113765.545	-	-	178.394	-	-	-	-	Not sampled - unable to access location due to flood water	-	-	-	-	-	-	-	Cowra
MW252	Off-site	536569.976	6113769.891	-	-	178.607	-	-	-	-	Not sampled - unable to access location due to flood water	-	-	-	-	-	-	-	Lachlan
MW253	Off-site	537469.028	6112456.611	6/11/2022	49.17	180.991	8.691	172.3	Clear	Low	No odour, ants in well head	Internal lab QC	17.7	2.05	3269	2125	6.32	175.5	Cowra
MW254	Off-site	537469.851	6112462.06	6/11/2022	26.14	181.122	12.644	168.478	Cloudy	Low	No odour	-	18	2.86	285.6	185.6	5.94	187.4	Lachlan
MW255	Off-site	539219.759	6112296.567	7/11/2022	52.95	182.094	13.059	169.035	Cloudy	Moderate	No odour	0906_QC106_20221108 & 0906_QC206_20221108	20	0.95	709	460.9	6.22	173	Cowra
MW256	Off-site	539217.619	6112291.105	7/11/2022	22.57	182.128	14.137	167.991	Clear	Low	No odour	-	20.3	1.52	1426	926.9	6.26	165.6	Lachlan
MW257	Off-site	538761.456	6111519.667	8/11/2022	16.36	182.37	14.561	167.809	Cloudy	Low	No odour, small amount of water in sleeve	-	19.4	3.90	3339	2170	6.28	115.8	Cowra
MW300	On-site	542277.11	6110129.15	6/11/2022	60.85	200.538	30.291	170.247	Cloudy	Low	No odour	Internal lab QC	19.2	3.27	1258	817.7	6.05	195.5	Cowra
MW301	On-site	542281.27	6110125.89	-	18.8	200.705	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Lachlan
MW302	On-site	542356.16	6109473.31	7/11/2022	65.48	209.607	39.086	170.521	Clear	Low	No odour	0906_QC104_20221107 & 0906_QC204_20221107	22.9	2.56	939	610.4	6.46	140.1	Cowra
MW303	On-site	542358.37	6109470.43	-	21.46	209.568	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Lachlan
MW304	On-site	541367.48	6108802.00	6/11/2022	58.16	211.767	39.192	172.575	Brown	High	No odour, brwon sediment in sleeve	Internal lab QC	20.7	0.62	1616	1050	6.66	142.2	Lachlan
MW305	On-site	541363.15	6108795.52	-	24.93	211.774	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Cowra
MW306	On-site	542799.42	6107013.89	7/11/2022	60.835	233.058	44.891	188.167	Cloudy	Low	No odour, sediment in sleeve	-	22.8	1.66	2085	1355	6.93	127.6	Lachlan
MW307	On-site	542791.05	6107014.44	-	30.55	232.904	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Cowra
MW308	On-site	543139.39	6109381.63	7/11/2022	66.25	213.901	42.211	171.69	Brown	High	No odour, sediment in sleeve	0906_QC105_20221107 & 0906_QC205_20221107	21.9	2.85	645	419.3	6.17	153.4	Cowra

Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Duplicate Samples	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)	Aquifer
MW309	On-site	543133.57	6109377.71	-	24.805	213.826	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Lachlan
MW310	On-site	543564.83	6108980.78	8/11/2022	58.39	210.274	24.31	-	Cloudy	Moderate	No odour, sediment in sleeve	-	21.6	1.53	1081	702.7	6.82	127.6	Lachlan
MW311	On-site	543566.06	6108977.08	8/11/2022	21.78	210.651	19.23	191.421	Cloudy	Moderate	No odour, brown/orange sediment in sleeve	-	20.7	3.88	3966	2578	6.70	131.5	Cowra
MW312	Off-site	[redacted]	[redacted]	8/11/2022	60.64	182.97	13.665	169.305	Clear	Low	Orange sediment in sleeve	-	21.6	0.53	558	362.7	6.57	126.3	Lachlan
MW313	Off-site	[redacted]	[redacted]	-	11.93	182.99	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Cowra

Sample ID	Property	Easting	Northing	Monitoring Date	Sample Depth (m)	Water Body Depth (m)	Flow Rate	Water Colour	Turbidity	Other Observations	Duplicate Samples	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)
SW104	On-site	542263.80	6110131.68	5/11/2022	0.1	0.1	Medium	Clear	Low	-	0906_QC102_20221104 & 0906_QC202_20221104	16.8	5.41	738	479.7	7.9	88.3
SW206	Off-site	541675.39	6110527.28	4/11/2022	0.1	1.5	Low	Clear	Low	-	Internal lab QC	16.6	5.68	788	512.2	8.6	-62.2
SW212	Off-site	539563.37	6114381.22	Inaccessible due to flood water													
SW218	Off-site	541679.77	6110529.39	4/11/2022	0.1	1.5	Low	Cloudy	High	Brown cloudy sediment within water flowing from pipe		16.9	0.09	53.9	35.0	7.7	168.8
SW228	Off-site	543262.03	6112272.39	9/11/2022	0.1	0.2	Low	Cloudy	Medium	Sewage odour		22.9	12.90	545	354.3	9.0	32.6
SW234	Off-site	536166.15	6112334.13	8/11/2022	0.1	2	Low	Cloudy	Medium	-		23.1	4.06	161.3	104.8	7.1	145.6
SW236	Off-site	543767.40	6112318.00	4/11/2022	0.1	0.5	Low	Cloudy	Medium	High water level, brown water	Internal lab QC	15.3	5.54	194.6	126.5	7.0	112.2
SW240	Off-site	545028.00	6110672.00	4/11/2022	0.1		High	Clear	Low	Fast flowing water		18.7	2.77	169.2	110.0	6.7	-33.3
SW261	Off-site	534761.81	6114107.59	Inaccessible due to flood water													
SW262	Off-site	534970.84	6113903.83	8/11/2022	0.1	0.2	High	Cloudy	Medium	Sampled on flood plain 15m south of historic location, junction of creek and river not visible.		17	4.93	123.9	80.5	7.5	139.4
SW286	Off-site	543605.67	6114255.45	8/11/2022	0.1	0.5	High	Cloudy	Medium	No odour, minimal particulates, river flowing rapidly		20.3	2.36	229.9	149.4	6.9	133.4
SW288	Off-site	542930.77	6112004.76	9/11/2022	0.1	0.2	High	Brown	High	Strong sewage odour, particulates present in sample		21.2	0.42	947	615.6	7.9	-160.4
SW289	Off-site	543054.42	6112176.56	9/11/2022	0.1	0.2	High	Brown	High	Sewage odour		21.2	0.24	850	552.5	7.4	-50
SW294	Off-site	535307.66	6113375.69	Inaccessible due to flood water													
SW309	Off-site	535436.96	6113744.17	8/11/2022	0.1	0.5	High	Cloudy	Medium	High water level, sampled over river bank		18	4.55	129.7	84.3	6.9	149.5
SW310	Off-site	538809.34	6111596.73	4/11/2022	0.1	0.4	High	Cloudy	Medium	Reeds and grasses observed, high water level and flow. Foam observed during sampling.	0906_QC101_20221104 & 0906_QC201_20221104	19.9	4.91	124.5	80.9	6.9	-48.9

Multi Parameter Water Meter

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Instrument	YSI Quatro Pro Plus
Serial No.	11E101629

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
2. pH 7.00		pH 7.00		386467	pH 7.00
3. pH 4.00		pH 4.00		394432	pH 3.94
4. mV		238.46mV		390802/387761	237.8mV
5. EC		2.76mS		385041	2.76mS
6. Temp		20.7°C		MultiTherm	20.7°C
7. DO		0ppm		379624	0.01ppm

Calibrated by: [redacted]

Calibration date: **31/10/2022**

Next calibration due: **30/11/2022**

Scanned with CamScanner

Equipment Calibration Report

Equipment Report – TPS 90FLMV Water Quality Meter

This TPS 90FLMV Water Quality Meter (*Unit*) has been performance checked as per the manufacture's guidelines[1]. – IIE101629

The Unit has been checked for and comprises of the following items:

Present	Damaged	Item
☑	☐	Orange carry case
☑	☐	90FLMV Unit
☑	☐	Dissolved Oxygen (YSI5739) Sensor
☑	☐	pH Sensor
☑	☐	Conductivity/ TDS/ Temperature Sensor
☑	☐	Redox (ORP) Sensor
☑	☐	Battery Charger
☑	☐	Syringe with storage solution (pH 2) for pH & ORP sensors, and a moist sponge for storage of DO sensor.
☑	☐	Instruction Manual
☑	☐	Calibration solutions kit

The following tests and operational checks have been conducted on the Unit:

Test Completed	Test Passed	Item
☐	☑	WQM Unit Cleaned & Decontaminated using Decon 90
☑	☑	Operations check (screen functions)
☑	☑	Battery Voltage <7.2 V (_____V)

The Unit has been performance checked and calibrated as follows:

Parameter	Calibration Values		
Temperature	Thermometer: 15.0 °C	Instrument: 14.9 °C	☑ Calibrated
Dissolved Oxygen	☑ 100% Saturation in Air	☑ 0.00 ppm in Na_2SO_4 solution	
Conductivity	☑ 0 µS/cm	☑ 2,760 µS/cm	
pH	☑ pH 4.00	☑ pH 6.88	☑ pH 9.22

Checked / Calibrated by: [redacted]

Signed: [redacted]

Date: 7/11/2022

[1] 90-FLMV Manual; Version 6.02, TPS, 2006.

Scanned with CamScanner

Instrument Quality Report
Interface Meter

enqip

Enqip #:	18035
Company:	Stantec Australia Pty Ltd
Consultant:	[redacted]
PO #:	DEF19008
Certificate #:	26478

INSTRUMENT IDENTIFICATION

Instrument Type:	Solinst Interface Meter
Model Number:	122
Serial Number:	IM-1607

INSPECTION RECORD

Battery:	PASS	**Water Tone:**	PASS
Tape Condition:	PASS	**Hydrocarbon Tone:**	PASS

Tested By: [redacted]

Test Date: 31/10/2022

enqip
116 Thistlethwaite St, South Melbourne 3205
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Instrument Quality Report
Interface Meter

enqip

Enqip #:	18035
Company:	Stantec Australia Pty Ltd
Consultant:	[redacted]
PO #:	DEF19008
Certificate #:	26479

INSTRUMENT IDENTIFICATION

Instrument Type:	Solinst Interface Meter
Model Number:	122
Serial Number:	313058

INSPECTION RECORD

Battery:	PASS	**Water Tone:**	PASS
Tape Condition:	PASS	**Hydrocarbon Tone:**	PASS

Tested By: [redacted] **Test Date:** 31/10/2022

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Instrument Quality Report
Interface Meter

Enqip #: 18035
Company: Stantec Australia Pty Ltd
Consultant: [redacted]
PO #: DEF19008
Certificate #: 26566

INSTRUMENT IDENTIFICATION

Instrument Type: Solinst Interface Meter
Model Number: 122
Serial Number: 313054

INSPECTION RECORD

Battery:	PASS	**Water Tone:**	PASS
Tape Condition:	PASS	**Hydrocarbon Tone:**	PASS

Tested By: [redacted]

Test Date: 8/11/2022

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Instrument Quality Report
Interface Meter

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Enqip #:	18035
Company:	Stantec Australia Pty Ltd
Consultant:	[redacted]
PO #:	DEF19008
Certificate #:	26567

INSTRUMENT IDENTIFICATION

Instrument Type:	Solinst Interface Meter
Model Number:	122
Serial Number:	313052

INSPECTION RECORD

Battery:	PASS	**Water Tone:**	PASS
Tape Condition:	PASS	**Hydrocarbon Tone:**	PASS

Tested By: [redacted] **Test Date:** 8/11/2022

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Date of Bump Test	Job Number	Unit Brand/ Model	Ambient Air Oxygen Calibration	Zero % Oxygen Solution Calibration	Standard Concentrations	Ambient Temperature (°C)	Bump Test Reading	Bump Test Readings within ±5%?	Comment	Test by (Name)	(Signature)
4/11	DEF19008	11E101629	100% Saturation? (Y) N	0% Calibration? (Y) N NA	pH 4.00 (Y) / N pH 6.88 (Y) / N pH 9.22 (Y) / N EC: 2,760µS/cm (Y) / N	15.6	pH 4.00: 4.02 pH 6.88: 6.90 pH 9.22: 9.26 Temp: 15.0 EC: 2720	pH 4.00: (± pH 0.2) (Y) / N pH 6.88: (± pH 0.2) (Y) / N pH 9.22: (± pH 0.2) (Y) / N Temp: (± 2°C) (Y) / N EC: (± 150µS/cm) (Y) N	N/A	MB	[redacted]
5/11	〃	〃	100% Saturation? (Y) N	0% Calibration? (Y) N NA	pH 4.00 (Y) / N pH 6.88 (Y) / N pH 9.22 (Y) / N EC: 2,760µS/cm (Y) / N	16.8	pH 4.00: 4.19 pH 6.88: 6.99 pH 9.22: 9.27 Temp: 16.9 EC: 2750	pH 4.00: (± pH 0.2) (Y) / N pH 6.88: (± pH 0.2) (Y) / N pH 9.22: (± pH 0.2) (Y) / N Temp: (± 2°C) (Y) / N EC: (± 150µS/cm) (Y) / N	N/A	MB	[redacted]
8/11	〃	〃	100% Saturation? (Y) N	0% Calibration? (Y) N NA	pH 4.00 (Y) / N pH 6.88 (Y) / N pH 9.22 (Y) / N EC: 2,760µS/cm (Y) / N	20.1	pH 4.00: 4.17 pH 6.88: 6.91 pH 9.22: 9.26 Temp: 20.0 EC: 2719	pH 4.00: (± pH 0.2) (Y) / N pH 6.88: (± pH 0.2) (Y) / N pH 9.22: (± pH 0.2) (Y) / N Temp: (± 2°C) (Y) / N EC: (± 150µS/cm) (Y) / N	N/A	MB	[redacted]
9/11	〃	〃	100% Saturation? (Y) N	0% Calibration? (Y) N NA	pH 4.00 (Y) / N pH 6.88 (Y) / N pH 9.22 (Y) / N EC: 2,760µS/cm (Y) / N	19.8	pH 4.00: 4.18 pH 6.88: 6.98 pH 9.22: 9.29 Temp: 19.9 EC: 2726	pH 4.00: (± pH 0.2) (Y) / N pH 6.88: (± pH 0.2) (Y) / N pH 9.22: (± pH 0.2) (Y) / N Temp: (± 2°C) (Y) / N EC: (± 150µS/cm) (Y) / N	N/A	MB	[redacted]
			100% Saturation? Y N	0% Calibration? Y N NA	pH 4.00 Y / N pH 6.88 Y / N pH 9.22 Y / N EC: 2,760µS/cm Y / N		pH 4.00: pH 6.88: pH 9.22: Temp: EC:	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N			
			100% Saturation? Y N	0% Calibration? Y N NA	pH 4.00 Y / N pH 6.88 Y / N pH 9.22 Y / N EC: 2,760µS/cm Y / N		pH 4.00: pH 6.88: pH 9.22: Temp: EC:	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N			
			100% Saturation? Y N	0% Calibration? Y N NA	pH 4.00 Y / N pH 6.88 Y / N pH 9.22 Y / N EC: 2,760µS/cm Y / N		pH 4.00: pH 6.88: pH 9.22: Temp: EC:	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N			
			100% Saturation? Y N	0% Calibration? Y N NA	pH 4.00 Y / N pH 6.88 Y / N pH 9.22 Y / N EC: 2,760µS/cm Y / N		pH 4.00: pH 6.88: pH 9.22: Temp: EC:	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N			

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APPENDIX

E

DATA QUALITY REVIEW

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Data Quality Review
RAAF Base Wagga, NSW, 2650

This Appendix reviews the Quality Assurance (QA) and Quality Control (QC) documentation. Quality assurance encompasses the actions, procedures, checks and decisions undertaken to ensure sample integrity and representativeness, and the reliability and accuracy of analysis results. The QA documentation should also include an indication of the Data Quality Objectives sought in relation to each significant action, test or process involved in the Assessment.

QC activities measure the effectiveness of the QA procedures by undertaking testing, and then comparing results to previously established objectives. QC work will include the internal laboratory testing as well as results of QC samples submitted such as trip blanks and duplicates. The quality of the information and/or data is deemed satisfactory when the QC results demonstrate that agreed objectives have been met.

Cardno undertook a review of its QA/QC as part of the data validation exercise. The findings are summarised below.

QA/QC Aspects	Evidence and Evaluation
	QA Documentation
Sampling and Analysis Quality Plan and Data Quality Objectives	Cardno was engaged by Department of Defence (the client) to carry out the PFAS Ongoing Monitoring Plan (OMP) of RAAF Base Wagga, NSW, 2650 (the site). The monitoring event commenced on 4 November 2022 until 9 November 2022 and is in general accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP) of 24 October 2022 (Our Ref: 20191021_OMP002_Wagga_ SAQP_Rev7). The assessment was carried out in general compliance with the following: ▪ Australian Standard AS 4482-2005 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds. ▪ Department of Defence (2019a), Contamination Management Manual (DCMM), August 2019. ▪ Department of Defence (2019b), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring. ▪ Department of Defence, Department of Energy, 2018, Quality System Manual Schedule B15. ▪ EPA Victoria (2009), Industrial Waste Resources Guidelines, Sampling and Analysis of Waters, Wastewaters, Soils and Wastes, Publication 701. ▪ Heads of Environmental Protection Authority's Australia and New Zealand (HEPA) (2020), PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020. ▪ National Environment Protection Council (NEPC), 1999, National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM). ▪ National Health and Medical Research Council (NHMRC) (2019), Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water, August 2019. ▪ USEPA (2000), Guidance for the Data Quality Objectives Process (EPA QA/G-4).

QA/QC Aspects	Evidence and Evaluation
	A quality control program was implemented during the investigation and the quality assurance procedures used have been reiterated in the report. The investigation was carried out in accordance with the Safe Work method Statements (SWMS) and Occupational Health and Safety (OHS) plan for the site. Detailed work plans were also provided for each phase of investigation and are outlined in the SAQP. The Data Quality Objectives were expressed in terms of the purpose of the assessment and the relevant assessment criteria.
Data Validation Report	This review constitutes a data validation review. This was supported by an Esdat generated "QAQC Checker" excel report, summarised in Tables B3 and B4, Appendix B.
Data Representativeness	
Holding Times	Groundwater and surface water sample analysis holding times were in conformance with EPA Publication IWRG701 2009 *'Sampling and Analysis of Waters, Wastewaters, Soils and Wastes*.
Background Samples	No background samples were collected as part of this assessment.
Equipment Decontamination	The decontamination methodology conducted during this investigation is documented in the body of the report, and was in general conformance with the SAQP and work plans. ▪ All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection.
Lab Reports Considered for this Assessment	Please refer to Appendix C
Data Precision and Accuracy	
QC Testing – Blind Replicates (Primary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 36 ▪ Blind Replicate Samples Analysed: 4 ▪ Blind Replicate Analyte Pairs: 112 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances reported for PFAS compounds. RPD results are presented in Table B3, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 13 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 56 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances reported for PFAS compounds. RPD results are presented in Table B3, Appendix B.
QC Testing – Field Splits (Secondary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 36 ▪ Blind Replicate Samples Analysed: 4 ▪ Blind Replicate Analyte Pairs: 112 (excludes 'analytes' that are a summation of other analytes)

QA/QC Aspects	Evidence and Evaluation
	▪ Number of Analyte Pairs Exceeding Criteria: 3 ▪ Percentage of Analyte Pairs Exceeding Criteria: 2.7% The RPD exceedances observed for PFAS compounds were considered to be minor and are due to low reported concentrations of analytes close to the LOR where small discrepancies can lead to disproportionately large RPDs and where larger RPDs are acceptable (e.g. for ALS, the permitted ranges for the RPD of laboratory duplicates are dependent on the magnitude of results in comparison to the LOR and results <10 times LOR have no limit to RPDs). Since they are within the same order of magnitude, it is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 13 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 56 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 2 ▪ Percentage of Analyte Pairs Exceeding Criteria: 3.6% The RPD exceedances associated with PFAS compounds are considered to be minor and likely attributed to low concentrations of analyte pairs. It is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B.
Trip Blanks	Five (5) trip blanks were collected and laboratory tested for PFAS. All analytes were reported below the limit of reporting (LOR). Trip blank results are presented in Table B4, Appendix B.
Laboratory Internal QC	Evidence of the laboratories internal QC testing is present and complete. Both ALS (the primary laboratory) and Eurofins-mgt performed internal QC with adequate testing and satisfactory results for matrix spikes, method blanks and laboratory duplicates.
Laboratory Method Detection Limit	Laboratory reports indicate the method detection limits were lower than the respective assessment criteria.
NATA endorsement of laboratory reports	Laboratory reports were stamped with the NATA endorsement stamp and signature. Laboratory reports are included in Appendix C of this report.
Calibration of Field Equipment	All field equipment used was calibrated by the equipment supplier. Additionally, daily bump tests were performed of the water quality meter throughout the monitoring event. Certificates are included in Appendix D of this report.
Decontamination and Equipment Blanks	All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection. Five (5) rinsate blanks were collected and laboratory tested for PFAS. No PFAS compounds reported above LOR in any rinsate blank sample, indicating that decontamination was adequate. Rinsate blank samples were tested for PFAS which all reported a concentration below the laboratory LOR. Results are shown in Table B4, Appendix B.
Data Comparability	
Full Review of Data	Once all results have been received, Cardno undertook a full review of the data for any anomalies in consideration of historical data at each location (where available), such as first-time detections or exceedances being reported at locations which have not had detections or exceedances previously. Where potentially anomalous data is identified or suspected, further confirmatory measures were undertaken such as re-extraction and reanalysis of the sample by the laboratory and/or additional data quality review. The following samples were re-extracted and reanalysed: MW311, SW206, SW240, SW288. All original results were confirmed.

QA/QC Aspects	Evidence and Evaluation
Standard Procedures	Fieldwork procedures are detailed in the report and followed the work methods outlined in the SAQP.
Qualified Personnel	Staff involved in managing and reviewing the project and those involved in fieldwork are qualified personnel.
Volatile Losses	Volatile losses are not applicable to PFAS.
Sample Integrity	Field Chain of Custody forms are included in Appendix C of this report and demonstrate sample integrity.
Data Completeness	
Completeness of Test Program	The scope of work undertaken was generally consistent with that set out in the Sampling and Analysis Quality Plan (SAQP). Variations to the SAQP are detailed in the Factual Report.
Validity of Data Set	The data quality review indicates no significant systematic errors in the data collection process for surface water and groundwater and therefore, the data set used as the basis for the assessment is considered valid and complete.

APPENDIX

F

INFORMATION ABOUT ENVIRONMENTAL REPORTS

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About Site Environmental Assessment Reports

1. Introduction

This document explains the Environmental Site Assessment (ESA) process and the context that applies to the use of Environmental Reports issued by Cardno.

2. What is an ESA?

Environmental Site Assessments (ESA) are undertaken for a range of purposes, specific to the brief issued by the client in each case. The scope may include one or a combination of any of the following:

- A factual report of the condition of a portion of the site or one aspect of an entire site.
- Assessment of the contamination levels in soil to be removed from a site – a waste classification assessment.
- Validation of the success of remediation of a site or a portion of a site.
- Provision of a professional opinion about the suitability of a site for one or more uses, in terms of its contamination status.

The scope of any ESA needs to be defined at the outset.

An ESA is not an Environmental Audit. Such audits are undertaken in accordance with the provisions of regulations enacted in various states of Australia, and are referred to as Site Audits in some jurisdictions. Statutory audits provide certification by EPA accredited auditors that a site is suitable for one or more uses. An ESA may provide similar advice but cannot be used in place of an audit if the latter is required by regulation in any instance. However in some circumstances and jurisdictions an ESA is sufficient to provide "environmental sign-off" of a site.

An ESA may be undertaken for due diligence purposes, to establish whether the site has been impacted to the extent that some beneficial uses of the site may be precluded. Due diligence audits in many cases may be completed as non-statutory Audits, although in some jurisdictions they can also be statutory audits, if defined as such at the outset.

3. The ESA Process

The Client generally initiates the ESA process by specifying a brief which identifies the specific objectives of the assessment. If not, it is the consultants' duty to so specify the ESA

In the case of an ESA to provide an opinion about the suitability of the site for use, it would be conducted in accordance with NEPM (Site Assessment). Such ESA would not commence until a thorough site history assessment (Phase 1 Assessment: to identify the potential for significant contamination at a site) is conducted. However, where the history is unclear, a broad screening of chemical parameters can be used to test environmental media. This normally includes a broad range of organic and inorganic compounds and elements, often referred to as an Environmental Screen.

(In the case of an ESA for a purpose other than to provide an opinion about the suitability of the site for use, it is not always necessary to undertake a Phase 1 assessment.)

The ESA requires sampling of soil at representative locations across the site. A NATA accredited laboratory performs the analysis of soil. It is impractical for all of the soil to be assessed. The ESA is often based on a statistical method of grid or random sampling, augmented by targeted sampling at locations known or suspected to be contaminated. Guidance on sampling strategy and density is provided in Australian Standard AS4482.1–2005. However, some considerable degree of judgement is still required in the application of any sampling and testing strategy. For example the blanket application of the "hot spot" method presented in this standard is often inappropriate given its limitations.

The field program also investigates the likelihood of contamination below the site surface. Field investigations must sample and test fill as well as the natural soils. If contamination is found then it is common for further work to be undertaken to characterise, to the extent practical, its vertical and horizontal extent. However, where fill is encountered and testing shows it to be uncontaminated, it must be realised that the heterogeneous nature of the material might mean that not all pockets of contaminated material can be detected using normal sampling regimes.

EPA guidelines for auditors, that may be relevant for an ESA, indicate the need in all cases to consider the potential for groundwater contamination in any site. This does not mean all sites need to be drilled to sample groundwater, but it is most often the case. Most hydrogeological settings and groundwater conditions are complex and vary in space and time. The condition of groundwater is investigated to identify if any beneficial use or environmental value of groundwater is precluded due to contamination.

As previously stated for soil, all groundwater at the site cannot be tested. The environmental investigations are conducted in accordance with industry standards and guidelines (e.g. EPA Vic Pub 668). This provides a level of confidence that a sufficiently comprehensive assessment of the groundwater at the site is achieved.

Where an investigation shows that groundwater is polluted, consideration should be given to assessing the risks and the need for and practicality of any clean up.

4. Environmental Assessment Report

The ESA Report details the findings of the ESA. It provides summary information on the site definition, the reasons for the assessment and other relevant facts. It reviews the scope and quality of the site investigations, laboratory testing and data analyses undertaken. These reports also present a review of the contamination status of the site, the need for any further clean up, and an opinion on the suitability of the site for a range of beneficial uses and land uses such as “residential – low density”, “commercial” etc, as appropriate.

However, as noted above, some ESA have a narrow scope such as for classification of waste soil for removal from site, and do not make conclusions on suitability of site for use.

The ESA Report generally includes copies of other documents and reports, necessary to support the assessment findings, presented as appendices. These can contain more detailed information than the body of the ESA Report. Care should be taken to also read the appended documents and the ESA report in full.

Cardno generally issues reports in electronic form (e-Report) on CD ROM. ESA Reports are issued in this format as Adobe Acrobat™ PDF files. However, a paper copy of the executive summary of the ESA Report is generally issued to the client, and others as required by the brief or by regulation.

5. Limitations of Environmental Assessment Report

The ESA Report is prepared in a manner that can be easily read by a lay person with a legitimate interest in the contamination status of the site, such as the site owner or occupier, EPA and Local Planning Authority. The ESA report is not intended for use by other parties or for other purposes. Anyone who uses the assessment report for purposes other than specified in the report, does so at their own risk.

The site should only be used for one or more of the beneficial uses and land uses identified in the ESA as suitable.

The conditions and qualifications may apply to the suitability of the site for use, and it is the responsibility of the Client to be cognizant of and accept these in accepting the report. Cardno are only responsible for the issuing of the ESA report but accepts no liability for the costs incurred in the implementation of ESA findings.

The ESA provides a “snapshot” of the site conditions at the time of the site investigation. Consequently, the report may not be valid at a later time if there has been any change to the contamination status of the site in that time. Verification of the status of the site may be required in cases where a significant time has elapsed, or site conditions have changed since the assessment and audit.

The ESA is necessarily limited by constraints such as time, cost and available information; although normal professional practice at the time has been applied with all due care to prepare the report. A necessary requirement of this process is the horizontal and vertical interpolation of data from discrete locations. However, site conditions are generally not homogenous and some discrepancies will occur between the actual and predicted results at locations not directly sampled. There is a risk that contamination may occur at the site and not be identified by a competent investigation and assessment. The approach adopted in sampling (a combination of statistically based grid and judgmental sampling) seeks to reduce, but cannot eliminate, this risk.

Where unexpected occurrences of contamination arise, subsequent to the issue of the ESA Report, Cardno should be permitted to make an interpretation of these facts in relation to the ESA Report findings. Consequently, the Client should inform Cardno and seek their opinion. Cardno accepts no liability for costs incurred due to such

unexpected occurrences, given the inherent uncertainties in the assessment process.

Cardno uses information provided by other parties as the basis for the ESA, and reliance on this information is at the discretion of Cardno. However, however Cardno cannot guarantee any of the facts, findings or conclusions presented by other parties. Cardno will not be liable for the use of information, provided by others that is subsequently found to be intentionally misleading.

The ESA Report is not and does not purport to be anything other than a contaminated land ESA. It is not a geotechnical report and bore logs reproduced are for interpretation of the likely distribution of contamination. They are not intended for geotechnical interpretations and may not be adequate for this purpose.

The ESA Report is not intended to be a comprehensive analysis of the presence and associated risk of asbestos in buildings and services. Where asbestos in buildings and services is known or likely, the report may only caution that an appropriately qualified person be engaged to undertake demolition to avoid contamination of the site.

Cardno

13 August 2015

APPENDIX

I

E7 FACTUAL REPORT

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PFAS OMP Factual Report

Biannual Sampling Event November 2022

RAAF Base Wagga

DEF19008

Prepared for
Department of Defence

9 March 2023

Cardno

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Effective Date	09/03/2023
Approved By:	

[redacted]

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Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Cardno is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

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List of Abbreviations and Units

Chemical Names

DO	Dissolved Oxygen
PFAS	Per- and Poly-fluoroalkyl Substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Per-fluoro-octanoic Acid
PFOS	Per-fluoro-octane Sulfonate
TDS	Total Dissolved Solids (salinity of water)

Technical Terms

AFFF	Aqueous Film-Forming Foam
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
AS	Australian Standard
BGL	Below Ground Level
COC	Chain of Custody
DSI	Detailed Site Investigation
EC	Electrical Conductivity
EPA	Environment Protection Authority
LOR	Limit of Reporting
N/A	Not Applicable
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environmental Protection Measure
ORP	Oxidation Reduction Potential
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan
SWL	Standing Water Level

Units

ha	Hectares
mAHD	Metres above Australian Height Datum
mBGL	Metres Below Ground Level
mbTOC	Metres below Top of Casing
mg/kg	Milligram per Kilogram (approximately equivalent to ppm)
mg/L	Milligram per Litre
ppm	Parts per Million
µg/L	Micrograms per Litre

µS/cm	Micro Siemens per Centimetre (Electrical Conductivity – Water)

Site Specific

OMP	Ongoing Monitoring Plan
DCMM	Defence Contamination Management Manual
Esdat	Environmental data management software
WWCDA	Wagga Wagga City Domestic Airport

1 Introduction

1 1 Background

Cardno was engaged by the Australian Department of Defence (Defence) to carry out the Per- and Poly-Fluoroalkyl Substances (PFAS) Ongoing Monitoring Plan (OMP; Jacobs, 2019b) of groundwater and surface water at RAAF Base Wagga ("the site"). The site is located outside of Wagga Wagga in Forest Hill, New South Wales, as shown in Figure 1, Appendix A.

The OMP was carried out in accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP):

> Cardno, 24 October 2022, Reference: DEF19008, PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP) Rev7, RAAF Base Wagga Wagga.

For the purposes of this report:

> RAAF Base Wagga is defined as "the Site", which also represents the "On-Site Monitoring Area". The Site is inclusive of the RAAF base as well as an operational airfield, Wagga Wagga City Domestic Airport (WWCDA), which is operated by the Wagga Wagga City Council (Council) (Figure 1, Appendix A).

> The "Off-Site Monitoring Area" comprise areas to the east, north, west and northwest of the Site (Figure 1, Appendix A).

> The "Monitoring Area" (MA) is comprised of the "On-Site Monitoring Area" and the "Off-Site Monitoring Area" (Figure 1, Appendix A).

1 Purpose Ob ectives

The objective of the OMP is to assess the changes in the nature and extent of PFAS in groundwater and surface water within the environment, specifically where there is an identified potentially elevated risk to a receptor or a potential future risk to a receptor associated with Defence's historical use of Aqueous Film Forming Foam (AFFF).

The purpose of this PFAS OMP factual report is to provide an up-to-date status of the condition of the site as it is currently understood in relation to the most recent sampling event.

The objectives of the report are:

> To provide a succinct summary of the November 2022 sampling event and provision of analytical results with supporting tables and figures.

> To provide confirmation of the current understanding of risk.

> To provide supporting data for the assessment of management actions, where relevant.

1 Relevant Guidelines

This assessment has been undertaken in general accordance with applicable industry standards for a site investigation for the purpose, objectives and scope identified in this report. These standards are set out in:

> Australian and New Zealand Guidelines, 2018, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.*

> Australian Standard AS 4482-2005 *Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 – Non-volatile and semi-volatile compounds*.

> Department of Defence, Department of Energy, 2018, *Quality System Manual Schedule B15*.

> Heads of Environmental Protection Authority's Australia and New Zealand (HEPA), 2020, *PFAS National Environmental Management Plan (NEMP),* Version 2.0, January 2020.

> National Environment Protection Council (NEPC), 1999, *National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013)* (ASC NEPM).

> National Health and Medical Research Council (NHMRC), 2019, *Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water*.

> Standards Australia, 1998, AS/NZ 5667:1998 *Water quality – sampling*.

> U.S. Environmental Protection Agency (EPA), 2000, '*Guidance for the Data Quality Objectives Process (EPA QA/G-4)*'.

> USEPA, 2002, '*Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8)'.*

Scope of Work

Cardno carried out the following tasks in order to satisfy the purpose and objectives of this assessment.

1 Review / Revision o the SAQP

Cardno undertook a review of the SAQP prior to commencement of the field program and revised the SAQP to reflect some updates to the field methodology. The SAQP will be reviewed and further revised as required prior to the next monitoring event scheduled for April 2023.

Groundwater Monitoring

Sampling of selected groundwater bores was performed in accordance with the SAQP, applying methods set out in Section 3 of this report. The groundwater bores monitored as part of the OMP are presented in Table 2-1, and are shown in Figure 4, Appendix A.

Table 2-1 Groundwater Monitoring Locations

Monitoring Area	Location ID
On-site	MW243, MW300, MW301, MW302, MW303, MW304, MW305, MW306, MW307, MW308, MW309, MW310, MW311.
Gumly Gumly Wetland	MW200, MW204, MW233, MW312, MW313.
Down-gradient of Gumly Gumly Wetland	MW238, MW239, MW240, MW244, MW245, MW247, MW248, MW249, MW250, MW251, MW252, MW253, MW254, MW255, MW256, MW257.
Off-site to the north and north-west of site	MW214[1], MW231, MW235, MW246.
Drinking water supply bores to the north and north-west of site	MW209, MW210, MW211, MW212, MW213.
Property to the east of the site	MW241, MW242.

Notes:
1. MW214 is the current production bore supplying irrigation water to the Base.

Data loggers previously installed in 13 groundwater monitoring locations to monitor water levels over time were retrieved and the data downloaded: MW215, MW242, MW243, MW304, MW312, MW238, MW239, MW245, MW244, MW247, MW248, MW249 and MW250. Data retrieved from MW250 was observed to have only recorded 10 April readings from the previous deployment. The logger was reset and confirmed to be accurately recording for this event. The data will be assessed and reported as part of the Annual Interpretive Report (AIR) for 2022.

Sur ace Water Monitoring

Sampling of selected surface water locations was performed in accordance with the SAQP, applying methods set out in Section 3 of this report. The surface water locations monitored as part of the OMP are presented in Table 2-2, and are shown in Figure 5, Appendix A.

Table 2-2 Surface Water Monitoring Locations

Monitoring Area	Location ID
Surface Water Inflows – drains discharging from the Site	SW104, SW206.
Surface Water Outflows – drain parallel to Forest Hill Rural Fire Service	SW218.

Monitoring Area	Location ID
Marshalls Creek downstream of Gumly Gumly Wetland	SW234, SW262, SW294, SW310.
Murrumbidgee River	SW212, SW261, SW286, SW309.
Kyeamba Creek	SW236, SW240.
Forest Hill Sewage Treatment Plant	SW228, SW288, SW289.

Data Management

All the data included in the report have been collected, uploaded to the Esdat database and reviewed according to the data management requirements of the Defence Contamination Management Manual (DCMM) Annex L.

Deviations rom the OMP SAQP

Deviations from the SAQP were attributed to a lack of sampling media or access constraints resulting from the regional flooding, as summarised in Table 2-3. On-site and off-site sampling and testing was undertaken at 36 groundwater monitoring wells, and 13 surface water locations. Six groundwater monitoring wells could not be sampled as the wells were found to be dry or had insufficient water for sampling. Three groundwater monitoring wells and three surface water locations could not be sampled as they were inaccessible due to flood water. Four surface water locations were moved slightly as they were inaccessible due to flood water.

Table 2-3 Deviations from the SAQP

Location	Deviation	Comment/ usti ication	Impact on E isting Dataset
Groundwater			
MW213	Not Sampled.	Bore under water and not operational	Minimal impact – Location last sampled in the May 2022 sampling event. Historical results at this location have been <LOR.
MW251	Not Sampled.	Unable to access location due to flood water.	Minimal impact – Location last sampled in the May 2022 sampling event. Historical results at this location have been <LOR.
MW252	Not Sampled.	Unable to access location due to flood water.	Minimal impact – Location last sampled in the May 2022 sampling event. Historical results at this location have been <LOR.
MW301	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW303	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW305	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW307	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW309	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP, with the exception of April 2021 where results were reported below criteria.
MW313	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.

Sur ace Water			
SW212	Not sampled.	Water level too high, unable to access due to flood water.	Minimal impact – Location last sampled in the May 2022 sampling event. Downstream locations have been sampled in this event. Results at this location have been <LOR since 2020.
SW236	Location moved.	Due to high water level sampling location was moved 10 m east.	Minimal impact – review of results from this sampling point are consistent with historical results.
SW261	Not sampled.	Water level too high, unable to access due to flood water.	Minimal impact – Location last sampled in the May 2022 sampling event. Upstream locations have been sampled in this event. Historical results at this location have been <LOR.
SW262	Location moved.	Due to high water level sampling location was moved 15 m south.	Minimal impact – review of results from this sampling point are consistent with historical results.
SW286	Location moved.	Due to high water level sampling location was moved 15 m south.	Minimal impact – review of results from this sampling point are consistent with historical results.
SW294	Not sampled.	Water level too high, unable to access due to flood water.	Minimal impact – Location last sampled in the May 2022 sampling event. Upstream and downstream locations have been sampled in this event. Historical results at this location have been consistent throughout the OMP.
SW309	Location moved.	Due to high water level sampling location was moved 20 m west and 10 m south.	Minimal impact – review of results from this sampling point are consistent with historical results.

Impact on the understanding of the risk profile is considered to be minimal to none for following locations:

- Locations MW213, MW251 and MW252: Location last sampled in May 2022, historical results have been <LOR.
- Locations MW301, MW303, MW305, MW307, MW309 and MW313: These locations have been historically dry. The data obtained from the paired water bearing wells installed in the Lachlan formation will provide insight into the vertical migration pathways of PFAS in the groundwater. The lack of data from these wells is not considered to affect the interpretation of the results obtained or the understanding of PFAS migration in the vicinity of the monitoring area.
- Locations SW212, SW261 and SW294: Location last sampled in May 2022, upstream and/or downstream locations have been sampled in this event. Results at these locations have been consistent throughout the OMP.
- Locations SW236, SW262, SW286 and SW309: review of results from these locations are consistent with historical results.

Overall, the deviations do not represent significant data gaps and therefore the impact on the understanding of the risk profile is negligible.

Methodology

1 Groundwater Sampling Methodology

Groundwater monitoring was undertaken as detailed in Table 3-1.

Table 3-1 Groundwater Sampling Method

Activity	Details
Dates of Field Activity	4 to 9 November 2022
Well Gauging	Standing Water Levels (SWL) were gauged using an interface probe. All wells were measured against a specified mark at the top of the well casing.
Groundwater Field Parameters	Groundwater water quality parameter field measurements (field parameters) were recorded with a water quality meter before sample collection (with the sample in a clean jar). The following field parameters were recorded using a water quality meter: ▪ pH. ▪ electrical conductivity (EC). ▪ oxidation reduction potential (ORP). ▪ Dissolved oxygen (DO). ▪ Temperature. Field parameters measured by the water quality meter were recorded on field data records. All field instruments (e.g. water quality meter) were calibrated by the equipment supplier to 5ptimize the accuracy of the measurements taken. Bump tests were also completed daily by field staff during the monitoring event. Calibration certificates and bump test records are provided in Appendix D.
Deployment of HydraSleeve®	The HydraSleeves® were deployed with attached weights in order for sample collection to begin at the lowest point of the well screen. All existing HydraSleeves® were replaced during the initial gauging round on 5 November 2022. HydraSleeve® were left in wells for a minimum of 24 hours to allow restabilisation of the well following the slight disturbance caused by sampler deployment, before sampling.
Retrieval of HydraSleeves® (Sample Collection)	Samples were collected via continuous pull method at a rate allowing the water to pass through the check valve into the sample sleeve. Samples were discharged immediately (to minimise changes in chemistry) via a discharge tube. All HydraSleeves® were replaced with new HydraSleeves® after sampling in preparation for the next sampling event. Where insufficient water was available for HydraSleeve® sampling, 3 monitoring well volumes were removed by bailer, or the well was purged dry, prior to bailer sample collection.
Decontamination procedure	New HydraSleeves® were used at each groundwater monitoring well, thus removing the need for decontamination. Where HydraSleeves® could not be used, single use bailers were used instead which also did not require decontamination. All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection.
Sample identification, preservation transport and holding times	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Samples were collected directly into appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under Chain of Custody (CoC) documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998 and AS 4482.1 as appropriate).
Laboratory Testing	All groundwater samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and Chain of Custody documentation are included in Appendix C.

Activity	Details
Laboratory Testing – Quality Control	Groundwater quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples (4 samples). ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples (4 samples). ▪ Rinsate blank samples at 1 per day [collected off re-used sampling equipment (e.g. interface probe)] (5 samples total). ▪ Trip blank samples of 1 per shipment included in the chilled sample containers upon transport to the laboratory (5 samples total).

Sur ace Water Sampling Methodology

Surface water monitoring was undertaken using a grab method as detailed in Table 3-2.

Table 3-2 Surface Water Sampling Method

Item	Details
Dates of Field Activity	4 to 9 November 2022
Water Level Gauging	Water depths were measured where relevant with an interface probe, limiting water disturbance.
Field parameters	Surface water field parameters (i.e. pH, electrical conductivity (EC), oxidation reduction potential (ORP), dissolved oxygen (DO), and temperature) were recorded at the time of sampling using a pre-calibrated water quality meter. Field observations such as flow, turbidity, and the presence of odours, sheen, nuisance organisms, floating debris and frothing (where observed) were also recorded on field sampling sheets.
Sampling Method	Where possible, the samples were collected directly into sample containers. The sample bottles were positioned at least 10 cm below the surface water level and above the sediment bed and orientated with the opening facing downwards to avoid the collection of surface films. Where access to surface water samples was difficult, the samples were collected using a long-handled sampling device with a glass container (scoop) that was lowered directly into the water body. Samples were then decanted into the laboratory-supplied sample containers. Samples were collected in accordance with Australian/New Zealand Standards (AS/NZS 5667.1:1998) '*Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*'.
Decontamination	All re-usable sampling equipment were thoroughly washed using phosphate-free detergent (Liquinox), and subsequently double rinsed with clean water before the sample collection.
Sample identification, preservation, transport and holding times.	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM. Samples were contained in appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under Chain of Custody (COC) documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998 and AS 4482.1 as appropriate).
Laboratory Testing	All surface water samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and Chain of Custody documentation are included in Appendix C.

Item	Details
Laboratory Testing – Quality Control	Surface water quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples (2 samples). ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples (2 samples). ▪ Rinsate blank samples at 1 per day [collected off re-used sampling equipment (e.g. long-handled sampling device)] (5 samples total). ▪ Trip blank samples of 1 per shipment included in the chilled sample containers upon transport to the laboratory (5 samples total).

Quality Control / Quality Assurance

A critical aspect of site assessments is the demonstration of the quality of the data used as the basis for the assessment. This is achieved through a Data Validation process which includes a review of the following data quality indicators, as described in the SAQP:

- QA documentation.
- Bias.
- Data Representativeness.
- Data Precision & Accuracy.
- Data Comparability.
- Data Set Completeness.

A detailed review of these aspects has been undertaken, the results of which are presented in Appendix E. A summary of the data validation from the QA/QC review is included in Section 4.4 below.

Assessment Criteria

1 Groundwater

The adopted assessment criteria for groundwater are detailed in Table 3-3.

Table 3-3 Criteria for Groundwater

E posure Scenario	Adopted Assessment Criteria		Guidance
	PFH S / PFOS	PFOA	
	µg/L		
Human Health – Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Ecological	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2019b).

Sur ace Water

The adopted assessment criteria for surface water are detailed in Table 3-4

Table 3-4 Criteria for Surface Water

E posure Scenario	Adopted Assessment Criteria		Guidance
	PFH S / PFOS	PFOA	
	µg/L		
Human Health – Surface Water Recreational	2[2]	10	HEPA 2020

Human Health – Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Ecological	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2019b).

Field Observations and Results

1 Conditions Impacting the Sampling Event

In the seven days prior to the sampling event, the regional area was experiencing a significant flooding event. 62.6 mm of rain was recorded at the nearest weather station (072150), located approximately 1 km south of the site. October 2022 rainfall was 145.8 mm, which is considerably higher than that recorded for October 2021 (44.2mm). Significant flooding was observed within the Monitoring Area, in particular around the Murrumbidgee River and its tributaries, and can potentially impact the groundwater and surface water sampling results.

No on-site activities with the potential to impact sample collection or the results were noted.

Groundwater

1 Summary o Field Observations

4.2.1.1 Water quality parameter field measurements

Stabilised water quality parameter field measurements, water colour and turbidity observations recorded during the groundwater sampling program are presented in field sampling record sheets, included in Appendix D. Water quality parameter field measurements were generally consistent with April/May 2022. Groundwater varied from clear to brown with low to high turbidity and no notable changes were recorded relative to previous monitoring events.

4.2.1.2 Groundwater Elevation and Migration

Groundwater elevation ranges encountered for the two aquifers during this sampling event are as follows:

- Shallow aquifer – from 167.809 mAHD (MW257) to 191.421 mAHD (MW311) for the Cowra Formation
- Deep aquifer – from 167.991 mAHD (MW256) to 188.167 mAHD (MW306) for the Lachlan Formation

Groundwater was noticeably higher in the wells in the north-west near the flooded Murrumbidgee River. Groundwater flow for both aquifers is interpreted to be both north-westerly from the wells in the south east and south easterly from the potentially flood affected wells near the Murrumbidgee River. Groundwater elevation contours and flow directions are shown in Figures 2a and 3a Appendix A. When the potentially flood impacted wells are removed, groundwater flow for both aquifers is interpreted to be north-westerly which is consistent with the flow of Kyeamba Creek and Marshalls Creek and with the previous monitoring events.

Groundwater elevation contours and flow directions without potentially flood impacted wells are shown in Figures 2b and 3b Appendix A. Gauging records are presented in Appendix D.

Groundwater Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, and are presented in Table B1, Appendix B, and summarised in Table 4-1 below. Of the 36 primary samples that were tested, PFOA was reported above the limit of reporting in 2 samples, and Sum of PFHxS and PFOS in 12 samples.

Table 4-1 Summary of Groundwater Results Exceeding Adopted Criteria

Analytes	Locations E ceeding Criteria	Adopted Criteria µg/L)	Ma Conc (µg/L)	No Analytical Results LOR	No Results Above Criteria	Signi icant Concentration Changes
PFOS	MW200, MW233	0.13[2]	0.28	7	2	-
PFOA	None	0.56[1]	0.1	2	0	-
Sum of PFHxS and PFOS	MW200, MW233, MW240, MW248, MW254, MW300, MW311	0.07[1]	0.92	12	7	MW311 (increase)

1. Drinking water assessment criteria
2. Ecological assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease
4. The most sensitive adopted guideline value for each analyte is displayed

Laboratory results have also been compared to available historical data. One location reported a significant change in concentration for this monitoring event.

> MW311: Sum of PFHxS and PFOS has increased by one order of magnitude from a previous result of 0.04 µg/L in March 2020 (last sampled) to 0.49 µg/L in this event.

All other concentrations reported during this event were generally consistent with previous sampling events (i.e. no significant concentration changes).

Table 4-2 below provides a summary of locations where a first-time detection of PFOS, Sum of PFHxS and PFOS or PFOA, or a new exceedance of guideline values, were reported. The laboratory reports are provided in Appendix C.

Table 4-2 Summary of Groundwater Results with First-time Detections or New Exceedances

Deviation Type	Monitoring Well	Sum o PFH S PFOS concentration µg/L		PFOA concentration µg/L		PFOS concentration µg/L	
		November 0	Previous Ma imum	November 0	Previous Ma imum	November 0	Previous Ma imum
First-time detection	MW243	0.01[1]	<0.01	<0.01	<0.01	0.01[1]	<0.01
New exceedance	MW311	**0**	0.04	<0.01	<0.01	<0.01	0.01

Note
Location with first-time detection of PFOS + PFHxS, PFOA or PFOS in latest monitoring round
Location with a new exceedance of the most sensitive adopted guideline value in latest monitoring round
Bold: Exceedance of adopted guideline values
1. Result recorded on quality control (duplicate or split) sample

Findings are summarised as follows:

> One groundwater sampling location (MW243) reported a first-time detection for PFOS and for Sum of PFHxS + PFOS

> One groundwater sampling location (MW311) reported a new exceedance for Sum of PFHxS + PFOS.

Summary o Monitoring Network Condition and Repairs

The monitoring network was observed to be generally in good condition.

The concrete base surrounding the MW244 was observed to have been cracked during the recent floods. The integrity of the well beneath the concrete did not appear to be impacted.

No other changes to the monitoring network condition were noted.

Sur ace Water

1 Summary o Field Observations

4.3.1.1 Water quality parameter field measurements

Stabilised water quality parameter field measurements, water colour and turbidity observations recorded during the surface water sampling program are presented in field sampling record sheets, included in Appendix D. Field measurements were generally consistent with historical observations. Surface water varied from clear to brown with generally low to medium turbidity. In general, water was clearer and slightly low turbid than the previous monitoring round in April/May 2022.

Sur ace Water Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, presented in Table B2, Appendix B, and summarised in Table 4-3 below. Of the 13 primary samples that were tested, PFOS was reported above the limit of reporting in 9 samples, and Sum of PFHxS and PFOS in 9 samples.

Table 4-3 Summary of Surface Water Results Exceeding Adopted Criteria

Analytes	Locations E ceeding Criteria	Adopted Criteria (µg/L)	Ma Conc (µg/L)	No Analytical Results LOR	No Results Above Criteria	Signi icant Concentration Changes
PFOS	SW104, SW206, SW218, SW228, SW289, SW310	0.13[2]	3.34	9	6	SW206 (increase)
PFOA	-	0.56[1]	0.11	6	-	-
Sum of PFHxS and PFOS	SW104, SW206, SW218, SW228, SW289, SW310	0.07[1]	4.88	9	6	SW206 (increase)

1. Drinking water assessment criteria
2. Ecological assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease
4. The most sensitive assessment criteria for each analyte has been adopted

Results have also been compared to available historical data. One location has reported a significant change in concentrations for this monitoring event.

- SW206: Sum of PFHxS and PFOS has increased by one order of magnitude from a previous result of 0.23 µg/L in May 2022 to 3.07 µg/L in this event.
- SW206: PFOS has increased by one order of magnitude from a previous result of 0.15 µg/L in May 2022 to 2.01 µg/L in this event.

All other concentrations reported during this event were generally consistent with previous sampling events.

Table 4-2 and Table 4-4 below provides a summary of locations where a first-time detection of PFOS, Sum of PFHxS and PFOS or PFOA, or a new exceedance of guideline values, were reported. The laboratory reports are provided in Appendix C.

Table 4-4 Summary of Surface Water Results with First-time Detections or New Exceedances

Deviation Type	Sur ace Water Location	Sum o PFH S PFOS concentration µg/L		PFOA concentration µg/L		PFOS concentration µg/L	
		November 0	Previous Ma imum	November 0	Previous Ma imum	November 0	Previous Ma imum
First-time detection	SW240	0.01	<0.01	<0.01	<0.01	0.01	<0.01
First-time detection	SW288	0.02	<0.01	<0.01	<0.01	0.02	<0.01

Note
Location with first-time detection of PFOS + PFHxS, PFOA or PFOS in latest monitoring round
Location with a new exceedance of the most sensitive adopted guideline values in latest monitoring round
Bold: Exceedance of adopted guideline values
2. Result recorded on quality control (duplicate or split) sample

Findings are summarised as follows:

> Two surface water sampling locations (SW240 and SW288) reported a first-time detection for Sum of PFHxS + PFOS.

Data alidation

The data validation process has concluded that there are no significant systematic errors in the data collection process. Therefore, the data set used as the basis for the surface water and groundwater assessment is considered valid and complete. A detailed Data Quality Review is included in Appendix E.

Risk Pro ile

The risk profile for the site is detailed in the latest Annual Interpretive Report provided by Cardno (Reference: DEF19008, *'PFAS OMP Annual Interpretive Report -, April and October 2021, Sampling Events RAAF Base Wagga'*. Please refer to this for a detailed discussion.

Summary and Conclusions

Cardno conducted the November 2022 biannual groundwater and surface water monitoring event at RAAF Base Wagga as part of the PFAS OMP. On-site and off-site sampling and testing was undertaken at 36 groundwater monitoring wells and 13 surface water locations.

Groundwater levels were gauged in all accessible wells before sampling. Groundwater was interpreted to flow in a north-westerly direction when potentially flood impacted wells were not considered, this is consistent with local drainage patterns and consistent with previous monitoring events.

The results of the November 2022 monitoring event do not indicate any changes in the risk profile associated with Defence's historical use of AFFF since the previous monitoring event in April/May 2022.

Table 5-1 Summary of Results

Activity	Details
Deviations from OMP SAQP	> Six groundwater wells were not sampled due to the wells being dry (MW301, MW303, MW305, MW307, MW309 and MW313). > Three groundwater wells were not sampled as they were inaccessible due to flooding (MW213, MW251 and MW252).
Groundwater Analytical Results	> 36 groundwater samples were collected in total. > Seven samples reported Sum of PFOS and PFHxS concentrations above the adopted human health criteria (MW200, MW233, MW240, MW248, MW254, MW300 and MW311). > Two samples reported PFOS concentration above the adopted ecological criteria (MW200, MW233). > One groundwater sampling location reported a first-time detection for Sum of PFHxS and PFOS (MW243). The first-time detection was reported equal to the LOR of 0.01 µg/L in the field split sample. Both the primary and blind replicate samples reported concentrations below the LOR of 0.01 µg/L. > One groundwater sampling location reported a new exceedance for Sum of PFHxS and PFOS (MW311). > One sample reported an order of magnitude increase in Sum of PFHxS and PFOS results compared to the previous time it was sampled in March 2020 (MW311). > All other groundwater results reported during this event were generally consistent with previous sampling events.

Activity	Details
Surface Water Analytical Results	> 13 surface water samples were collected in total. > Six samples reported Sum of PFOS and PFHxS concentrations above the adopted human health criteria (SW104, SW206, SW218, SW228, SW289 and SW310). > Six samples reported PFOS concentrations above the adopted human health criteria (SW104, SW206, SW218, SW228, SW289 and SW310). > Two surface water sampling locations reported first-time detections for Sum of PFHxS and PFOS (SW240 and SW288). The first-time detection at SW240 was equal to the LOR of 0.01 µg/L. > One sample reported an order of magnitude increase in Sum of PFHxS and PFOS results compared to the previous event (SW206). > One sample reported an order of magnitude increase in PFOS results compared to the previous event (SW206). > All other surface water results reported during this event were generally consistent with the previous monitoring event.
Next Scheduled Monitoring Event	> The next OMP monitoring event is scheduled for April 2023. > SAQP to be reviewed and updated as required prior to the next monitoring event. > Field parameters at MW244 will be monitored closely during the next monitoring event to assess if fresh water ingress may be occurring at the damaged well.

References

General Re erences

1. ANZECC and ARMCANZ (2000) Australian Water Quality Guidelines for Fresh and Marine Water Quality.
2. Department of Defence (2019a), Contamination Management Manual (DCMM), August 2019.
3. Department of Defence (2019b), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring.
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Site Speci ic Re erences

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APPENDIX

A

FIGURES

Cardno

now

Stantec

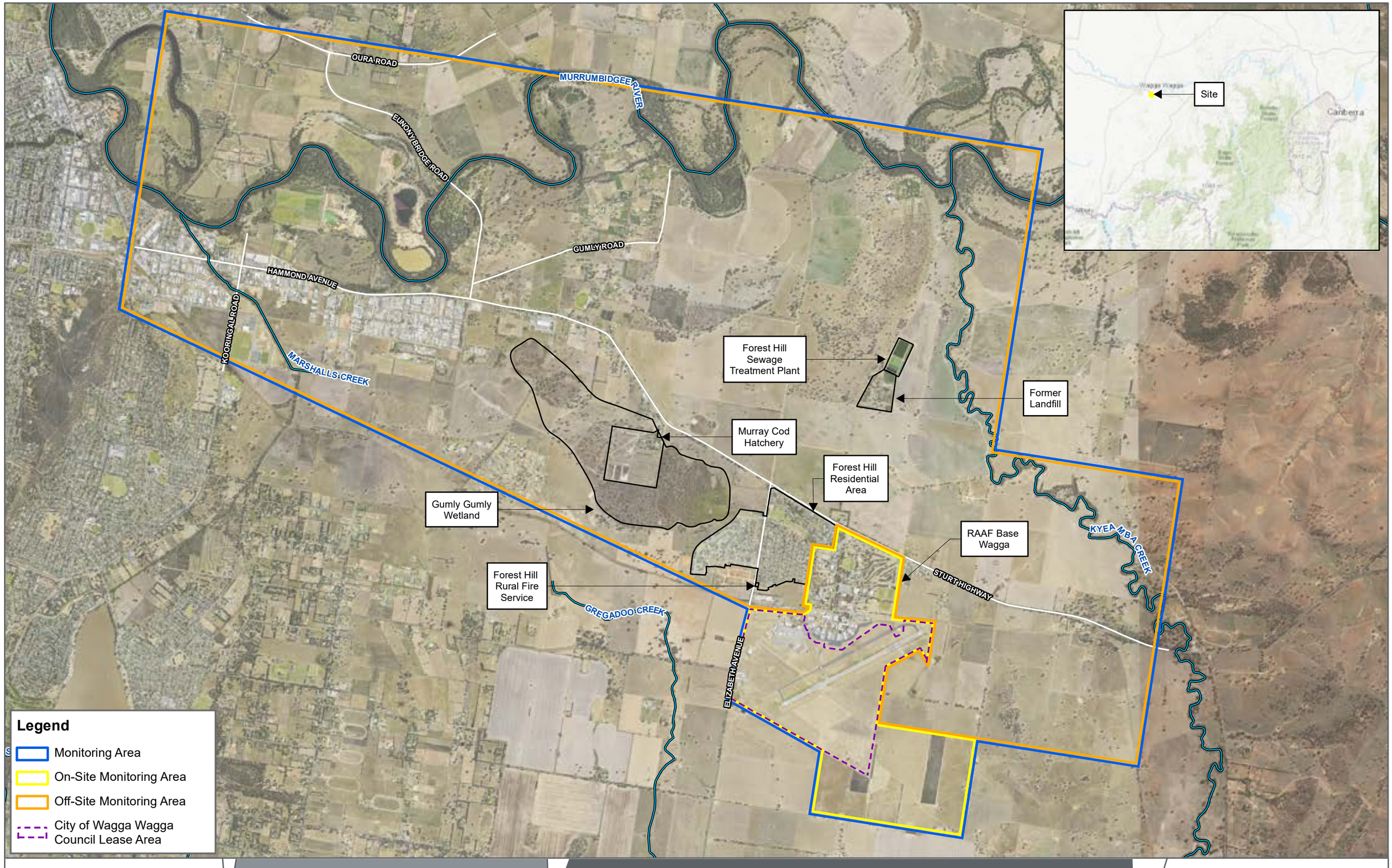


FIGURE 1

1:40,000 Scale at A3

Metres

0 1,000 2,000

Site Locality Plan

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2022-06-07 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-032-SiteLocalityPlan_WW_.mxd 07
Aerial Imagery Supplied by Metromap (February, 2022)

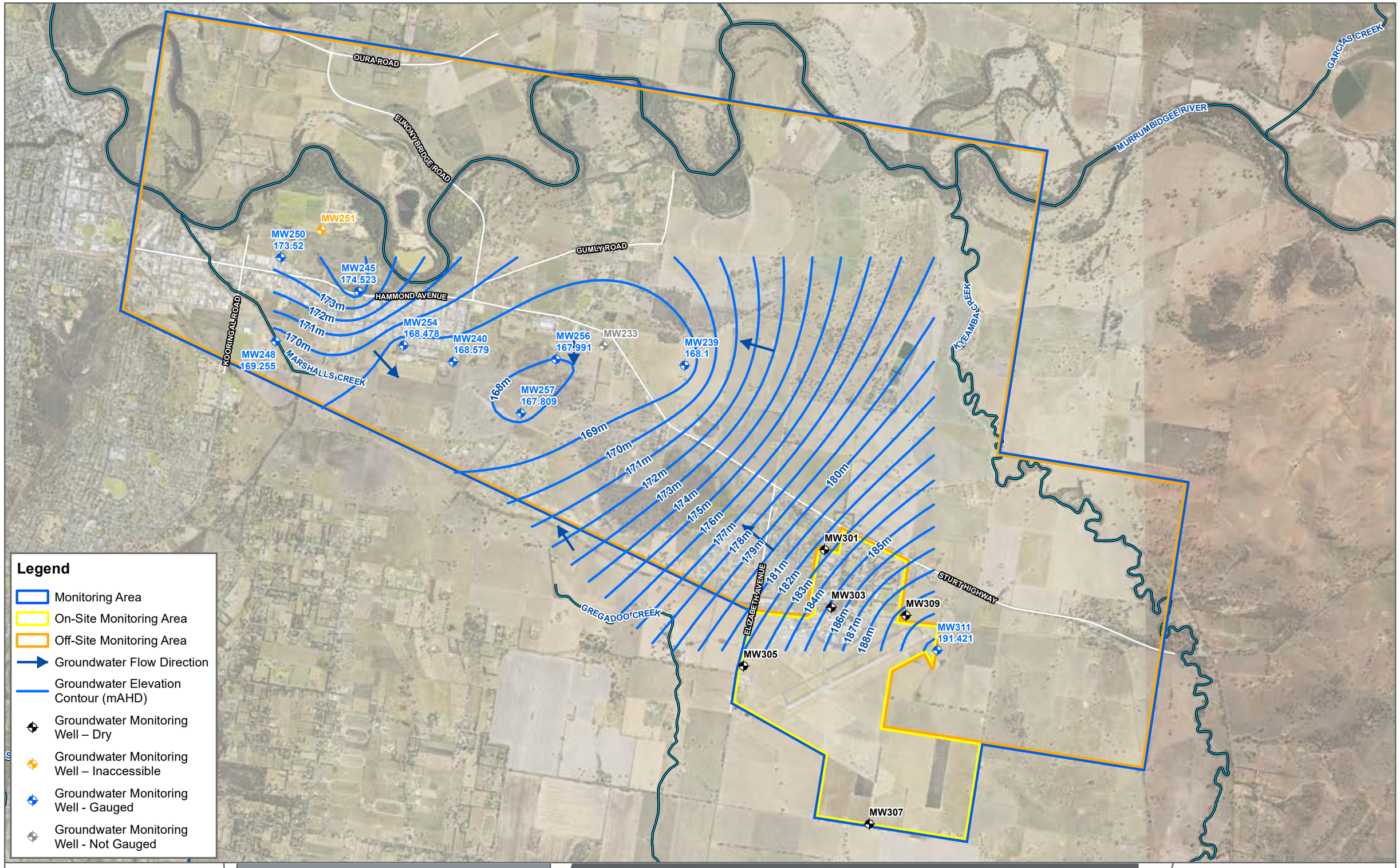


FIGURE 2A

1:40,000 Scale at A3

Metres

0 1,000 2,000

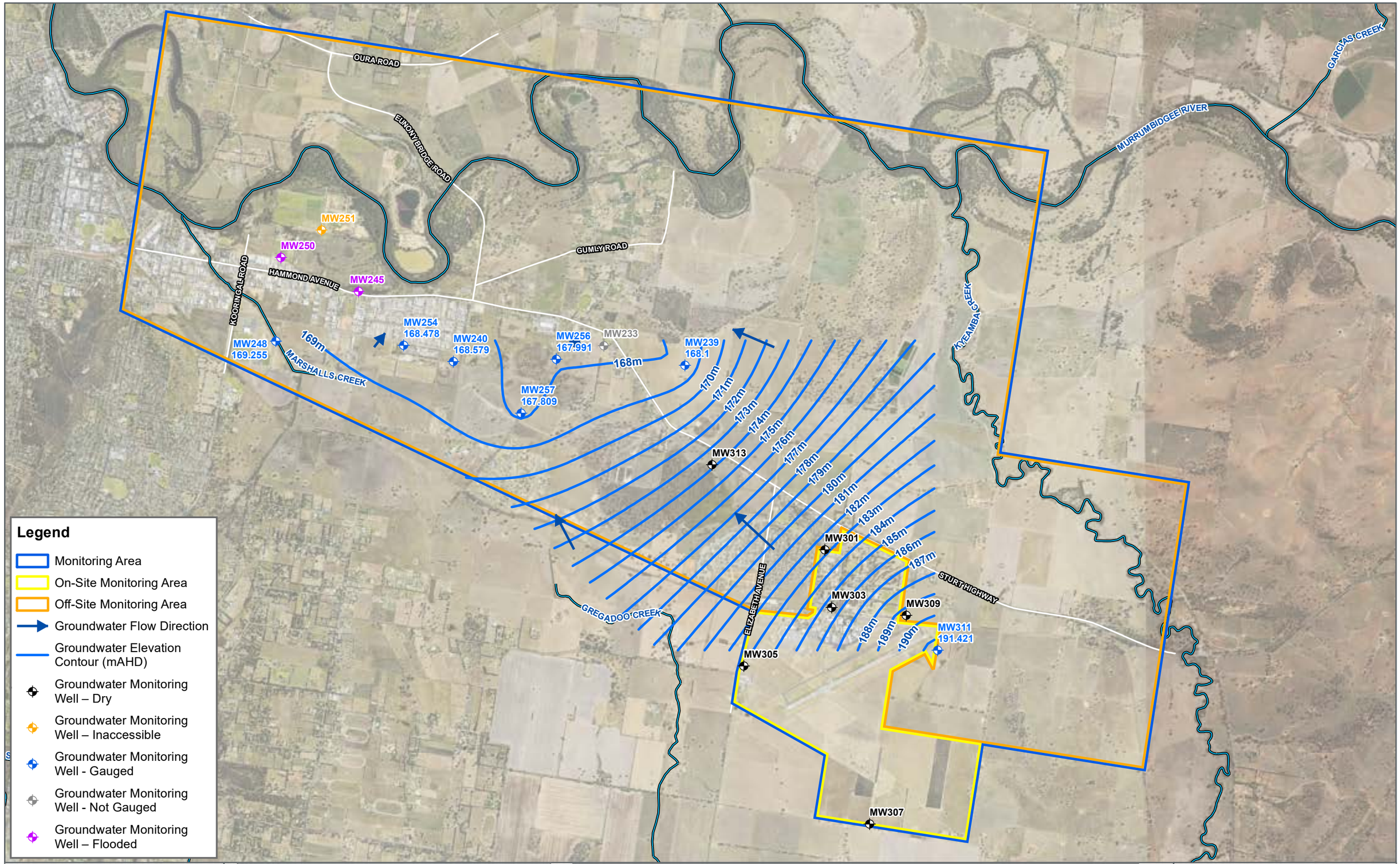
Groundwater Elevation Contours - Cowra Aquifer (November, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-1 n1-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0263-GWContoursSA_CowraE6_WW.mxd 01
Aerial Imagery Supplied by Nearmap (April, 2021)



Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Groundwater Flow Direction
- Groundwater Elevation Contour (mAHD)
- Groundwater Monitoring Well – Dry
- Groundwater Monitoring Well – Inaccessible
- Groundwater Monitoring Well - Gauged
- Groundwater Monitoring Well - Not Gauged
- Groundwater Monitoring Well – Flooded

FIGURE 2B

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours Without Flood Impacted Wells - Cowra Aquifer (November, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-1 n1-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0264-GWContoursSA_CowraE6_WW.mxd 01
Aerial Imagery Supplied by Nearmap (April, 2021)

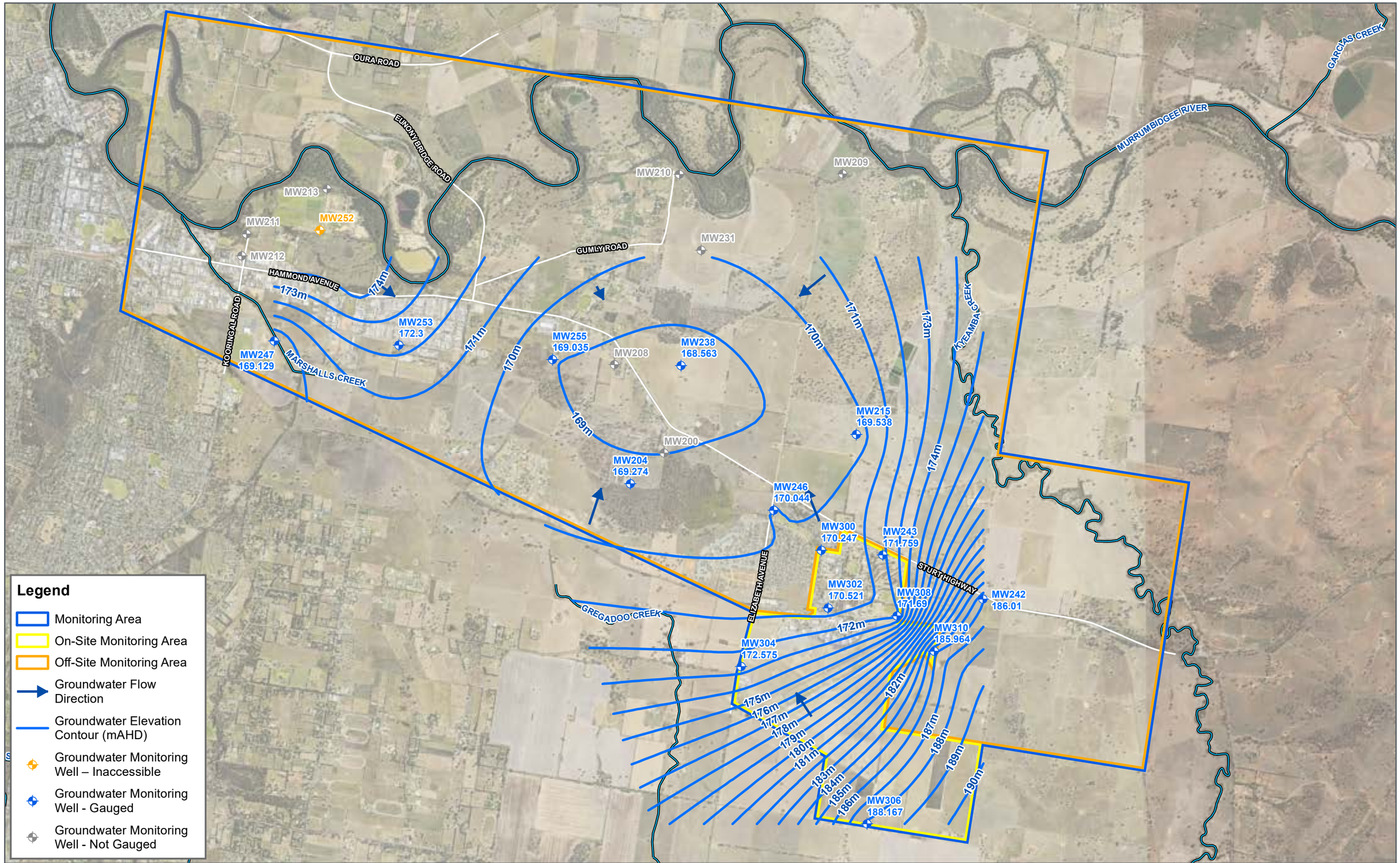


FIGURE 3A

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Lachlan Aquifer (November, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2023-01-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0265-GWContoursDA_LachlanE6_WW.mxd 02
Aerial Imagery Supplied by Metromap (Aprill, 2021)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GARCIAS CREEK
MURRUMBIDGEE RIVER
KYEAMBA CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY

MW213
MW211
MW252
MW249
MW212
MW244
MW253
172.3
MW247
169.129
MW255
169.035
MW208
MW238
168.563
MW210
MW209
MW231
MW215
169.538
MW200
MW204
169.274
MW246
170.044
MW300
170.247
MW243
171.759
MW302
170.521
MW308
171.69
MW242
186.01
MW310
185.964
MW304
172.575
MW306
188.167

170m
171m
172m
173m
174m
175m
176m
177m
178m
179m
180m
181m
182m
183m
184m
185m
186m
187m
188m
189m
190m

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Groundwater Flow Direction
- Groundwater Elevation Contour (mAHD)
- Groundwater Monitoring Well – Inaccessible
- Groundwater Monitoring Well - Gauged
- Groundwater Monitoring Well - Not Gauged
- Groundwater Monitoring Well – Flooded

FIGURE 3B

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours Without Flood Impacted Wells - Lachlan Aquifer (November, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2023-01-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0266-GWContoursDA_LachlanE6_WW.mxd 02
Aerial Imagery Supplied by Metromap (Aprill, 2021)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GARCIAS CREEK
MURRUMBIDGEE RIVER
KYEAMBA CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STUART HIGHWAY

MW213
MW211
MW251
MW212
MW250
MW249
MW244
MW245
MW248
MW247
MW253
MW254
MW240
MW255
MW256
MW233
MW208
MW238
MW239
MW257
MW210
MW209
MW231
MW215
MW214
MW200
MW204
MW246
MW301
MW243
MW300
MW302
MW303
MW308
MW242
MW241
MW309
MW310
MW311
MW304
MW305
MW306
MW307

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- First Time Detection
- First Time Exceedance of Assessment Criteria
- Dry / Insufficient water
- Sampled, 'No New Detection Or Exceedance'
- Unable to be sampled

FIGURE 4

1:40,000 Scale at A3

Metres

0 1,000 2,000

PFAS Results Summary - Groundwater (November, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-01-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0267-GW_PFAS_SummaryE6_WW.mxd 01
Aerial Imagery Supplied by Metromap (November, 2020)

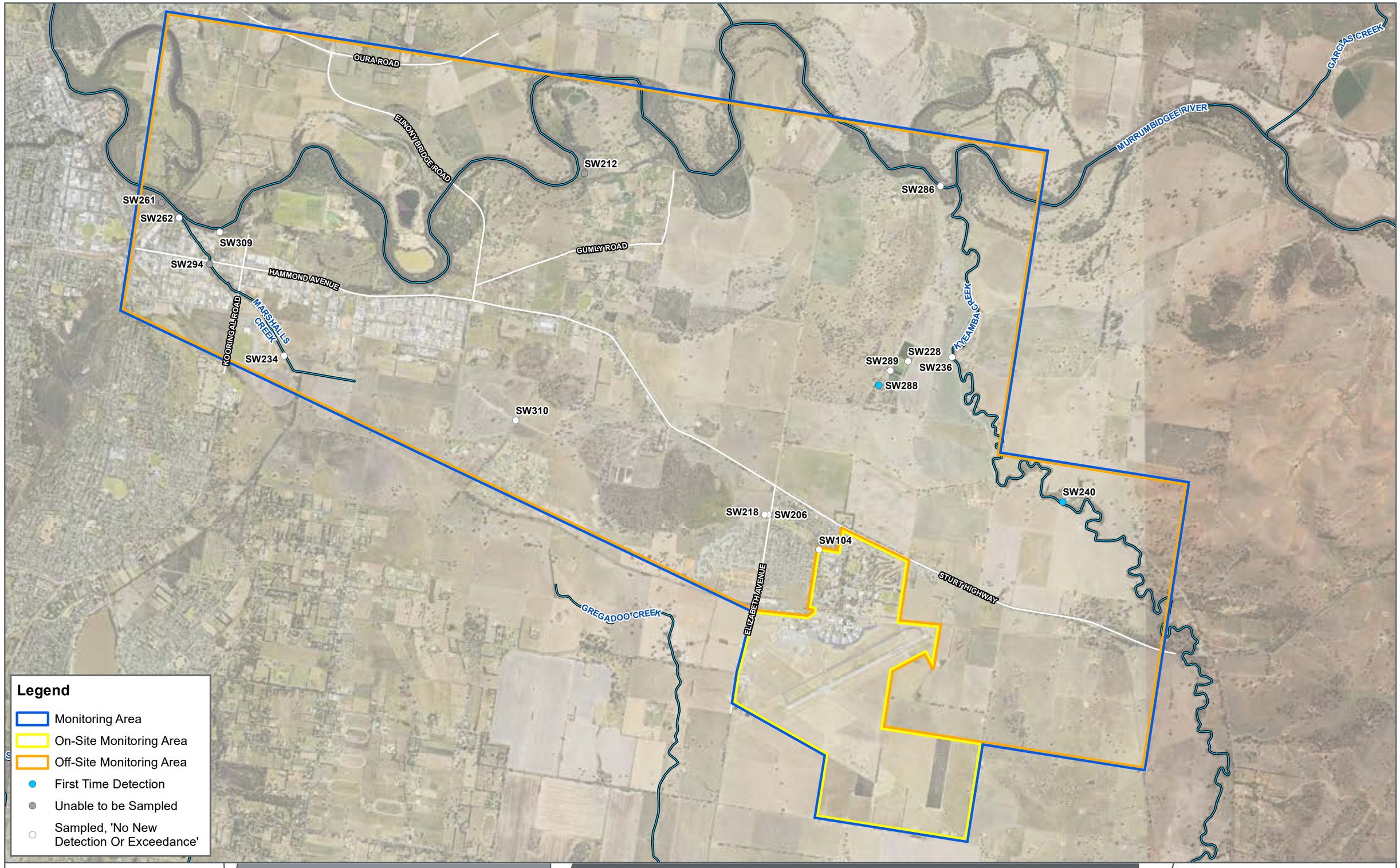


FIGURE 5

1:40,000 Scale at A3

Metres

0 800 1,600

PFAS Results Summary - Surface Water (November, 2022)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-01-24 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0268-SW_PFAS_SummaryE6_WW.mxd 01
Aerial Imagery Supplied by Nearmap (April, 2021)

APPENDIX

B

DATA ASSESSMENT TABLES

Cardno

now

Stantec

								Perfluorocarbons																												
								Perfluorooctane sulfonic acid PFOS	Perfluorooctanoate PFOA	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid PFBS	Perfluoropentane sulfonic acid PFPeS	Perfluorohexane sulfonic acid PFHxS	Perfluoroheptane sulfonic acid PFHpS	Perfluorodecanesulfonic 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	Perfluorooctane sulfonamide FOSA	N-Methyl perfluorooctane sulfonamide MeFOSA	N-methylperfluoro-1-octane sulfonamido-ethanol N-MeFOSE	N-Ethyl perfluorooctane sulfonamide EtFOSA	N-Ethyl perfluorooctane sulfonamidoethanol EtFOSE	N-Methyl perfluorooctane sulfonamidoacetic acid MeFOSAA	N-Ethyl perfluorooctane sulfonamidoacetic acid EtFOSAA	Fluorotelomer sulfonic acid FTS	Fluorotelomer Sulfonate FtS	Fluorotelomer sulfonate FtS	Fluorotelomer sulfonic acid 10 FTS	Sum of PFAS	Sum of enHealth PFAS PFHxS PFOS PFOA
								µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR								0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water									**0**	**0 0**																												
PFAS NEMP 2.0 Table 1 Health Recreational Water									*10*	*2*																												
PFAS NEMP 2.0 Table 5 Freshwater 95%								0.13	220																													
Location Code	**Location Type**	**Sampled Date Time**	**Field ID**	**Sample Type**	**Lab Report Number**																																	
MW200	Off-base	7/07/2017	0906_GW200_D_07072017	Normal	ES1716876	1.36	0.08	***3.36***	0.34	0.29	2	0.08	<0.02	<0.1	0.1	0.32	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.62	-
	Off-base	25/03/2020	0906_MW200_20200325	Normal	ES2011455	0.75	0.05	**1**	0.18	0.19	1.15	0.04	<0.02	<0.1	0.05	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.7	-
	Off-base	30/09/2020	0906_MW200_20200930	Normal	ES2034893	0.6	0.04	**1**	0.14	0.18	0.96	0.05	<0.02	<0.1	0.04	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.3	-
	Off-base	23/04/2021	0906_MW200_20210423	Normal	ES2116296	0.39	0.04	**1**	0.14	0.15	1	<0.02	<0.02	<0.1	0.05	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.04	-
	Off-base	21/10/2021	0906_MW200_20211021	Normal	ES2139300	0.31	0.02	**0**	0.1	0.1	0.55	0.03	<0.02	<0.1	0.03	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.29	-
	Off-base	3/05/2022	0906_MW200_20220503	Normal	EM2208337	0.28	0.03	**0**	0.09	0.1	0.64	0.02	<0.02	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.33	-
	Off-base	8/11/2022	0906_MW200_20221108	Normal	EM2222380	0.28	0.02	**0**	0.1	0.1	0.64	0.02	<0.02	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.33	-
MW204	Off-base	7/07/2017	0906_GW204_D_07072017	Normal	ES1716876	0.03	<0.01	0.07	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
	Off-base		0906_QC101_07072017	Field_D	ES1716876	0.04	<0.01	**0 0**	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
	Off-base		0906_QC201_07072017	Interlab_D	553701	0.02	<0.01	-	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-
	Off-base	18/01/2018	0906_MW204_D_180118	Normal	ES1802488	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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
	Off-base		0906_QC101_180118	Field_D	ES1802488	0.02	<0.01	0.04	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base		0906_QC201_180118	Interlab_D	581448	0.01	<0.01	0.04	<0.01	<0.01	0.03	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	Off-base	20/02/2018	0906_MW204_D_180220	Normal	ES1805693	0.03	<0.01	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	30/03/2020	0906_MW204_20200330	Normal	ES2011455	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW204_20201001	Normal	ES2034893	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW204_20210423	Normal	ES2116296	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW204_20211021	Normal	ES2139300	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW204_20220503	Normal	EM2208337	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW204_20221109	Normal	EM2222380	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW209	Off-base	7/09/2017	0906_GW209_D_170907	Normal	EM1712263	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC101_170907	Field_D	EM1712263	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC201_170907	Interlab_D	562566	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	Off-base	12/01/2018	0906_MW209_D_180112	Normal	ES1801990	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	31/03/2020	0906_MW209_20200331	Normal	ES2011456	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_MW209_20200930	Normal	ES2034898	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW209_20210422	Normal	ES2116325	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW209_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW209_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW209_20221109	Normal	EM2222392	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW210	Off-base	20/06/2017	0906_0S002_170620	Normal	ES1715329	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC101_170620	Field_D	ES1715329	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC201_170620	Interlab_D	551365	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-
	Off-base	18/01/2018	0906_MW210_D_180112	Normal	ES1802470	0.03	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	21/02/2018	0906_MW210_D_180221	Normal	ES1805664	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	17/07/2018	0906_MW210_D_180717	Normal	EM1811457	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC101_180717	Field_D	EM1811457	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC201_180717	Interlab_D	608455	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	26/03/2020	0906_MW210_20200326	Normal	ES2011461	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW210_20201001	Normal	ES2034897	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW210_20210423	Normal	ES2116321	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW210_20211021	Normal	ES2139302	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW210_20220503	Normal	EM2208335	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW210_20221108	Normal	EM2222395	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW211	Off-base	20/06/2017	0906_EWB1_170620	Normal	ES1715334	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/12/2017	0906_EWB1_171204	Normal	ES1731229	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_MW211_20200327	Normal	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_MW211_20200928	Normal	ES2034885	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW211_20210420	Normal	ES2116324	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW211_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW211_20221108	Normal	EM2222397	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

						Perfluorocarbons																																
						Perfluorooctane sulfonic acid PFOS	Perfluorooctanoate PFOA	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid PFBS	Perfluoropentane sulfonic acid PFPeS	Perfluorohexane sulfonic acid PFHxS	Perfluoroheptane sulfonic acid PFHpS	Perfluorodecanesulfonic 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	Perfluorooctane sulfonamide FOSA	N-Methyl perfluorooctane sulfonamide MeFOSA	N-methylperfluoro-1-octanesulfonamidoethanol N-MeFOSE	N-Ethyl perfluorooctane sulfonamide EtFOSA	N-Ethyl perfluorooctane sulfonamidoethanol EtFOSE	N-Methyl perfluorooctanesulfonamidoacetic acid MeFOSAA	N-Ethyl perfluorooctanesulfonamidoacetic acid EtFOSAA	Fluorotelomer sulfonic acid FTS	Fluorotelomer Sulfonate FtS	Fluorotelomer sulfonate FtS	Fluorotelomer sulfonic acid 10 FTS	Sum of PFAS	Sum of enHealth PFAS PFHxS PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																														
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																														
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																															
MW212	Off-base	20/06/2017	0906_EWB2_170620	Normal	ES1715334	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/12/2017	0906_EWB2_171204	Normal	ES1731229	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_MW212_20200327	Normal	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_MW212_20200928	Normal	ES2034885	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW212_20210420	Normal	ES2116324	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW212_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW212_20220502	Normal	EM2208334	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW212_20221109	Normal	EM2222397	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW213	Off-base	20/06/2017	0906_EWB3_170620	Normal	ES1715334	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/12/2017	0906_EWB3_171204	Normal	ES1731229	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906_MW213_20200327	Normal	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC101_20200327	Field_D	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC201_20200327	Interlab_D	712442	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base		0906_MW213_20200928	Normal	ES2034885	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906_QC101_20200928	Field_D	ES2034862-AA	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC201_20200928	Interlab_D	749083	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	20/04/2021	0906_MW213_20210420	Normal	ES2116324	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW213_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC104_20211020	Field_D	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906_QC204_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base	2/05/2022	0906_MW213_20220502	Normal	EM2208334	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW214	Off-base	20/06/2017	0906_GW047279_170620	Normal	ES1715334	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	18/01/2018	0906_MW214_D_180118	Normal	ES1802545	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	31/03/2020	0906_MW214_20200331	Normal	ES2011568	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW214_20201001	Normal	ES2034891	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/04/2021	0906_MW214_20210427	Normal	ES2116327	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW214_20211021	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/05/2022	0906_MW214_20220503	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	7/11/2022	0906_MW214_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW215	Off-base	20/06/2017	0906_GW047281_170620	Normal	ES1715334	0.06	<0.01	0.06	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
	Off-base	16/01/2018	0906_MW215_D_180116	Normal	ES1802545	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW231	Off-base	12/01/2018	0906_MW231_D_180112	Normal	ES1802473	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	26/03/2020	0906_MW231_20200326	Normal	ES2011459	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	26/03/2020	0906_MW231_20200326	Normal	ES2011456	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_MW231_20200930	Normal	ES2034898	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW231_20210423	Normal	ES2116325	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906_MW231_20211022	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/05/2022	0906_MW231_20220504	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW231_20221109	Normal	EM2222392	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW233	Off-base	20/02/2018	0906_MW233_I_180220	Normal	ES1805656	0.08	<0.01	**0 1**	<0.02	<0.02	0.1	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.2	-
	Off-base	25/03/2020	0906_MW233_20200325	Normal	ES2011451	0.18	<0.01	**0**	0.02	0.19	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-
	Off-base	30/09/2020	0906_MW233_20200930	Normal	ES2034890	0.25	<0.01	**0**	0.02	0.03	0.19	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	-
	Off-base	22/04/2021	0906_MW233_20210422	Normal	ES2116319	0.17	<0.01	**0**	0.02	0.02	0.21	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-
	Off-base	19/10/2021	0906_MW233_20211019	Normal	ES2139304	0.28	<0.01	**0**	0.03	0.04	0.24	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-
	Off-base	2/05/2022	0906_MW233_20220502	Normal	EM2208333	0.2	<0.01	**0**	0.02	0.02	0.19	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-
	Off-base	7/11/2022	0906_MW233_20221107	Normal	EM2222376	0.24	<0.01	**0**	0.03	0.03	0.23	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.57	-
MW235	Off-base	11/01/2018	0906_MW235_D_180111	Normal	ES1802460	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/12/2019	0906_MW235_D_191219	Normal	ES1942606-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	27/03/2020	0906_MW235_20200327	Normal	ES2011450	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_MW235_20200930	Normal	ES2034899	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW235_20210420	Normal	ES2115488	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW235_20211020	Normal	ES2139305	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/05/2022	0906_MW235_20220501	Normal	EM2208341	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	7/11/2022	0906_MW235_20221107	Normal	EM2222377	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

						Per luorocarbons																																				
						Per luorooctane sul onic acid PFOS	Per luorooctanoate PFOA	Sum o PFH S and PFOS	Per luorobutane sul onic acid PFBS	Per luoropentane sul onic acid PFPeS	Per luorohe ane sul onic acid PFH S	Per luoroheptane sul onic acid PFHpS	Per luorodecanesul onic acid PFDS	Per luorobutanoic acid PFBA	Per luoropentanoic acid PFPeA	Per luorohe anoic acid PFH A	Per luoroheptanoic acid PFHpA	Per luorononanoic acid PFNA	Per luorodecanoic acid PFDA	Per luoroundecanoic acid PFUnDA	Per luorododecanoic acid PFDoDA	Per luorotridecanoic acid PFTrDA	Per luorotetradecanoic acid PFTeDA	Per luorooctane sul onamide FOSA	N-Methyl per luorooctane sul onamide MeFOSA	- N-methylper luoro-1-octane sul onamido -ethanol N-MeFOSE	N-Ethyl per luorooctane sul onamide EtFOSA	N-Ethyl per luorooctane sul onamidoethanol EtFOSE	N-Methyl per luorooctane sul onamidoacetic acid MeFOSAA	N-Ethyl per luorooctane sul onamidoacetic acid EtFOSAA	Fluorotelomer sul onic acid FTS	Fluorotelomer Sul onate FtS	Fluorotelomer sul onate FtS	Fluorotelomer sul onic acid 10 FTS	Sum o PFAS	Sum o onHealth PFAS PFH S PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																																		
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																																		
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																																			
MW238	Off-base	12/12/2019	0906_MW238_I_191212	Normal	ES1941492-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	30/03/2020	0906_MW238_20200330	Normal	ES2011456	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906_MW238_20200930	Normal	ES2034898	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW238_20210423	Normal	ES2116325	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW238_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW238_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	8/11/2022	0906_MW238_20221108	Normal	EM2222392	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW239	Off-base	12/12/2019	0906_MW239_S_191212	Normal	ES1941492-AC	<0.01	<0.01	<0.01	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	30/03/2020	0906_MW239_20200330	Normal	ES2011456	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW239_20201001	Normal	ES2034898	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906_MW239_20210423	Normal	ES2116325	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW239_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW239_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW239_20221108	Normal	EM2222392	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW240	Off-base	12/12/2019	0906_MW240_D_191212	Normal	ES1941492-AD	0.05	<0.01	**0**	0.04	-	0.21	-	-	<0.1	<0.02	0.06	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	12/12/2019	0906_QC101_191212	Field_D	ES1941492-AD	0.04	<0.01	**0**	0.05	-	0.29	-	-	<0.1	<0.02	0.08	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base	19/12/2019	0906_MW240_I_191219	Normal	ES1942606-AB	0.02	<0.01	**0 1**	0.03	-	0.17	-	-	<0.1	<0.02	0.04	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base		0906_QC101_191219	Field_D	ES1942606-AB	0.02	<0.01	**0 1**	0.03	-	0.17	-	-	<0.1	<0.02	0.05	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base		0906_QC201_191219	Interlab_D	695221	0.01	<0.01	**0 1**	0.02	0.01	0.11	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.19	0.00012
	Off-base	1/04/2020	0906_MW240_20200330	Normal	ES2011453	0.01	<0.01	**0 11**	<0.02	<0.02	0.1	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-
	Off-base	30/09/2020	0906_MW240_20200930	Normal	ES2034866	0.06	0.02	**0 1**	0.04	0.05	0.35	<0.02	<0.02	<0.1	0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-
	Off-base	20/04/2021	0906_MW240_20210420	Normal	ES2116333	0.04	0.01	**0**	0.04	0.03	0.23	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.42	-
	Off-base	19/10/2021	0906_MW240_20211019	Normal	ES2139237	0.04	<0.01	**0 1**	0.02	0.02	0.15	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	-
	Off-base	1/05/2022	0906_MW240_20220501	Normal	EM2208150	0.04	<0.01	**0 1**	<0.02	0.02	0.15	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25	-
	Off-base	7/11/2022	0906_MW240_20221107	Normal	EM2222399	0.04	<0.01	**0 1**	0.02	0.02	0.17	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.3	-
MW241	Off-base	18/03/2020	0906_MW241_D_200318	Normal	ES2009949	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	31/03/2020	0906_MW241_20200331	Normal	ES2011462	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.15	<0.05	<0.05	0.15	-
	Off-base	1/10/2020	0906_MW241_20201001	Normal	ES2034889	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW241_20210422	Normal	ES2116320	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.12	<0.05	<0.05	0.12	-
	Off-base	24/10/2021	0906_MW241_20211024	Normal	ES2139236	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW241_20220502	Normal	EM2208340	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW241_20221108	Normal	EM2222383	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW242	Off-base	12/03/2020	0906_MW242_I_200312	Normal	ES2008845	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	31/03/2020	0906_MW242_20200331	Normal	ES2011462	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW242_20201001	Normal	ES2034889	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW242_20210422	Normal	ES2116320	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906_MW242_20211022	Normal	ES2139236	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW242_20220502	Normal	EM2208340	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW242_20221108	Normal	EM2222383	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW243	On-base	10/03/2020	0906_MW243_I_200310	Normal	ES2008845	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC201_200310	Interlab_D	707955	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	30/03/2020	0906_MW243_20200330	Normal	ES2011457	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/10/2020	0906_MW243_20201001	Normal	ES2034862-AB	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_MW243_20210423	Normal	ES2116327	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	23/04/2021	0906_QC106_20210423	Field_D	ES2116327	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC206_20210423	Interlab_D	792771	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	20/10/2021	0906_MW243_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	2/05/2022	0906_MW243_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC203_20221107	Interlab_D	940477	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00001
	On-base	7/11/2022	0906_MW243_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC103_20221107	Field_D	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

						Perfluorocarbons																																		
						Perfluorooctanesulfonic acid PFOS	Perfluorooctanoate PFOA	Sum of PFHxS and PFOS	Perfluorobutanesulfonic acid PFBS	Perfluoropentanesulfonic acid PFPeS	Perfluorohexanesulfonic acid PFHxS	Perfluoroheptanesulfonic acid PFHpS	Perfluorodecanesulfonic 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	Perfluorooctanesulfonamide FOSA	N-Methyl perfluorooctanesulfonamide MeFOSA	N-methylperfluoro-1-octanesulfonamido-ethanol N-MeFOSE	N-Ethyl perfluorooctanesulfonamide EtFOSA	N-Ethyl perfluorooctanesulfonamidoethanol EtFOSE	N-Methyl perfluorooctanesulfonamidoacetic acid MeFOSAA	N-Ethyl perfluorooctanesulfonamidoacetic acid EtFOSAA	Fluorotelomer sulfonic acid FTS	Fluorotelomer Sulfonate FtS	Fluorotelomer sulfonate FtS	Fluorotelomer sulfonic acid 10 FTS	Sum of PFAS	Sum of enHealth PFAS PFH S PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																																
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																																
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																																	
MW244	Off-base	13/03/2020	0906_MW244_I_200313	Normal	ES2009442	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/04/2020	0906_MW244_20200401	Normal	ES2011562	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906_MW244_20201001	Normal	ES2034866	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW244_20210420	Normal	ES2116333	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906_MW244_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906_MW244_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW244_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW245	Off-base	13/03/2020	0906_MW245_S_200313	Normal	ES2009442	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.02	-	
	Off-base	1/04/2020	0906_MW245_20200401	Normal	ES2011562	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.02	-	
	Off-base	1/10/2020	0906_MW245_20201001	Normal	ES2034866	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.03	-	
	Off-base	20/04/2021	0906_MW245_20210420	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.02	-	
	Off-base	19/10/2021	0906_MW245_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/04/2022	0906_MW245_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW245_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW246	Off-base	22/06/2020	0906_MW246_I_200622	Normal	ES2021594	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/07/2020	0906_QC202_200730	Normal	735782	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001	
	Off-base	30/07/2020	0906_MW246_I_200730	Normal	ES2026752	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906_MW246_20210420	Normal	ES2116333	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/10/2021	0906_MW246_20211020	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/05/2022	0906_MW246_20220501	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	7/11/2022	0906_MW246_20221107	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW247	Off-base	30/07/2020	0906_MW247_I_200730	Normal	ES2026752	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/04/2021	0906_MW247_20210427	Normal	ES2116333	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW247_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW247_20220502	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW247_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW248	Off-base	30/07/2020	0906_MW248_S_200730	Normal	ES2026752	0.09	0.01	**0 1**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.04	0.04	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.28	-	
	Off-base	27/04/2021	0906_MW248_20210427	Normal	ES2116333	0.07	<0.01	**0 1**	<0.02	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.14	-	
	Off-base	20/10/2021	0906_MW248_20211020	Normal	ES2139237	0.08	0.01	**0 1**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.03	0.03	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.24	-	
	Off-base	2/05/2022	0906_MW248_20220502	Normal	EM2208150	0.06	<0.01	**0 1**	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.12	-	
	Off-base	9/11/2022	0906_MW248_20221109	Normal	EM2222399	0.07	<0.01	**0 1**	<0.02	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.2	-	
MW249	Off-base	30/07/2020	0906_MW249_I_200730	Normal	ES2026752	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/04/2021	0906_MW249_20210428	Normal	ES2116333	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW249_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/04/2022	0906_MW249_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW249_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW250	Off-base	30/07/2020	0906_MW250_S_200730	Normal	ES2026752	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.08	-	
	Off-base	2/09/2020	0906_MW250_S_200902	Normal	ES2031377	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.07	-	
	Off-base		0906_QC202_200902	Interlab_D	742937	0.06	<0.01	**0 1**	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.14	0.0001	
	Off-base		0906_MW250_20210428	Normal	ES2116333	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.08	-	
	Off-base	28/04/2021	0906_QC107_20210428	Field_D	ES2116333	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.08	-	
	Off-base		0906_QC207_20210428	Interlab_D	792804	<0.01	<0.01	0.02	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00002	
	Off-base	19/10/2021	0906_MW250_20211019	Normal	ES2139237	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.04	-	
	Off-base	9/11/2022	0906_MW250_20221109	Normal	EM2222399	<0.01	<0.01	0.01	<0.02	<0.02	0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	0.01	-	
MW251	Off-base	30/07/2020	0906_QC201_200730	Normal	735782	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001	
	Off-base	30/07/2020	0906_MW251_S_200730	Normal	ES2026752	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW251_20210422	Normal	ES2118542	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906_MW251_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/04/2022	0906_MW251_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW252	Off-base	30/07/2020	0906_MW252_I_200730	Normal	ES2026752	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906_MW252_20210422	Normal	ES2118542	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906_MW252_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/04/2022	0906_MW252_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

						Perfluorocarbons																																
						Perfluorooctane sulfonic acid PFOS	Perfluorooctanoate PFOA	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid PFBS	Perfluoropentane sulfonic acid PFPeS	Perfluorohexane sulfonic acid PFHxS	Perfluoroheptane sulfonic acid PFHpS	Perfluorodecanesulfonic 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	Perfluorooctane sulfonamide FOSA	N-Methyl perfluorooctane sulfonamide MeFOSA	N-Methylperfluoro-1-octanesulfonamidoethanol N-MeFOSE	N-Ethyl perfluorooctane sulfonamide EtFOSA	N-Ethyl perfluorooctane sulfonamidoethanol EtFOSE	N-Methyl perfluorooctanesulfonamidoacetic acid MeFOSAA	N-Ethyl perfluorooctanesulfonamidoacetic acid EtFOSAA	Fluorotelomer sulfonic acid FTS	Fluorotelomer Sulfonate FtS	Fluorotelomer sulfonate FtS	Fluorotelomer sulfonic acid 10 FTS	Sum of PFAS	Sum of enHealth PFAS PFHxS PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																														
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																														
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																															
MW253	Off-base	30/07/2020	0906_MW253_I_200730	Normal	ES2026752	0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	20/04/2021	0906_MW253_20210420	Normal	ES2116333	<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base	19/10/2021	0906_MW253_20211019	Normal	ES2139237	0.02	<0.01	0.05	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base		0906_QC102_20211019	Field_D	ES2139231	0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base		0906_QC202_20211019	Interlab_D	837704	0.02	<0.01	0.06	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00006
	Off-base	30/04/2022	0906_MW253_20220430	Normal	EM2208150	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	7/11/2022	0906_MW253_20221107	Normal	EM2222399	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
MW254	Off-base	30/07/2020	0906_MW254_S_200730	Normal	ES2026752	<0.01	**0.14**	**0 1**	0.02	0.03	0.15	<0.02	<0.02	<0.1	**0.04**	0.07	**0.06**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-
	Off-base	20/04/2021	0906_MW254_20210420	Normal	ES2116333	<0.01	**0.14**	**0 1**	0.04	0.03	0.19	<0.02	<0.02	<0.1	0.03	0.06	**0.05**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	-
	Off-base	19/10/2021	0906_MW254_20211019	Normal	ES2139237	<0.01	0.08	**0 1**	0.02	0.02	0.13	<0.02	<0.02	<0.1	0.02	0.04	**0.04**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.43	-
	Off-base		0906_QC101_20211019	Field_D	ES2139231	<0.01	0.12	**0 1**	0.02	0.02	0.14	<0.02	<0.02	<0.1	0.03	0.05	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-
	Off-base		0906_QC201_20211019	Interlab_D	837704	<0.01	0.13	**0 1**	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.03	0.05	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.44	0.00027
	Off-base	30/04/2022	0906_MW254_20220430	Normal	EM2208150	0.13	0.25	**0**	0.03	0.03	0.2	<0.02	<0.02	<0.1	0.08	0.09	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.89	-
	Off-base	7/11/2022	0906_MW254_20221107	Normal	EM2222399	0.02	0.1	**0 1**	<0.02	0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.04	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.33	-
MW255	Off-base	30/07/2020	0906_MW255_I_200730	Normal	ES2026752	<0.01	0.02	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
	Off-base	22/04/2021	0906_MW255_20210422	Normal	ES2116333	0.04	<0.01	**0 1**	0.02	<0.02	0.1	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.16	-
	Off-base		0906_MW255_02072021	Normal	ES2124834	0.04	<0.01	**0 1**	<0.02	<0.02	0.08	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-
	Off-base	2/07/2021	0906_QC101_02072021	Field_D	ES2124834	0.03	<0.01	**0 11**	<0.02	-	0.08	-	-	<0.1	<0.02	0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base		0906_QC201_210702	Interlab_D	808916	0.04	<0.01	**0 1**	-	-	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	0.00013
	Off-base	19/10/2021	0906_MW255_20211019	Normal	ES2139237	0.01	<0.01	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	30/04/2022	0906_MW255_20220430	Normal	EM2208150	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
	Off-base		0906_QC206_20221108	Interlab_D	940477	0.04	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00004
	Off-base	8/11/2022	0906_MW255_20221108	Normal	EM2222399	0.02	<0.01	0.07	<0.02	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
	Off-base		0906_QC106_20221108	Field_D	EM2222404	0.02	<0.01	0.07	<0.02	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
MW256	Off-base		0906_MW256_S_200910	Normal	ES2032277	0.04	<0.01	**0**	0.05	0.05	0.28	<0.02	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-
	Off-base	10/09/2020	0906_QC101_200910	Field_D	ES2032277	0.02	<0.01	**0**	0.06	-	0.3	-	-	<0.1	<0.02	0.1	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
	Off-base		0906_QC201_200910	Interlab_D	744316	<0.01	<0.01	**0 1**	-	-	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	0.00021
	Off-base	22/04/2021	0906_MW256_20210422	Normal	ES2116333	0.07	<0.01	**0**	0.07	0.04	0.23	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.46	-
	Off-base	19/10/2021	0906_MW256_20211019	Normal	ES2139237	0.01	<0.01	**0 1**	<0.02	<0.02	0.09	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-
	Off-base	2/05/2022	0906_MW256_20220502	Normal	EM2208150	<0.01	<0.01	0.06	<0.02	<0.02	0.06	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
	Off-base	8/11/2022	0906_MW256_20221108	Normal	EM2222399	<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
MW257	Off-base	10/09/2020	0906_MW257_S_200910	Normal	ES2032277	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906_MW257_20220502	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906_MW257_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW300	On-base	12/01/2018	0906_MW300_D_180112	Normal	ES1802545	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base	13/04/2018	0906_MW300_D_180413	Normal	EM1806331	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/03/2020	0906_MW300_20200330	Normal	ES2011457	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base	29/09/2020	0906_MW300_20200929	Normal	ES2034862-AB	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base		0906_MW300_20210422	Normal	ES2116327	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base	22/04/2021	0906_QC105_20210422	Field_D	ES2116327	<0.01	<0.01	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	On-base		0906_QC205_20210422	Interlab_D	792803	<0.01	<0.01	0.02	0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.00002
	On-base		0906_MW300_20211020	Normal	ES2139228	<0.01	<0.01	0.05	0.04	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.18	-
	On-base	20/10/2021	0906_QC106_20211020	Field_D	ES2139231	<0.01	<0.01	0.05	0.04	<0.02	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-
	On-base		0906_QC206_20211020	Interlab_D	837704	<0.01	<0.01	0.07	0.04	0.02	0.07	<0.01	<0.01	<0.05	**0.01**	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.17	0.00007
	On-base		0906_MW300_20220501	Normal	EM2208338	<0.01	<0.01	**0 1**	0.05	0.03	0.1	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.22	-
	On-base	1/05/2022	0906_QC102_20220501	Field_D	EM2208338	<0.01	<0.01	**0 1**	0.06	0.03	0.1	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-
	On-base		0906_QC202_20220501	Interlab_D	889634	<0.01	<0.01	**0 1**	0.08	0.03	0.13	<0.01	<0.01	<0.05	0.02	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.34	0.00013
	On-base	7/11/2022	0906_MW300_20221107	Normal	EM2222404	<0.01	<0.01	**0 1**	0.1	0.04	0.13	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.35	-
MW302	On-base	12/01/2018	0906_MW302_D_180112	Normal	ES1802545	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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
	On-base	11/04/2018	0906_MW302_D_180411	Normal	EM1806331	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/03/2020	0906_MW302_20200330	Normal	ES2011457	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_MW302_20200929	Normal	ES2034862-AB	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	29/09/2020	0906_QC102_20200929	Field_D	ES2034862-AB	<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	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC202_20200929	Interlab_D	749220	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001

Per luorocarbons

						Per luorooctane sul onic acid PFOS	Per luorooctanoate PFOA	Sum o PFH S and PFOS	Per luorobutane sul onic acid PFBS	Per luoropentane sul onic acid PFPeS	Per luorohe ane sul onic acid PFH S	Per luoroheptane sul onic acid PFHpS	Per luorodecanesul onic acid PFDS	Per luorobutanoic acid PFBA	Per luoropentanoic acid PFPeA	Per luorohe anoic acid PFH A	Per luoroheptanoic acid PFHpA	Per luorononanoic acid PFNA	Per luorodecanoic acid PFDA	Per luoroundecanoic acid PFUnDA	Per luorododecanoic acid PFDoDA	Per luorotridecanoic acid PFTrDA	Per luorotetradecanoic acid PFTeDA	Per luorooctane sul onamide FOSA	N-Methyl per luorooctane sul onamide MeFOSA	- N-methylper luoro-1-octane sul onamido -ethanol N-MeFOSE	N-Ethyl per luorooctane sul onamide EtFOSA	N-Ethyl per luorooctane sul onamidoethanol EtFOSE	N-Methyl per luorooctane sul onamidoacetic acid MeFOSAA	N-Ethyl per luorooctane sul onamidoacetic acid EtFOSAA	Fluorotelomer sul onic acid FTS	Fluorotelomer Sul onate FtS	Fluorotelomer sul onate FtS	10 Fluorotelomer sul onic acid 10 FTS	Sum o PFAS	Sum o enHealth PFAS PFH S PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																												
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																												
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																													
	On-base	21/04/2021	0906_MW302_20210421	Normal	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC103_20210421	Field_D	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC203_20210421	Interlab_D	792803	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	20/10/2021	0906_MW302_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC107_20211020	Field_D	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC207_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	1/05/2022	0906_MW302_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC105_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC205_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	7/11/2022	0906_QC204_20221107	Interlab_D	940477	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base		0906_MW302_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC104_20221107	Field_D	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW304	On-base	16/01/2018	0906_MW304_D_180116	Normal	ES1802545	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	<0.02	<0.05	<0.00005	<0.05	0.15	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.24	-
	On-base	13/04/2018	0906_MW304_D_180413	Normal	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	31/03/2020	0906_MW304_20200331	Normal	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.06	-
	On-base	29/09/2020	0906_MW304_20200929	Normal	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	28/04/2021	0906_MW304_20210428	Normal	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	20/10/2021	0906_MW304_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_MW304_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC104_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC204_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	7/11/2022	0906_MW304_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW306	On-base	16/01/2018	0906_MW306_D_180116	Normal	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.08	-
	On-base	12/04/2018	0906_MW306_D_180412	Normal	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/03/2020	0906_MW306_20200330	Normal	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	29/09/2020	0906_MW306_20200929	Normal	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/04/2021	0906_MW306_20210422	Normal	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/10/2021	0906_MW306_20211022	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	2/05/2022	0906_MW306_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	7/11/2022	0906_MW306_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW308	On-base	15/01/2018	0906_MW308_D_180115	Normal	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC103_180115	Field_D	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC203_180115	Interlab_D	581313	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	On-base	11/04/2018	0906_MW308_D_180411	Normal	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/03/2020	0906_MW308_20200330	Normal	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	29/09/2020	0906_MW308_20200929	Normal	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	21/04/2021	0906_MW308_20210421	Normal	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/04/2021	0906_MW308_20210422	Normal	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	21/10/2021	0906_MW308_20211021	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	1/05/2022	0906_MW308_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC103_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC203_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base	7/11/2022	0906_QC205_20221107	Interlab_D	940477	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	On-base		0906_MW308_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base		0906_QC105_20221107	Field_D	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW309	On-base	21/04/2021	0906_MW309_20210421	Normal	ES2116327	0.04	0.03	0.04	<0.02	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.1	-
MW310	On-base	16/01/2018	0906_MW310_D_180116	Normal	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	12/04/2018	0906_MW310_D_180412	Normal	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	31/03/2020	0906_MW310_20200331	Normal	ES2011457	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	30/09/2020	0906_MW310_20200930	Normal	ES2034862-AB	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/04/2021	0906_MW310_20210422	Normal	ES2116327	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	22/10/2021	0906_MW310_20211022	Normal	ES2139228	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	2/05/2022	0906_MW310_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	8/11/2022	0906_MW310_20221108	Normal	EM2222404	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
MW311	On-base	15/01/2018	0906_QC201_180115	Interlab_D	581313	<0.01	<0.01	0.04	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	On-base		0906_MW311_I_180115	Normal	ES1802545	0.01	<0.01	0.04	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	On-base		0906_QC101_180115	Field_D	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	On-base	31/03/2020	0906_MW311_20200331	Normal	ES2011457	<0.01	<0.01	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	On-base	8/11/2022	0906_MW311_20221108	Normal	EM2222404	<0.01	<0.01	**0**	0.05	0.06	0.49	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.6	-
MW312	Off-base	16/01/2018	0906_MW312_D_180115	Normal	ES1802566	0.02	<0.01	**0 1**	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.1	-
	Off-base	13/04/2018	0906_MW312_D_180413	Normal	EM1806331	0.02	<0.01	**0 0**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
	Off-base	1/04/2020	0906_MW312_200401	Normal	ES2011454	0.01	<0.01	0.07	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-
	Off-base	1/10/2020	0906_MW312_20201001	Normal	ES2034888	0.01	<0.01	0.06	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-
	Off-base	21/10/2021	0906_MW312_20211021	Normal	ES2139399	0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	3/05/2022	0906_MW312_20220503	Normal	EM2208339	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906_MW312_20221108	Normal	EM2222499	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

						Per luorocarbons																														
						Per luorooctane sul onic acid PFOS	Per luorooctanoate PFOA	Sum o PFH S and PFOS	Per luorobutane sul onic acid PFBS	Per luoropentane sul onic acid PFPeS	Per luorohe ane sul onic acid PFH S	Per luoroheptane sul onic acid PFHpS	Per luorodecanesul onic acid PFDS	Per luorobutanoic acid PFBA	Per luoropentanoic acid PFPeA	Per luorohe anoic acid PFH A	Per luoroheptanoic acid PFHpA	Per luorononanoic acid PFNA	Per luorodecanoic acid PFDA	Per luoroundecanoic acid PFUnDA	Per luorododecanoic acid PFDoDA	Per luorotridecanoic acid PFTrDA	Per luorotetradecanoic acid PFTeDA	Per luorooctane sul onamide FOSA	N-Methyl per luorooctane sul onamide MeFOSA	- N-methylper luoro-1-octane sul onamido - ethanol N-MeFOSE	N-Ethyl per luorooctane sul onamide EtFOSA	N-Ethyl per luorooctane sul onamidoethanol EtFOSE	N-Methyl per luorooctane sul onamidoacetic acid MeFOSAA	N-Ethyl per luorooctane sul onamidoacetic acid EtFOSAA	Fluorotelomer sul onic acid FTS	Fluorotelomer Sul onate FtS	Fluorotelomer sul onate FtS	10 Fluorotelomer sul onic acid 10 FTS	Sum o PFAS	Sum o enHealth PFAS PFH S PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																												
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																												
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																													
Location Code	**Location Type**	**Sampled Date Time**	**Field ID**	**Sample Type**	**Lab Report Number**																															
SW104	On-base	4/12/2017	0906 SW104 171204	Normal	ES1731266	0.27	0.02	**0**	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.39	-
	On-base	16/08/2018	0906 SW104 180816	Normal	ES1824412	0.05	<0.01	**0 1**	<0.02	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.17	-
	On-base	17/10/2018	0906 SW104 181017	Normal	ES1831100	0.38	0.02	**0**	0.03	<0.02	0.29	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.75	-
	On-base	25/03/2020	0906 SW104 20200325	Normal	ES2011457	0.09	<0.01	**0 1**	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15	-
	On-base	2/09/2020	0906 SW104 200904	Normal	ES2031377	2.83	0.13	***4.27***	0.17	0.16	1.44	0.09	<0.02	<0.1	0.15	0.44	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.48	-
	On-base		0906 QC201 200904	Interlab D	742937	2.3	0.1	***3.29***	0.13	0.13	0.99	0.06	<0.01	0.06	0.1	0.41	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	4.4	0.00339
	On-base	29/09/2020	0906 SW104 20200929	Normal	ES2034862-AB	2.8	0.17	***4.61***	0.21	0.23	1.81	0.12	<0.02	<0.1	0.17	0.59	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	6.18	-
	On-base	21/04/2021	0906 QC202 20210421	Interlab D	792803	0.27	0.02	**0 1**	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.51	0.00043
	On-base		0906 QC102 20210421	Field D	ES2116327	0.26	0.02	**0**	0.03	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	0.63	-
	On-base		0906 SW104 20210421	Normal	ES2116327	0.28	0.02	**0**	0.04	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.68	-
	On-base	20/10/2021	0906 QC105 20211020	Field D	ES2139231	0.4	0.01	**0**	0.04	0.03	0.25	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.79	-
	On-base		0906 QC205 20211020	Interlab D	837704	0.61	0.02	**0 1**	0.04	0.03	0.3	0.02	<0.01	<0.05	0.02	0.07	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.14	0.00093
	On-base		0906 SW104 20211020	Normal	ES2139228	0.41	0.01	**0**	0.05	0.04	0.22	<0.02	<0.02	<0.1	0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.82	-
	On-base	1/05/2022	0906 QC101 20220501	Field D	EM2208338	0.58	0.01	**0**	0.03	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.89	-
	On-base		0906 QC201 20220501	Interlab D	889634	0.83	0.02	**1 0**	0.03	0.02	0.26	0.02	<0.01	<0.05	0.03	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.28	0.00111
	On-base		0906 SW104 20220501	Normal	EM2208338	0.63	0.01	**0**	0.03	<0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.91	-
	On-base	5/11/2022	0906 QC202 20221105	Interlab D	940477	3.1	0.04	***4.7***	0.17	0.18	1.6	0.12	<0.01	0.1	0.13	0.41	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	0.01	<0.01	5.98	0.00474
	On-base		0906 QC102 20221105	Field D	EM2222404	3.19	0.1	***4.63***	0.2	0.18	1.44	0.09	<0.04	<0.2	0.1	0.35	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.09	<0.04	<0.09	<0.00009	<0.09	<0.09	<0.04	<0.04	<0.05	0.05	<0.05	<0.05	5.74	-
	On-base		0906 SW104 20221105	Normal	EM2222404	3.34	0.11	***4.88***	0.19	0.19	1.54	0.08	<0.04	<0.2	0.1	0.37	0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.09	<0.04	<0.09	<0.00009	<0.09	<0.09	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	5.97	-
SW206	Off-base	20/06/2017	0906 SW001 170620	Normal	ES1715334	0.23	<0.01	**0**	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.36	-
	Off-base	7/07/2017	0906 SW001 07072017	Normal	ES1716880	0.27	0.01	**0**	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.37	-
	Off-base	13/12/2017	0906 SW206 171213	Normal	ES1732701	0.57	0.02	**1 0**	0.05	0.04	0.52	<0.02	<0.02	<0.1	0.03	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.32	-
	Off-base	25/03/2020	0906 SW206 20200325	Normal	ES2011453	0.38	0.01	**0**	<0.02	<0.02	0.16	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.59	-
	Off-base	1/10/2020	0906 SW206 20201001	Normal	ES2034866	1.21	0.06	**1**	0.07	0.08	0.66	0.04	<0.02	<0.1	0.08	0.21	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.44	-
	Off-base	20/04/2021	0906 SW206 20210420	Normal	ES2116333	0.13	0.01	**0**	0.03	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.31	-
	Off-base	21/10/2021	0906 SW206 20211021	Normal	ES2139237	0.01	<0.01	0.03	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	3/05/2022	0906 SW206 20220503	Normal	EM2208150	0.15	<0.01	**0**	0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25	-
	Off-base	4/11/2022	0906 SW206 20221104	Normal	EM2222399	2.01	0.09	***3.07***	0.18	0.12	1.06	0.06	<0.02	<0.1	0.1	0.29	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.96	-
SW212	Off-base	11/12/2017	0906 SW212 171211	Normal	ES1731989	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	18/06/2018	0906 SW212 180619	Normal	ES1818232	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	15/08/2019	0906 SW212 190815	Normal	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906 SW212 20200327	Normal	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	30/09/2020	0906 SW212 20200930	Normal	ES2034866	0.09	<0.01	**0 0**	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09	-
	Off-base	30/09/2020	0906 SW212 20200930 Dup	Normal	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	23/04/2021	0906 SW212 20210423	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906 SW212 20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906 SW212 20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW218	Off-base	17/01/2018	0906 SW218 180117	Normal	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	25/03/2020	0906 SW218 20200325	Normal	ES2011453	0.03	<0.01	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	1/10/2020	0906 QC204 20201001	Interlab D	749074	0.04	<0.01	**0**	0.04	0.03	0.19	0.01	<0.01	<0.05	0.04	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.47	0.00023
	Off-base		0906 QC104 20201001	Field D	ES2034866	0.06	0.01	**0**	0.08	0.05	0.3	<0.02	<0.02	<0.1	0.05	0.13	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.71	-
	Off-base		0906 SW218 20201001	Normal	ES2034866	0.1	0.02	**0**	0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72	-
	Off-base	20/04/2021	0906 SW218 20210420	Normal	ES2116333	0.01	<0.01	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	21/10/2021	0906 SW218 20211021	Normal	ES2139237	0.27	0.01	**0 1**	0.04	0.04	0.24	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66	-
	Off-base	3/05/2022	0906 SW218 20220503	Normal	EM2208150	0.24	0.01	**0**	0.03	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-
	Off-base	4/11/2022	0906 SW218 20221104	Normal	EM2222399	0.63	0.04	**0**	0.04	0.04	0.34	<0.02	<0.02	<0.1	0.04	0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.25	-
SW228	Off-base	7/12/2017	0906 SW228 171207	Normal	ES1731266	2.9	0.17	***4.33***	0.21	0.19	1.43	0.1	<0.02	<0.1	0.14	0.51	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	0.06	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.77	-
	Off-base	12/04/2018	0906 SW228 180412	Normal	EM1806331	0.3	0.04	**0**	0.02	0.02	0.23	<0.02	<0.02	<0.1	0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.73	-
	Off-base	7/08/2018	0906 SW228 A 180807	Normal	EM1812664	0.49	0.03	**0**	<0.02	0.02	0.47	0.02	<0.02	<0.1	<0.02	0.09	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	-
	Off-base	7/08/2018	0906 SW228 B 180807	Normal	EM1812664	0.49	0.03	**0**	<0.02	0.02	0.49	0.02	<0.02	<0.1	<0.02	0.1	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.17	-
	Off-base	4/04/2019	0906 QC201 190408	Interlab D	650878	0.6	0.05	**1 1**	0.05	0.06	0.56	0.03	<0.01	<0.05	0.07	0.24	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.7	0.00121
	Off-base		0906 QC101 190408	Field D	ES1911335	0.81	0.06	**1 1**	0.1	0.09	0.6	0.04	<0.02	<0.1	0.11	0.43	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.28	-
	Off-base		0906 SW228 190408	Normal	ES1911335	0.77	0.06	**1**	0.1	0.08	0.62	0.04	<0.02	<0.1	0.12	0.43	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	2.31	-
	Off-base	27/03/2020	0906 SW228 20200327	Normal	ES2011453	0.73	0.05	**1**	0.05	0.06	0.52	0.03	<0.02	<0.1	0.07	0.25	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.79	-
	Off-base		0906 QC102 20200327	Field D	ES2011453	0.77	0.05	**1 1**	0.04	0.06	0.54	0.03	<0.02	<0.1	0.08	0.26	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.85	-
	Off-base		0906 QC202 20200327	Interlab D	712445	0.63	0.03	**1 0**	0.04	0.05	0.41	0.02	<0.01	<0.05	0.05	0.16	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.43	0.00107
	Off-base	1/10/2020	0906 SW228 20201001	Normal	ES2034866	2.15	0.09	***3.32***	0.11	0.14	1.17	0.08	<0.02	<0.1	0.1	0.4	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.28	-
	Off-base	27/04/2021	0906 SW228 20210427	Normal	ES2116333	1.1	0.06	***2.19***	0.19	0.1	1.09	0.06	<0.02	<0.1	0.1	0.48	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.22	-
	Off-base	21/10/2021	0906 SW228 20211021	Normal	ES2139237	1.41	0.06	***2.13***	0.1	0.09	0.72	0.06	<0.02	<0.1	0.09	0.32	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.88	-
	Off-base	3/05/2022	0906 SW228 20220503	Normal	EM2208150	0.86	0.04	**1 1**	0.14	0.06	0.55	0.04	<0.02	<0.1	0.05	0.2	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.96	-
	Off-base	9/11/2022	0906 SW228 20221109	Normal	EM2222399	1.17	0.06	**1**	0.06	0.08	0.76	0.05	<0.02	<0.1	0.06	0.27	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.54	-
SW234	Off-base	11/12/2017	0906 SW234 171211	Normal	ES1731989	0.22	0.03	**0**	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.41	-
	Off-base	18/06/2018	0906 SW234 180618	Normal	ES1818232	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.08	-
	Off-base	27/03/2020	0906 SW234 20200327	Normal	ES2011453	<0.01	0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	<0.05	<0.05	0.25	-
	Off-base	29/09/2020	0906 SW234 20200929	Normal	ES2034866	0.28	0.02	**0**	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.11	<0.05	<0.05	0.6	-
	Off-base	20/04/2021	0906 SW234 20210420	Normal	ES2116333	0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.34	<0.05	<0.05	0.42	-
	Off-base	19/10/2021	0906 SW234 20211019	Normal	ES2139237	0.04	<0.01	0.04	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base	2/05/2022	0906 QC107 20220502	Field D	EM2208150	0.02	<0.01	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.23	<0.05	<0.05	0.25	-
	Off-base		0906 SW234 20220502	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.22	<0.05	<0.05	0.22	-
	Off-base		0906 QC207 20220502	Interlab D	889634	0.02	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	0.28	<0.01	<0.01	0.34	0.00002
	Off-base	8/11/2022	0906 SW234 20221108	Normal	EM2222399	0.02	<0.01	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
SW236	Off-base	15/12/2017	0906 SW236 171215	Normal	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/10/2020	0906 SW236 20201002	Normal	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906 SW236 20210422	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906 SW236 20211022	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906 SW236 20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/11/2022	0906 SW236 20221104	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-

						Per luorocarbons																														
						Per luorooctane sul onic acid PFOS	Per luorooctanoate PFOA	Sum o PFH S and PFOS	Per luorobutane sul onic acid PFBS	Per luoropentane sul onic acid PFPeS	Per luorohe ane sul onic acid PFH S	Per luoroheptane sul onic acid PFHpS	Per luorodecanesul onic acid PFDS	Per luorobutanoic acid PFBA	Per luoropentanoic acid PFPeA	Per luorohe anoic acid PFH A	Per luoroheptanoic acid PFHpA	Per luorononanoic acid PFNA	Per luorodecanoic acid PFDA	Per luoroundecanoic acid PFUnDA	Per luorododecanoic acid PFDoDA	Per luorotridecanoic acid PFTrDA	Per luorotetradecanoic acid PFTeDA	Per luorooctane sul onamide FOSA	N-Methyl per luorooctane sul onamide MeFOSA	- N-methylper luoro-1-octane sul onamido - ethanol N-MeFOSE	N-Ethyl per luorooctane sul onamide EtFOSA	N-Ethyl per luorooctane sul onamidoethanol EtFOSE	N-Methyl per luorooctane sul onamidoacetic acid MeFOSAA	N-Ethyl per luorooctane sul onamidoacetic acid EtFOSAA	Fluorotelomer sul onic acid FTS	Fluorotelomer Sul onate FtS	Fluorotelomer sul onate FtS	10 Fluorotelomer sul onic acid 10 FTS	Sum o PFAS	Sum o enHealth PFAS PFH S PFOS PFOA
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LOR						0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.05	0.00005	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01	0.00001
PFAS NEMP 0 Table 1 Health Drinking Water							**0**	**0 0**																												
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																												
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																													
Location Code	**Location Type**	**Sampled Date Time**	**Field ID**	**Sample Type**	**Lab Report Number**																															
SW240	Off-base	20/12/2017	0906 QC201 171220	Interlab D	580967	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-
	Off-base		0906 QC101 171220	Field D	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906 QC201 171220	Field D	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906 SW240 171220	Normal	ES1732819	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/10/2020	0906 SW240 20201002	Normal	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906 SW240 20210422	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906 SW240 20211022	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906 SW240 20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/11/2022	0906 SW240 20221104	Normal	EM2222399	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
SW261	Off-base	16/01/2018	0906 SW261 180116	Normal	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/04/2018	0906 SW261 180403	Normal	ES1810698	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	18/06/2018	0906 SW261 180618	Normal	ES1818232	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	15/08/2019	0906 SW261 190815	Normal	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906 SW261 20200327	Normal	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906 SW261 20200928	Normal	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906 SW261 20210420	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906 QC103 20211019	Field D	ES2139231	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906 QC203 20211019	Interlab D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base		0906 SW261 20211019	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/04/2022	0906 SW261 20220428	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW262	Off-base	16/01/2018	0906 SW262 180116	Normal	ES1802545	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	18/06/2018	0906 SW262 180618	Normal	ES1818232	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.08	-
	Off-base	27/03/2020	0906 SW262 20200327	Normal	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906 SW262 20200928	Normal	ES2034866	0.05	<0.01	0.05	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-
	Off-base	20/04/2021	0906 SW262 20210420	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906 SW262 20211019	Normal	ES2139237	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
	Off-base	28/04/2022	0906 SW262 20220428	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906 SW262 20221108	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW286	Off-base	8/04/2018	0906 SW286 180408	Normal	ES1810698	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	15/08/2019	0906 SW286 190815	Normal	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906 SW286 20200327	Normal	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/10/2020	0906 SW286 20201002	Normal	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/04/2021	0906 SW286 20210422	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	22/10/2021	0906 SW286 20211022	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906 SW286 20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906 SW286 20221108	Normal	EM2222399	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW288	Off-base	12/04/2018	0906 SW288 180412	Normal	EM1806331	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	15/08/2018	0906 SW288 180815	Normal	ES1824412	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base		0906 QC201 180816	Interlab D	613110	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.00001
	Off-base		0906 QC101 180816	Field D	ES1824412	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	16/08/2018	0906 SW288 180816	Normal	ES1824412	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	4/04/2019	0906 SW288 190408	Normal	ES1911335	<0.01	<0.01	<0.01	<0.02	<0.02	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base	27/03/2020	0906 SW288 20200327	Normal	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	1/10/2020	0906 SW288 20201001	Normal	ES2034866	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/04/2021	0906 SW288 20210427	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	21/10/2021	0906 SW288 20211021	Normal	ES2139237	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	3/05/2022	0906 SW288 20220503	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	9/11/2022	0906 SW288 20221109	Normal	EM2222399	0.02	<0.01	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
SW289	Off-base	12/04/2018	0906 QC201 180412	Interlab D	594506	0.18	0.03	0	0.02	0.02	0.19	0.01	<0.01	<0.05	0.02	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.54	-
	Off-base		0906 QC101 180412	Field D	EM1806331	0.21	0.03	0	<0.02	0.02	0.22	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.55	-
	Off-base		0906 SW289 180412	Normal	EM1806331	0.2	0.03	0	<0.02	<0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-
	Off-base	4/04/2019	0906 SW289 190408	Normal	ES1911335	0.42	0.03	0	0.05	0.04	0.32	0.02	<0.02	<0.1	0.06	0.18	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	-
	Off-base	27/03/2020	0906 SW289 20200327	Normal	ES2011453	0.79	0.03	1	0.03	0.04	0.45	0.02	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.48	-
	Off-base	1/10/2020	0906 SW289 20201001	Normal	ES2034866	0.05	0.01	0	0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66	-
	Off-base	27/04/2021	0906 SW289 20210427	Normal	ES2116333	0.24	0.02	0	<0.02	<0.02	0.34	<0.02	<0.02	<0.1	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.7	-
	Off-base	21/10/2021	0906 SW289 20211021	Normal	ES2139237	1.15	0.04	1	0.11	0.07	0.69	0.06	<0.02	<0.1	0.06	0.22	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.42	-
	Off-base	3/05/2022	0906 SW289 20220503	Normal	EM2208150	0.65	0.02	0	0.04	0.03	0.29	0.02	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	-
	Off-base	9/11/2022	0906 SW289 20221109	Normal	EM2222399	1.54	0.08	***2.68***	0.17	0.11	1.14	0.08	<0.02	<0.1	0.08	0.35	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.59	-
SW294	Off-base	18/06/2018	0906 SW294 180618	Normal	ES1818232	0.01	0.07	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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-
	Off-base	15/08/2019	0906 SW294 190815	Normal	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906 SW294 20200327	Normal	ES2011453	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906 SW294 20200928	Normal	ES2034866	0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-
	Off-base	20/04/2021	0906 SW294 20210420	Normal	ES2116333	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-
	Off-base	19/10/2021	0906 SW294 20211019	Normal	ES2139237	0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-
	Off-base	28/04/2022	0906 SW294 20220428	Normal	EM2208150	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	<0.05	<0.05	0.18	-
SW309	Off-base	15/08/2019	0906 SW309 190815	Normal	ES1926282	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	27/03/2020	0906 SW309 20200327	Normal	ES2011459	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	28/09/2020	0906 SW309 20200928	Normal	ES2034885	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	20/04/2021	0906 SW309 20210420	Normal	ES2116324	<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	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	19/10/2021	0906 SW309 20211019	Normal	ES2139303	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	2/05/2022	0906 SW309 20220502	Normal	EM2208334	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
	Off-base	8/11/2022	0906 SW309 20221108	Normal	EM2222397	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-
SW310	Off-base	27/03/2020	0906 SW310 20200327	Normal	ES2011453	0.58	0.02	0	0.02	0.02	0.24	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.92	-
	Off-base	29/09/2020	0906 SW310 20200929	Normal	ES2034866	1.6	0.05	***2.11***	0.07	0.05	0.51	0.03	<0.02	<0.1	0.06	0.16	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.56	-
	Off-base	21/04/2021	0906 QC204 20210421	Interlab D	792774	1	0.03	1	0.05	0.02	0.36	0.02	<0.01	<0.05	0.04	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.63	0.00139
	Off-base		0906 QC104 20210421	Field D	ES2116333	0.92	0.03	1	0.06	0.03	0.43	<0.02	<0.02	<0.1	0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.57	-
	Off-base		0906 SW310 20210421	Normal	ES2116333	0.85	0.02	1	0.1	0.03	0.38	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.46	-
	Off-base	19/10/2021	0906 SW310 20211019	Normal	ES2139237	1.21	0.02	1	0.04	0.02	0.26	0.02	<0.02	<0.1	0.03	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.67	-
	Off-base	30/04/2022	0906 SW310 20220430	Normal	EM2208150	0.04	<0.01	0.04	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-
	Off-base	4/11/2022	0906 QC201 20221104	Interlab D	940477	0.71	<0.01	0	0.01	<0.01	0.12	<0.01	<0.01	<0.05	0.02	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.9	0.00083
	Off-base		0906 SW310 20221104	Normal	EM2222399	0.55	0.01	0	<0.02	<0.02	0.13	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72	-
	Off-base		0906 QC101 20221104	Field D	EM2222404	0.48	0.01	0 0	<0.02	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.00005	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-

Notes
Denotes first time detection above LOR in latest monitoring round
Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

	Lab Report Number		EM2222399	EM2222404		EM2222399	940477		
	Field ID		0906_SW310_20221104	0906_QC101_20221104	**RPD**	0906_SW310_20221104	0906_QC201_20221104	**RPD**	
	Sampled Date		4/11/2022	4/11/2022		4/11/2022	4/11/2022		
ChemName		**Unit**	**LOR**						
Sum of WA DWER PFAS (n=10)*		ug/L	0.01	0.72	0.64	12	0.72	0.9	22
Perfluorocarbons									
Perfluorooctane sulfonic acid (PFOS)		µg/L	0.01	0.55	0.48	14	0.55	0.71	25
Perfluorooctanoate (PFOA)		µg/L	0.01	0.01	0.01	0	0.01	<0.01	0
Sum of PFHxS and PFOS		µg/L	0.01	0.68	0.60	13	0.68	0.83	20
Perfluorononanesulfonic acid (PFNS)		UG/L						<0.01	
Perfluorobutane sulfonic acid (PFBS)		µg/L	0.01	<0.02	<0.02	0	<0.02	0.01	0
Perfluoropentane sulfonic acid (PFPeS)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)		µg/L	0.01	0.13	0.12	8	0.13	0.12	8
Perfluoroheptane sulfonic acid (PFHpS)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)		µg/L	0.05	<0.1	<0.1	0	<0.1	<0.05	0
Perfluoropentanoic acid (PFPeA)		µg/L	0.01	<0.02	<0.02	0	<0.02	0.02	0
Perfluorohexanoic acid (PFHxA)		µg/L	0.01	0.03	0.03	0	0.03	0.04	29
Perfluoropropanesulfonic acid (PFPrS)		UG/L						<0.01	
Perfluoroheptanoic acid (PFHpA)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)		µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)		µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0
Perfluorooctane sulfonamide (FOSA)		µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)		µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)		mg/L	0.00005	<0.00005	<0.00005	0	<0.00005	<0.00005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)		µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)		µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)		µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)		µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)		µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)		µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)		µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)		µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0
Sum of PFAS		µg/L	0.01	0.72	0.64	12	0.72	0.9	22

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 30 (1 - 10 x EQL); 30 (10 - 30 x EQL); 30 (> 30 x EQL))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

		EM2222404 0906_SW104_20221105 5/11/2022 14:24	EM2222404 0906_QC102_20221105 5/11/2022 14:24	RPD	EM2222404 0906_SW104_20221105 5/11/2022 14:24	940477 0906_QC202_20221105 5/11/2022	RPD	EM2222404 0906_MW243_20221107 7/11/2022 14:24	EM2222404 0906_QC103_20221107 7/11/2022 14:24	RPD	EM2222404 0906_MW243_20221107 7/11/2022 14:24
ChemName	**Unit**										
Sum of WA DWER PFAS (n=10)*	ug/L	5.70	5.47	4	5.70	5.62	1	<0.01	<0.01	0	<0.01
Perfluorocarbons											
Perfluorooctane sulfonic acid (PFOS)	µg/L	3.34	3.19	5	3.34	3.1	7	<0.01	<0.01	0	<0.01
Perfluorooctanoate (PFOA)	µg/L	0.11	0.10	10	0.11	0.04	**93**	<0.01	<0.01	0	<0.01
Sum of PFHxS and PFOS	µg/L	4.88	4.63	5	4.88	4.7	4	<0.01	<0.01	0	<0.01
Perfluorononanesulfonic acid (PFNS)	UG/L					<0.01					
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.19	0.20	5	0.19	0.17	11	<0.02	<0.02	0	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.19	0.18	5	0.19	0.18	5	<0.02	<0.02	0	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	1.54	1.44	7	1.54	1.6	4	<0.01	<0.01	0	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.08	0.09	12	0.08	0.12	**40**	<0.02	<0.02	0	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.04	<0.04	0	<0.04	<0.01	0	<0.02	<0.02	0	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	<0.2	<0.2	0	<0.2	0.10	0	<0.1	<0.1	0	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	0.10	0.10	0	0.10	0.13	26	<0.02	<0.02	0	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.37	0.35	6	0.37	0.41	10	<0.02	<0.02	0	<0.02
Perfluoropropanesulfonic acid (PFPrS)	UG/L					0.06					
Perfluoroheptanoic acid (PFHpA)	µg/L	0.05	0.04	22	0.05	0.06	18	<0.02	<0.02	0	<0.02
Perfluorononanoic acid (PFNA)	µg/L	<0.04	<0.04	0	<0.04	<0.01	0	<0.02	<0.02	0	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	<0.04	<0.04	0	<0.04	<0.01	0	<0.02	<0.02	0	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.04	<0.04	0	<0.04	<0.01	0	<0.02	<0.02	0	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.04	<0.04	0	<0.04	<0.01	0	<0.02	<0.02	0	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.04	<0.04	0	<0.04	<0.01	0	<0.02	<0.02	0	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.09	<0.09	0	<0.09	<0.01	0	<0.05	<0.05	0	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.04	<0.04	0	<0.04	<0.05	0	<0.02	<0.02	0	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.09	<0.09	0	<0.09	<0.05	0	<0.05	<0.05	0	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	<0.00009	<0.00009	0	<0.00009	<0.00005	0	<0.00005	<0.00005	0	<0.00005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.09	<0.09	0	<0.09	<0.05	0	<0.05	<0.05	0	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.09	<0.09	0	<0.09	<0.05	0	<0.05	<0.05	0	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.04	<0.04	0	<0.04	<0.05	0	<0.02	<0.02	0	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.04	<0.04	0	<0.04	<0.05	0	<0.02	<0.02	0	<0.02
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.05	0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.05	<0.05	0	<0.05	0.01	0	<0.05	<0.05	0	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05
Sum of PFAS	µg/L	5.97	5.74	4	5.97	5.98	0	<0.01	<0.01	0	<0.01

***RPDs have only been considered where a concentration is greater than 1 times th**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for**
*****Interlab Duplicates are matched on a per compound basis as methods vary bet**

		940477 0906_QC203_20221107 7/11/2022	RPD	EM2222404 0906_MW302_20221107 7/11/2022 14:24	EM2222404 0906_QC104_20221107 7/11/2022 14:24	RPD	EM2222404 0906_MW302_20221107 7/11/2022 14:24	940477 0906_QC204_20221107 7/11/2022	RPD	EM2222404 0906_MW308_20221107 7/11/2022 14:24	EM2222404 0906_QC105_20221107 7/11/2022 14:24	RPD
ChemName	**Unit**											
Sum of WA DWER PFAS (n=10)*	ug/L	<0.05	0	<0.01	<0.01	0	<0.01	<0.05	0	<0.01	<0.01	0
Perfluorocarbons												
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctanoate (PFOA)	µg/L	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorononanesulfonic acid (PFNS)	UG/L	<0.01						<0.01				
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.1	0
Perfluoropentanoic acid (PFPeA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoropropanesulfonic acid (PFPrS)	UG/L	<0.01						<0.01				
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorononanoic acid (PFNA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
Sum of PFAS	µg/L	<0.1	0	<0.01	<0.01	0	<0.01	<0.1	0	<0.01	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times th**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for**
*****Interlab Duplicates are matched on a per compound basis as methods vary bet**

		EM2222404 0906_MW308_20221107 7/11/2022 14:24	940477 0906_QC205_20221107 7/11/2022	RPD	EM2222399 0906_MW255_20221108 8/11/2022 13:49	EM2222404 0906_QC106_20221108 8/11/2022 14:24	RPD	EM2222399 0906_MW255_20221108 8/11/2022 13:49	940477 0906_QC206_20221108 8/11/2022	RPD
ChemName	**Unit**									
Sum of WA DWER PFAS (n=10)*	ug/L	<0.01	<0.05	0	0.07	0.07	0	0.07	0.06	15
Perfluorocarbons										
Perfluorooctane sulfonic acid (PFOS)	µg/L	<0.01	<0.01	0	0.02	0.02	0	0.02	0.04	**67**
Perfluorooctanoate (PFOA)	µg/L	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	<0.01	<0.01	0	0.07	0.07	0	0.07	0.04	**55**
Perfluorononanesulfonic acid (PFNS)	UG/L		<0.01						<0.01	
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.01	<0.01	0	0.05	0.05	0	0.05	<0.01	**133**
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	<0.1	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0
Perfluoropentanoic acid (PFPeA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	0.02	0
Perfluoropropanesulfonic acid (PFPrS)	UG/L		<0.01						<0.01	
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Sum of PFAS	µg/L	<0.01	<0.1	0	0.07	0.07	0	0.07	<0.1	0

***RPDs have only been considered where a concentration is greater than 1 times th**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for**
*****Interlab Duplicates are matched on a per compound basis as methods vary bet**

Lab Report Number	EM2222404	EM2222404	EM2222404	EM2222404
Field ID	0906_QC301_20221104	0906_QC302_20221105	0906_QC303_20221107	0906_QC304_20221108
Sampled Date	4/11/2022 14:24	5/11/2022 14:24	7/11/2022 14:24	8/11/2022 14:24
Sample Type	Rinsate	Rinsate	Rinsate	Rinsate

ChemName	Unit	LOR				
Sum of WA DWER PFAS (n=10)*	ug/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluorocarbons						
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoate (PFOA)	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
Perfluorobutane sulfonic acid (PFBS)	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
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	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
Perfluoropentanoic acid (PFPeA)	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
Perfluoroheptanoic acid (PFHpA)	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
Perfluorodecanoic acid (PFDA)	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
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	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
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
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 sulfonate (8:2 FtS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01

		EM2222404 0906_QC305_20221109 9/11/2022 14:24 Rinsate	EM2222404 0906_QC501_20221104 4/11/2022 14:24 Trip_B	EM2222404 0906_QC502_20221105 5/11/2022 14:24 Trip_B	EM2222404 0906_QC503_20221107 7/11/2022 14:24 Trip_B	EM2222404 0906_QC504_20221108 8/11/2022 14:24 Trip_B	EM2222404 0906_QC505_20221109 9/11/2022 14:24 Trip_B
ChemName	**Unit**						
Sum of WA DWER PFAS (n=10)*	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorocarbons							
Perfluorooctane sulfonic acid (PFOS)	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoate (PFOA)	µg/L	<0.01	<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	<0.01
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.02	<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	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.02	<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	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	<0.02	<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	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.02	<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	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	<0.02	<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	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.02	<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	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.05	<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	<0.05
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum of PFAS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

APPENDIX

C

LABORATORY CERTIFICATES

Cardno

now

Stantec

Cardno

145

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]

Phone: [redacted] Fax: +61 3 8415 7788 Mobile: +61 4 2087 7350

Address [redacted]

PM Email: [redacted]

Results Email (please email results to all listed):

[redacted]

Project Number: NSW_0906_PFASOMP

Laboratory (name, phone,fax no & contact person) : Eurofins

Attn [redacted]

Sample ID	Laboratory ID	Container	Sampling Da	Sampling Time	Sample Matrix: Water	Soil				Sample preservation: Ice				Analysis: Per- and Polyfluoroalkyl Substances (PFASs)											HOLD
0906_QC201_20221104		2	4/11		X									X											
0906_QC202_20221105		2	5/11		X									X											
0906_QC203_20221107		2	7/11		X									X											
0906_QC204_20221107		2	7/11		X									X											
0906_QC205_20221107		2	7/11		X									X											
0906_QC206_20221108		2	8/11		X									X											

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples

Sampler name: (print and signature)

Date:

	Date	Time		Date	Time
Relinquished by (Sampler) (print and signature) [redacted]	11/11		Received by (Courier) (print and signature) [redacted]	11/11	4pm
Relinquished by (print and signature) [redacted] (ACJ)	11/11		Received by (print and signature)	Date	Time
Relinquished by (print and signature)	Date	Time	Received by (print and signature)	Date	Time

8.6°
Ice

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

940477

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www.eurofins.com.au EnviroSales@eurofins.com

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IANZ# 1327

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Christchurch 7675
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Sample Receipt Advice

Company name:	Stantec Australia Pty Ltd (VIC)
Contact name:	[redacted]
Project name:	Not provided
Project ID:	NSW_0906_PFASOMP
Turnaround time:	5 Day
Date/Time received	Nov 11, 2022 4:00 PM
Eurofins reference	940477

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted] **on phone :** [redacted] **or by email:** [redacted]

Results will be delivered electronically via email to [redacted]) - [redacted]

Note: A copy of these results will also be delivered to the general Stantec Australia Pty Ltd (VIC) email address.

Global Leader - Results you can trust

eurofins

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email: EnviroSales@eurofins.com

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Tel: 0800 856 450
IANZ# 1290

Company Name: Stantec Australia Pty Ltd (VIC)
Address: [redacted]
Melbourne
VIC 3000

Project Name:
Project ID: NSW_0906_PFASOMP

Order No.:
Report #: 940477
Phone:
Fax:

Received: Nov 11, 2022 4:00 PM
Due: Nov 24, 2022
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC202_20221105	Nov 05, 2022		Water	M22-No0029867	X
2	0906_QC203_20221107	Nov 07, 2022		Water	M22-No0029868	X
3	0906_QC204_20221107	Nov 07, 2022		Water	M22-No0029869	X
4	0906_QC205_20221107	Nov 07, 2022		Water	M22-No0029870	X
Test Counts						4

Stantec Australia Pty Ltd
[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **940477-W-V3**
Project name
Project ID NSW_0906_PFASOMP
Received Date Nov 11, 2022

Client Sample ID			**0906_QC202_20221105**	**0906_QC203_20221107**	**0906_QC204_20221107**	**0906_QC205_20221107**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**M22-No0029867**	**M22-No0029868**	**M22-No0029869**	**M22-No0029870**
Date Sampled			**Nov 05, 2022**	**Nov 07, 2022**	**Nov 07, 2022**	**Nov 07, 2022**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	0.10	< 0.05	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	0.13	< 0.01	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.41	< 0.01	< 0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	0.06	< 0.01	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	0.04	< 0.01	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	90	90	95	96
13C5-PFPeA (surr.)	1	%	94	99	109	106
13C5-PFHxA (surr.)	1	%	99	102	109	108
13C4-PFHpA (surr.)	1	%	97	95	102	103
13C8-PFOA (surr.)	1	%	133	136	142	145
13C5-PFNA (surr.)	1	%	83	83	86	87
13C6-PFDA (surr.)	1	%	67	88	79	88
13C2-PFUnDA (surr.)	1	%	51	83	74	80
13C2-PFDoDA (surr.)	1	%	43	89	71	69
13C2-PFTeDA (surr.)	1	%	56	116	91	93
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	79	97	98	97
D3-N-MeFOSA (surr.)	1	%	123	133	110	138

Client Sample ID			0906_QC202_20221105	0906_QC203_20221107	0906_QC204_20221107	0906_QC205_20221107
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M22-No0029867	M22-No0029868	M22-No0029869	M22-No0029870
Date Sampled			Nov 05, 2022	Nov 07, 2022	Nov 07, 2022	Nov 07, 2022
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D5-N-EtFOSA (surr.)	1	%	112	115	108	127
D7-N-MeFOSE (surr.)	1	%	69	133	89	116
D9-N-EtFOSE (surr.)	1	%	58	106	91	99
D5-N-EtFOSAA (surr.)	1	%	71	114	96	112
D3-N-MeFOSAA (surr.)	1	%	73	100	96	107
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	0.17	< 0.01	< 0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	0.06	< 0.01	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	0.18	< 0.01	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	1.6	< 0.01	< 0.01	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	0.12	< 0.01	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	[N09]3.1	0.01	< 0.01	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	123	116	124	128
18O2-PFHxS (surr.)	1	%	94	96	100	100
13C8-PFOS (surr.)	1	%	107	97	98	97
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	103	76	90	89
13C2-6:2 FTSA (surr.)	1	%	109	129	124	170
13C2-8:2 FTSA (surr.)	1	%	84	92	91	95
13C2-10:2 FTSA (surr.)	1	%	52	98	74	84
PFASs Summations						
Sum (PFHxS + PFOS)*	0.01	ug/L	4.7	0.01	< 0.01	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	3.14	0.01	< 0.01	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	4.74	0.01	< 0.01	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	5.62	< 0.05	< 0.05	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	5.98	< 0.1	< 0.1	< 0.1

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	Nov 24, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	Nov 24, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	Nov 24, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	Nov 24, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	Nov 12, 2022	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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IANZ# 1290

Company Name: Stantec Australia Pty Ltd (VIC)
Address: [redacted]
Melbourne
VIC 3000

Project Name:
Project ID: NSW_0906_PFASOMP

Order No.:
Report #: 940477
Phone:
Fax:

Received: Nov 11, 2022 4:00 PM
Due: Nov 24, 2022
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC202_20221105	Nov 05, 2022		Water	M22-No0029867	X
2	0906_QC203_20221107	Nov 07, 2022		Water	M22-No0029868	X
3	0906_QC204_20221107	Nov 07, 2022		Water	M22-No0029869	X
4	0906_QC205_20221107	Nov 07, 2022		Water	M22-No0029870	X
Test Counts						4

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg milligrams per kilogram
mg/L milligrams per litre
µg/L micrograms per litre
ppm parts per million
ppb parts per billion
% Percentage
org/100 mL Organisms per 100 millilitres
NTU Nephelometric Turbidity Units
MPN/100 mL Most Probable Number of organisms per 100 millilitres
CFU Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	104			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	100			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	88			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	75			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	77			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	75			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	77			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	76			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	84			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	110			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	85			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	100			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	135			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	128			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	86			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	112			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	90			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	102			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	80			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	89			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	96			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	82			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	81			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	88			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	86			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	87			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	102			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	98			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	101			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	M22-No0029791	NCP	%	102			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M22-No0029791	NCP	%	74			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M22-No0029791	NCP	%	83			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M22-No0029791	NCP	%	93			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M22-No0029791	NCP	%	n/a			50-150	Fail	
Perfluorononanoic acid (PFNA)	M22-No0029791	NCP	%	88			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M22-No0029791	NCP	%	88			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	M22-No0029791	NCP	%	97			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	M22-No0029791	NCP	%	98			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M22-No0029791	NCP	%	105			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M22-No0029791	NCP	%	95			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	M22-No0029791	NCP	%	105			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M22-No0029791	NCP	%	106			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M22-No0029791	NCP	%	104			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M22-No0029791	NCP	%	113			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M22-No0029791	NCP	%	110			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M22-No0029791	NCP	%	79			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M22-No0029791	NCP	%	72			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M22-No0029791	NCP	%	69			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	M22-No0029791	NCP	%	84			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M22-No0029791	NCP	%	72			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M22-No0029791	NCP	%	86			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M22-No0029791	NCP	%	86			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M22-No0029791	NCP	%	104			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M22-No0043229	NCP	%	58			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M22-No0029791	NCP	%	80			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M22-No0029791	NCP	%	73			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M22-No0029791	NCP	%	73			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M22-No0029791	NCP	%	85			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M22-No0029791	NCP	%	87			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	M22-No0029790	NCP	ug/L	0.09	0.11	14	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M22-No0029790	NCP	ug/L	0.12	0.12	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M22-No0029790	NCP	ug/L	0.22	0.22	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M22-No0029790	NCP	ug/L	0.32	0.32	2.1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M22-No0029790	NCP	ug/L	0.24	0.25	3.7	30%	Pass	
Perfluorononanoic acid (PFNA)	M22-No0029790	NCP	ug/L	0.18	0.18	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M22-No0029790	NCP	ug/L	0.16	0.18	16	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	M22-No0029790	NCP	ug/L	0.02	0.04	40	30%	Fail	Q15
Perfluorododecanoic acid (PFDoDA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	M22-No0029790	NCP	ug/L	0.17	0.20	19	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M22-No0029790	NCP	ug/L	0.03	0.03	15	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M22-No0029790	NCP	ug/L	0.01	0.01	2.4	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M22-No0029790	NCP	ug/L	0.03	0.03	11	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M22-No0029790	NCP	ug/L	0.13	0.15	10	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M22-No0029790	NCP	ug/L	0.03	0.03	8.4	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M22-No0039406	NCP	ug/L	11	11	2.7	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

This report has been revised (V2) following repeat analysis. PFAS results for sample 0906_QC203_20221107 have now been replaced by the repeat results.

V3: This is a split report with 948319 as requested by MB 8/12/22

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

[redacted] Analytical Services Manager

[redacted] Senior Analyst-PFAS

[redacted]

General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Cardno

145

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed): [redacted]
Project Number: NSW_0906_PFASOMP
Laboratory (name, phone,fax no & contact person) : Eurofins
Attn [redacted] 03 8564 5933

Sample ID	Laboratory ID	Container	Sampling Da	Sampling Time	Sample Matrix: Water	Soil	Sample preservation: Ice	Analysis: Per- and Polyfluoroalkyl Substances (PFASs)	HOLD
0906_QC201_20221104		2	4/11		X			X	
0906_QC202_20221105		2	5/11		X			X	
0906_QC203_20221107		2	7/11		X			X	
0906_QC204_20221107		2	7/11		X			X	
0906_QC205_20221107		2	7/11		X			X	
0906_QC206_20221108		2	8/11		X			X	

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples

Sampler name: (print and signature)

Relinquished by (Sampler) (print and signature) [redacted]	Date 11/11	Time	Received by (print and signature) [redacted]	Date 11/11	Time [redacted]	Date:
Relinquished by (print and signature) [redacted]	Date 11/11	Time	Received by (print and signature)	Date		
Relinquished by (print and signature)	Date	Time	Received by (print and signature)	Date	Time	

8.6°
Ice

Please supply results electronically in spreadsheet and ESDAT files.
Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

940477

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Sample Receipt Advice

Company name:	Stantec Australia Pty Ltd (VIC)
Contact name:	[redacted]
Project name:	Not provided
Project ID:	NSW_0906_PFASOMP
Turnaround time:	5 Day
Date/Time received	Nov 11, 2022 4:00 PM
Eurofins reference	948319

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted]

Results will be delivered electronically via email to [redacted]) - [redacted]

Note: A copy of these results will also be delivered to the general Stantec Australia Pty Ltd (VIC) email address.

Global Leader - Results you can trust

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

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IANZ# 1290

Company Name: Stantec Australia Pty Ltd (VIC)
Address: [redacted]
Melbourne
VIC 3000

Project Name:
Project ID: NSW_0906_PFASOMP

Order No.:
Report #: 948319
Phone:
Fax:

Received: Nov 11, 2022 4:00 PM
Due: Dec 15, 2022
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC201_20221104	Nov 04, 2022		Water	M22-No0029866	X
2	0906_QC206_20221108	Nov 08, 2022		Water	M22-No0029871	X
Test Counts						2

Stantec Australia Pty Ltd
[redacted]
Melbourne
VIC 3000

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **948319-W**
Project name
Project ID NSW_0906_PFASOMP
Received Date Nov 11, 2022

Client Sample ID			**0906_QC201_20221104**	**0906_QC206_20221108**
Sample Matrix			**Water**	**Water**
Eurofins Sample No.			**M22-No0029866**	**M22-No0029871**
Date Sampled			**Nov 04, 2022**	**Nov 08, 2022**
Test/Reference	LOR	Unit		
Perfluoroalkyl carboxylic acids (PFCAs)				
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	0.02	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.04	0.02
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	89	83
13C5-PFPeA (surr.)	1	%	85	93
13C5-PFHxA (surr.)	1	%	96	101
13C4-PFHpA (surr.)	1	%	95	97
13C8-PFOA (surr.)	1	%	136	131
13C5-PFNA (surr.)	1	%	84	83
13C6-PFDA (surr.)	1	%	78	83
13C2-PFUnDA (surr.)	1	%	60	78
13C2-PFDoDA (surr.)	1	%	50	87
13C2-PFTeDA (surr.)	1	%	41	120
Perfluoroalkyl sulfonamido substances				
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	85	97
D3-N-MeFOSA (surr.)	1	%	89	128

Client Sample ID			0906_QC201_20221104	0906_QC206_20221108
Sample Matrix			Water	Water
Eurofins Sample No.			M22-No0029866	M22-No0029871
Date Sampled			Nov 04, 2022	Nov 08, 2022
Test/Reference	LOR	Unit		
Perfluoroalkyl sulfonamido substances				
D5-N-EtFOSA (surr.)	1	%	86	120
D7-N-MeFOSE (surr.)	1	%	70	133
D9-N-EtFOSE (surr.)	1	%	56	104
D5-N-EtFOSAA (surr.)	1	%	79	115
D3-N-MeFOSAA (surr.)	1	%	81	97
Perfluoroalkyl sulfonic acids (PFSAs)				
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	0.12	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	0.71	0.04
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	114	119
18O2-PFHxS (surr.)	1	%	96	93
13C8-PFOS (surr.)	1	%	85	97
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	166	78
13C2-6:2 FTSA (surr.)	1	%	152	110
13C2-8:2 FTSA (surr.)	1	%	114	90
13C2-10:2 FTSA (surr.)	1	%	61	101
PFASs Summations				
Sum (PFHxS + PFOS)*	0.01	ug/L	0.83	0.04
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	0.71	0.04
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	0.83	0.04
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	0.9	0.06
Sum of PFASs (n=30)*	0.1	ug/L	0.9	< 0.1

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	Nov 12, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	Nov 12, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	Nov 12, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	Nov 12, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	Nov 12, 2022	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Address: [redacted]
Melbourne
VIC 3000

Project Name:
Project ID: NSW_0906_PFASOMP

Order No.:
Report #: 948319
Phone:
Fax:

Received: Nov 11, 2022 4:00 PM
Due: Dec 15, 2022
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC201_20221104	Nov 04, 2022		Water	M22-No0029866	X
2	0906_QC206_20221108	Nov 08, 2022		Water	M22-No0029871	X
Test Counts						2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg milligrams per kilogram
mg/L milligrams per litre
µg/L micrograms per litre
ppm parts per million
ppb parts per billion
% Percentage
org/100 mL Organisms per 100 millilitres
NTU Nephelometric Turbidity Units
MPN/100 mL Most Probable Number of organisms per 100 millilitres
CFU Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	124			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	88			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	85			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	79			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	107			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	94			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	92			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	104			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	102			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	112			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	101			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	95			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	134			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	105			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	130			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	114			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	83			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	84			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	71			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	97			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	78			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	78			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	76			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	91			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	105			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	91			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	75			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	70			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	83			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	94			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	M22-No0029791	NCP	%	102			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M22-No0029791	NCP	%	74			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M22-No0029791	NCP	%	83			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M22-No0029791	NCP	%	93			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M22-No0029791	NCP	%	n/a			50-150	Fail	
Perfluorononanoic acid (PFNA)	M22-No0029791	NCP	%	88			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M22-No0029791	NCP	%	88			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	M22-No0029791	NCP	%	97			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	M22-No0029791	NCP	%	98			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M22-No0029791	NCP	%	105			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M22-No0029791	NCP	%	95			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	M22-No0029791	NCP	%	105			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M22-No0029791	NCP	%	106			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M22-No0029791	NCP	%	104			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M22-No0029791	NCP	%	113			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M22-No0029791	NCP	%	110			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M22-No0029791	NCP	%	79			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M22-No0029791	NCP	%	72			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M22-No0029791	NCP	%	69			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	M22-No0029791	NCP	%	84			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M22-No0029791	NCP	%	72			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M22-No0029791	NCP	%	86			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M22-No0029791	NCP	%	86			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M22-No0029791	NCP	%	104			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M22-No0029791	NCP	%	120			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M22-No0029791	NCP	%	80			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M22-No0029791	NCP	%	73			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M22-No0029791	NCP	%	73			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M22-No0029791	NCP	%	85			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M22-No0029791	NCP	%	87			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	M22-No0029790	NCP	ug/L	0.09	0.11	14	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M22-No0029790	NCP	ug/L	0.12	0.12	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M22-No0029790	NCP	ug/L	0.22	0.22	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M22-No0029790	NCP	ug/L	0.32	0.32	2.1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M22-No0029790	NCP	ug/L	0.24	0.25	3.7	30%	Pass	
Perfluorononanoic acid (PFNA)	M22-No0029790	NCP	ug/L	0.18	0.18	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M22-No0029790	NCP	ug/L	0.16	0.18	16	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	M22-No0029790	NCP	ug/L	0.02	0.04	40	30%	Fail	
Perfluorododecanoic acid (PFDoDA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	M22-No0029790	NCP	ug/L	0.17	0.20	19	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M22-No0029790	NCP	ug/L	0.03	0.03	15	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M22-No0029790	NCP	ug/L	0.01	0.01	2.4	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M22-No0029790	NCP	ug/L	0.03	0.03	11	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M22-No0029790	NCP	ug/L	0.13	0.15	10	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M22-No0029790	NCP	ug/L	0.03	0.03	8.4	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M22-No0029790	NCP	ug/L	1.6	1.8	14	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M22-No0029790	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

This is a split report with 940477 as requested by MB 8/12/22

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

[redacted] Analytical Services Manager

[redacted] Senior Analyst-PFAS

[redacted]

[redacted]

General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Cardno

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]
Phone: [redacted]
Address [redacted]
PM Email: [redacted]
Results Email (please email results to all listed): [redacted]

Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone & contact person): [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	Water	Sample preservation: Ice/ Ice Bricks	Analysis: PFAS Standard Suite
0906_MW233_20221107	①	2	7/11/2022			x			x	x

Environmental Division Melbourne
Work Order Reference
EM2222376

Telephone : [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: (print and signature) [redacted] Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Lab): (print and signature) [redacted]	Date 11/11/22	Time 17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222376**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO5.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO5		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°c - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222376-001	07-Nov-2022 00:00	0906_MW233_20221107	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU T[redacted]x Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LABREPORTS

- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222376**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO5.xls	Issue Date	: 17-Nov-2022 12:31
Sampler	: MB		
Site	: Wagga-PO5		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW233_20221107	----	----	----	----
				Sampling date / time	07-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2222376-001	--------	--------	--------	--------	
				Result	----	----	----	----	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.03**	----	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.03**	----	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.23**	----	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.24**	----	----	----	----	
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	**0.04**	----	----	----	----	
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	0906_MW233_20221107	----	----	----	----
				Sampling date / time	07-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222376-001	--------	--------	--------	--------
					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		**0.57**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.47**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.54**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**99.0**	----	----	----	----
13C8-PFOA	----	0.02	%		**94.1**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EM2222376**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO5.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO5		
Quote number	: EN/024/		
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]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222376**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO5	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 1
Order number	: ----	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

- **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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / ***Container*** / Client Sample ID(s)	***Sample Date***	*Extraction / Preparation* ***Date extracted***	*Due for extraction*	*Evaluation*	*Analysis* ***Date analysed***	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW233_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW233_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW233_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW233_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW233_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to **all** listed):
[redacted]
- derp.labreports@esdat.com.au

Project Number: NSW_0906_PFASOMP **Site:**
Laboratory (name, phone, & contact person): ALS [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water		Ice/ Ice Bricks				PFAS Standard Suite
0906_MW235_20221107	1	2	7/11/2022			x				x				x

Environmental Division
Melbourne
Work Order Reference
EM2222377
Telephone [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** (print and signature) [redacted] Date:11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s...	Date 11/11/22	Time 17.20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222377**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted] VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO6.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO6		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222377-001	07-Nov-2022 00:00	0906_MW235_20221107	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

DERP LABREPORTS

- EDI Format - ESDAT (ESDAT) — Email
- Electronic SRN for ESdat (ESRN_ESDAT) — Email

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222377**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO6.xls	Issue Date	: 17-Nov-2022 15:56
Sampler	: MB		
Site	: Wagga-PO6		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW235_20221107	----	----	----	----
				Sampling date / time	07-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222377-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW235_20221107	----	----	----	----
				Sampling date / time	07-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222377-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
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	%		**90.1**	----	----	----	----
13C8-PFOA	----	0.02	%		**95.2**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222377**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO6.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO6		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222377**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO6	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 1
Order number	: ----	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

- **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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW235_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW235_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW235_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW235_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW235_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]

Results Email (please email results to **all** listed):
[redacted]
- derp.labreports@esdat.com.au

Project Number: NSW_0906_PFASOMP **Site:**

Laboratory (name, phone, & contact person): ALS [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	Water		Sample preservation: Ice/ Ice Bricks				Analysis: PFAS Standard Suite
0906_MW200_20221108	1	2	8/11/2022			x				x				x
0906_MW204_20221109	2	2	9/11/2022			x				x				x

Environmental Division
Melbourne
Work Order Reference
EM2222380
Telephone [redacted]

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: (print and signature) [redacted] Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22	Time 17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222380**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted] VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO1.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO1		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222380-001	08-Nov-2022 00:00	0906_MW200_20221108	✓
EM2222380-002	09-Nov-2022 00:00	0906_MW204_20221109	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LABREPORTS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222380**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO1.xls	Issue Date	: 17-Nov-2022 12:31
Sampler	: MB		
Site	: Wagga-PO1		
Quote number	: EN/024/		
No. of samples received	: 2		
No. of samples analysed	: 2		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW200_20221108	0906_MW204_20221109	----	----	----
				Sampling date / time	08-Nov-2022 00:00	09-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2222380-001	EM2222380-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.10**	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.10**	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.64**	<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		**0.28**	<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		**0.14**	<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		**0.02**	<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	0906_MW200_20221108	0906_MW204_20221109	----	----	----
				Sampling date / time	08-Nov-2022 00:00	09-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2222380-001	EM2222380-002	--------	--------	--------
					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		**1.33**	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.92**	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.21**	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.6**	**90.6**	----	----	----
13C8-PFOA	----	0.02	%		**95.4**	**97.8**	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222380**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO1.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO1		
Quote number	: EN/024/		
No. of samples received	: 2		
No. of samples analysed	: 2		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222380**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO1	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 2
Order number	: ----	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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW200_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW204_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW200_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW204_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW200_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW204_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW200_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW204_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW200_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW204_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed):
[redacted]
- derp.labreports@esdat.com.au
Project Number: NSW_0906_PFASOMP Site:
Laboratory (name, phone, & contact person): ALS
[redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Sample preservation: Ice/ Ice Bricks	Analysis: PFAS Standard Suite
0906_MW241_20221108	1	2	8/11/2022			x			x	x
0906_MW242_20221108	2	2	8/11/2022			x			x	x
						x				

Environmental Division Melbourne
Work Order Reference
EM2222383

Telephone : [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: (print and signature) Maya Brennan Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22	Time 17.20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Revision 1
Approved 23 May 2013

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2222383**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO8.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO8		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222383-001	08-Nov-2022 00:00	0906_MW241_20221108	✓
EM2222383-002	08-Nov-2022 00:00	0906_MW242_20221108	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ACCOUNTS ADDRESS
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LABREPORTS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222383**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO8.xls	Issue Date	: 17-Nov-2022 12:32
Sampler	: MB		
Site	: Wagga-PO8		
Quote number	: EN/024/		
No. of samples received	: 2		
No. of samples analysed	: 2		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW241_20221108	0906_MW242_20221108	----	----	----
				Sampling date / time	08-Nov-2022 00:00	08-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2222383-001	EM2222383-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
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	0906_MW241_20221108	0906_MW242_20221108	----	----	----
				Sampling date / time	08-Nov-2022 00:00	08-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2222383-001	EM2222383-002	--------	--------	--------
					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		<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.3**	**94.6**	----	----	----
13C8-PFOA	----	0.02	%		**92.6**	**94.4**	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222383**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO8.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO8		
Quote number	: EN/024/		
No. of samples received	: 2		
No. of samples analysed	: 2		

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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222383**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO8	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 2
Order number	: ----	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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW241_20221108, 0906_MW242_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW241_20221108, 0906_MW242_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW241_20221108, 0906_MW242_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW241_20221108, 0906_MW242_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW241_20221108, 0906_MW242_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet of

PM Name: [redacted]

Phone [redacted]

Address [redacted]

PM Email: [redacted]

Results Email (please email results to all listed):

[redacted]

- derp.labreports@esdat.com.au

Project Number: NSW_0906_PFASOMP Site:

Laboratory (name, phone, & contact person): ALS

[redacted]

Environmental Division
Melbourne
Work Order Reference
EM2222392

Telephone [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Ice/ Ice Bricks	PFAS Standard Suite
0906_MW239_20221108	1	2	8/11/2022			x			x	x
0906_MW238_20221108	2	2	8/11/2022			x			x	x
0906_MW209_20221109	3	2	9/11/2022			x			x	x
0906_MW231_20221109	4	2	9/11/2022			x			x	x

Sample Matrix | Sample preservation | Analysis

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: (print and signature) Maya Brennan Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22	Time 17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222392**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: + [redacted]
Facsimile	: ----	Facsimile	: + [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COCWagga-PO2.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO2		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **17-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°C - 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
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222392-001	08-Nov-2022 00:00	0906_MW239_20221108	✓
EM2222392-002	08-Nov-2022 00:00	0906_MW238_20221108	✓
EM2222392-003	09-Nov-2022 00:00	0906_MW209_20221109	✓
EM2222392-004	09-Nov-2022 00:00	0906_MW231_20221109	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LABREPORTS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222392**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COCWagga-PO2.xls	Issue Date	: 17-Nov-2022 12:34
Sampler	: MB		
Site	: Wagga-PO2		
Quote number	: EN/024/		
No. of samples received	: 4		
No. of samples analysed	: 4		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW239_20221108	0906_MW238_20221108	0906_MW209_20221109	0906_MW231_20221109	----
				Sampling date / time	08-Nov-2022 00:00	08-Nov-2022 00:00	09-Nov-2022 00:00	09-Nov-2022 00:00	----
Compound	CAS Number	LOR	Unit		EM2222392-001	EM2222392-002	EM2222392-003	EM2222392-004	--------
					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: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW239_20221108	0906_MW238_20221108	0906_MW209_20221109	0906_MW231_20221109	----
				Sampling date / time	08-Nov-2022 00:00	08-Nov-2022 00:00	09-Nov-2022 00:00	09-Nov-2022 00:00	----
Compound	CAS Number	LOR	Unit		EM2222392-001	EM2222392-002	EM2222392-003	EM2222392-004	--------
					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	%		**91.1**	**90.3**	**96.4**	**101**	----
13C8-PFOA	----	0.02	%		**92.3**	**96.5**	**95.8**	**98.4**	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EM2222392**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COCWagga-PO2.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO2		
Quote number	: EN/024/		
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]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222392**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO2	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 4
Order number	: ----	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

- **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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW239_20221108, 0906_MW238_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW209_20221109, 0906_MW231_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW239_20221108, 0906_MW238_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW209_20221109, 0906_MW231_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW239_20221108, 0906_MW238_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW209_20221109, 0906_MW231_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW239_20221108, 0906_MW238_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW209_20221109, 0906_MW231_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW239_20221108, 0906_MW238_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)							
0906_MW209_20221109, 0906_MW231_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed):
[redacted]
- derp.labreports@esdat.com.au
Project Number: NSW_0906_PFASOMP Site:
Laboratory (name, phone, & contact person): ALS
[redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Ice/ Ice Bricks	PFAS Standard Suite
0906_MW210_20221108		2	8/11/2022			x			x	x

Sample Matrix | Sample preservation | Analysis

Environmental Division
Melbourne
Work Order Reference
EM2222395

Telephone : [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.		Sampler name: (print and signature)		Date:		
Relinquished by (Sampler): (print and signature)	Date	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22		Time 17.20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date		Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date		Time

Please supply results electronically in spreadsheet and ESDAT files.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222395**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO3.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO3		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222395-001	08-Nov-2022 00:00	0906_MW210_20221108	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LABREPORTS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222395**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO3.xls	Issue Date	: 17-Nov-2022 12:30
Sampler	: MB		
Site	: Wagga-PO3		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW210_20221108	----	----	----	----
				Sampling date / time	08-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222395-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW210_20221108	----	----	----	----
				Sampling date / time	08-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222395-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.2**	----	----	----	----
13C8-PFOA	----	0.02	%		**94.1**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222395**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO3.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO3		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222395**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO3	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 1
Order number	: ----	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

- **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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW210_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW210_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW210_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW210_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW210_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet ____ of ____

PM Name: [redacted]

Phone: [redacted]

Address: [redacted]

PM Email: [redacted]

Results Email (please email results to **all** listed):

[redacted]

- derp.labreports@esdat.com.au

Project Number: NSW_0906_PFASOMP **Site:**

Laboratory (name, phone, & contact person): ALS

[redacted]

Environmental Division Melbourne

Work Order Reference

EM2222397

Telephone : [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Ice/ Ice Bricks	PFAS Standard Suite
0906_SW309_20221108	1	2	8/11/2022				x		x	x
0906_MW211_20221108	2	2	8/11/2022			x			x	x
0906_MW212_20221108	3	4	8/11/2022			x			x	x

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: (print and signature) Maya Brennan Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22	Time 17.20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

[redacted]

From: [redacted]
Sent: Friday, 11 November 2022 2:35 PM
To: [redacted]
Cc:
Subject: [EXTERNAL] - DEF19008 - Wagga/Kapooka/Bandiana sample collection
Attachments: COC Wagga - PO5.xls; COC Wagga - PO6.xls; COC Wagga - PO7.xls; COC Wagga - PO8.xls; COC Wagga - Base.xls; COC Wagga - PO1.xls; COC Wagga - PO2.xls; COC Wagga - PO3.xls; COC Wagga - PO4.xls

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.

Hey [redacted],

See attached Wagga ECOCs.

Thanks again,

[redacted]
Environmental Scientist

Phone: +61 3 9937 0780

[redacted]

Stantec Australia
Level 4, 501 Swanston Street Melbourne Victoria 3000 Australia

Cardno now Stantec

Stantec acknowledges the Traditional Owners of Country throughout Australia and recognises their continuing connection to lands, waters and communities. We pay our respect to Aboriginal and Torres Strait Islander cultures and to Elders past and present.

The content of this email is the confidential property of Stantec and should not be copied, modified, retransmitted, or used for any purpose except with Stantec's written authorization. If you are not the intended recipient, please delete all copies and notify us immediately.

Please consider the environment before printing this email.

From: [redacted]
Sent: Friday, 11 November 2022 12:20 PM
To: [redacted]
Cc: [redacted]
Subject: RE: [EXTERNAL] - DEF19008 - Wagga/Kapooka/Bandiana sample collection

Hey Graeme,

Please see attached ECOC's for Kapooka.

Could we get a 5-day turn around on these.

I will send through the Wagga COCs shortly.

[redacted]

From: [redacted]
Sent: Friday, 11 November 2022 3:00 PM
To: COC Melbourne
Cc: [redacted]
Subject: STANTEC / CARDNO - DEF19008 - Wagga/Kapooka/Bandiana sample collection
Attachments: [EXTERNAL] - DEF190008 Bandiana Additional samples; RE: [EXTERNAL] - DEF19008 - Wagga/Kapooka/Bandiana sample collection; [EXTERNAL] - DEF19008 - Wagga/Kapooka/Bandiana sample collection

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: COC for incoming samples

Sample Receipt

9 eskies coming in from Stantec / Cardno this afternoon.

CoCs attached

Please note there are samples from 3 separate sites:

- 0445 – Bandiana
- 0315 – Kapooka
- 0906 – Wagga Wagga

- 3 eskies of Wagga samples
- 3 eskies of Kapooka samples
- 1 esky of Bandiana samples

All PFAS, approximately.....

- 0445 – Bandiana – 6 samples
- 0315 – Kapooka – 46 samples
- 0906 – Wagga Wagga – 64 samples

Also note that there are separate locations for each site (e.g. Bandiana has P01, Public Lands). Each COC should be a separate work order.

[redacted] - Client has specifically requested 5 day TAT on Kapooka samples if we need to put any on a longer TAT. Also probably need to keep some room for more urgent Coffey / Air Services samples that could still come in. We sent them 100 more bottles this arvo.

Kind Regards

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222397**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: + [redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO4.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO4		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 3 / 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222397-001	08-Nov-2022 00:00	0906_SW309_20221108	✓
EM2222397-002	08-Nov-2022 00:00	0906_MW211_20221108	✓
EM2222397-003	08-Nov-2022 00:00	0906_MW212_20221109	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LABREPORTS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222397**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO4.xls	Issue Date	: 17-Nov-2022 12:32
Sampler	: MB		
Site	: Wagga-PO4		
Quote number	: EN/024/		
No. of samples received	: 3		
No. of samples analysed	: 3		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW211_20221108	0906_MW212_20221109	----	----	----
				Sampling date / time	08-Nov-2022 00:00	08-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2222397-002	EM2222397-003	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW211_20221108	0906_MW212_20221109	----	----	----
				Sampling date / time	08-Nov-2022 00:00	08-Nov-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2222397-002	EM2222397-003	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.0**	**96.2**	----	----	----
13C8-PFOA	----	0.02	%		**95.0**	**97.6**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_SW309_20221108	----	----	----	----
				Sampling date / time	08-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2222397-001	--------	--------	--------	--------	
				Result	----	----	----	----	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_SW309_20221108	----	----	----	----
				Sampling date / time	08-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222397-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
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	%		**94.1**	----	----	----	----
13C8-PFOA	----	0.02	%		**93.1**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222397**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: + [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO4.xls	Issue Date	: 17-Nov-2022
Sampler	: MB		
Site	: Wagga-PO4		
Quote number	: EN/024/		
No. of samples received	: 3		
No. of samples analysed	: 3		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703116)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	99.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703116)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703116)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	70.0	130
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	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703116) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	80.0	70.0	130
EP231P: PFAS Sums (QCLot: 4703116)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222397**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO4	Issue Date	: 17-Nov-2022
Sampler	: MB	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, 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	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_SW309_20221108, 0906_MW211_20221108, 0906_MW212_20221109	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_SW309_20221108, 0906_MW211_20221108, 0906_MW212_20221109	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_SW309_20221108, 0906_MW211_20221108, 0906_MW212_20221109	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_SW309_20221108, 0906_MW211_20221108, 0906_MW212_20221109	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_SW309_20221108, 0906_MW211_20221108, 0906_MW212_20221109	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-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	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

Cardno

Chain of Custody

Sheet 1 of 2

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed):
[redacted]
- derp.labreports@esdat.com.au
Project Number: NSW_0906_PFASOMP Site:
Laboratory (name, phone, & contact person): ALS
[redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Ice/ Ice Bricks				PFAS Standard Suite												Comments
0906_MW245_20221109	1	2	9/11/2022			x			x				x												
0906_MW249_20221109	2	2	9/11/2022			x			x				x												
0906_MW255_20221108	3	2	8/11/2022			x			x				x												
0906_MW253_20221107	4	2	7/11/2022			x			x				x												Extra bottles for lab QC
0906_MW254_20221107	5	2	7/11/2022			x			x				x												
0906_MW240_20221107	6	2	7/11/2022			x			x				x												
0906_MW246_20221107	7	2	7/11/2022			x			x				x												
0906_MW247_20221109	8	2	9/11/2022			x			x				x												
0906_MW256_20221108	9	2	8/11/2022			x			x				x												
0906_MW257_20221109	10	2	9/11/2022			x			x				x												
0906_MW248_20221109	11	2	9/11/2022			x			x				x												
0906_MW244_20221109	12	2	9/11/2022			x			x				x												
0906_SW262_20221108	13	2	8/11/2022				x		x				x												
0906_SW310_20221104	14	2	4/11/2022				x		x				x												
0906_SW234_20221108	15	2	8/11/2022				x		x				x												
0906_SW240_20221104	16	2	4/11/2022				x		x				x												
0906_SW286_20221108	17	2	8/11/2022				x		x				x												
0906_SW289_20221109	18	2	9/11/2022				x		x				x												
0906_SW228_20221109	19	2	9/11/2022				x		x				x												
0906_SW236_20221104	20	2	4/11/2022				x		x				x												Extra bottles for lab QC

Environmental Division
Melbourne
Work Order Reference
EM2222399

Telephone : - [redacted]

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** (print and signature) Maya Brennan Date: 11/11/22

Relinquished by (Sampler): (print and signature)	Date	Time	Received by (Courier/Lab): (print and s	Date	Time
Maya Brennan	11/11/22		[redacted]	14/11/22	17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Page of

Chain of Custody

Sheet 2 of 2

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed):
Project Num Site:
Laboratory (name, phone, & contact person): ALS

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Ice/ Ice Blocks				PFAS Standard Suite											Comments
0906_SW288_20221109		22	9/11/2022				x		x				x											
0906_SW258_20221104		23	9/11/2022				x		x				x											
0906_SW266_20221104		23	9/11/2022				x		x				x											Extra bottles for lab QC
0906_MW292_20221108		24	9/11/2022			x			x				x											

Sampler: I attest that the proper field sampling procedures were used during this collection of | Sampler name: (print and signature) | Mass Sciences | Date: 11/1/22

Relinquished by (Sampler): (print and signature) Mass Sciences	Date 11/1/22	Time	Received by (Courier/Lab): (print and signature) [redacted]	Date	11/14/22	Time	17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date		Time	
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date		Time	

Please supply results electronically in spreadsheet and EDD/ET files.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222399**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]g	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: +[redacted]
Facsimile	: ----	Facsimile	: +[redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 3
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-PO7.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO7		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **17-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 24 / 24

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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222399-001	09-Nov-2022 00:00	0906_MW245_20221109	✓
EM2222399-002	09-Nov-2022 00:00	0906_MW249_20221109	✓
EM2222399-003	08-Nov-2022 00:00	0906_MW255_20221108	✓
EM2222399-004	07-Nov-2022 00:00	0906_MW253_20221107	✓
EM2222399-005	07-Nov-2022 00:00	0906_MW254_20221107	✓
EM2222399-006	07-Nov-2022 00:00	0906_MW240_20221107	✓
EM2222399-007	07-Nov-2022 00:00	0906_MW246_20221107	✓
EM2222399-008	09-Nov-2022 00:00	0906_MW247_20221109	✓
EM2222399-009	08-Nov-2022 00:00	0906_MW256_20221108	✓
EM2222399-010	09-Nov-2022 00:00	0906_MW257_20221109	✓
EM2222399-011	09-Nov-2022 00:00	0906_MW248_20221109	✓
EM2222399-012	09-Nov-2022 00:00	0906_MW244_20221109	✓
EM2222399-013	08-Nov-2022 00:00	0906_SW262_20221108	✓
EM2222399-014	04-Nov-2022 00:00	0906_SW310_20221104	✓
EM2222399-015	08-Nov-2022 00:00	0906_SW234_20221108	✓
EM2222399-016	04-Nov-2022 00:00	0906_SW240_20221104	✓
EM2222399-017	08-Nov-2022 00:00	0906_SW286_20221108	✓
EM2222399-018	09-Nov-2022 00:00	0906_SW289_20221109	✓
EM2222399-019	09-Nov-2022 00:00	0906_SW228_20221109	✓
EM2222399-020	04-Nov-2022 00:00	0906_SW236_20221104	✓
EM2222399-021	09-Nov-2022 00:00	0906_SW288_20221109	✓
EM2222399-022	04-Nov-2022 00:00	0906_SW218_20221104	✓
EM2222399-023	04-Nov-2022 00:00	0906_SW206_20221104	✓
EM2222399-024	09-Nov-2022 00:00	0906_MW250_20221109	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV) — Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

DERP LABREPORTS

- EDI Format - ESDAT (ESDAT) — Email
- Electronic SRN for ESdat (ESRN_ESDAT) — Email

[redacted]

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222399**	Page	: 1 of 15
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO7.xls	Issue Date	: 18-Nov-2022 15:34
Sampler	: MB		
Site	: Wagga-PO7		
Quote number	: EN/024/		
No. of samples received	: 24		
No. of samples analysed	: 24		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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	0906_MW245_20221109	0906_MW249_20221109	0906_MW255_20221108	0906_MW253_20221107	0906_MW254_20221107
				Sampling date / time	09-Nov-2022 00:00	09-Nov-2022 00:00	08-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00
					EM2222399-001	EM2222399-002	EM2222399-003	EM2222399-004	EM2222399-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**0.02**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	**0.05**	**0.02**	**0.12**
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	**0.02**	<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	**0.04**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	**0.03**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	**0.10**
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	0906_MW245_20221109	0906_MW249_20221109	0906_MW255_20221108	0906_MW253_20221107	0906_MW254_20221107
				Sampling date / time	09-Nov-2022 00:00	09-Nov-2022 00:00	08-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		EM2222399-001	EM2222399-002	EM2222399-003	EM2222399-004	EM2222399-005
					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	<0.01	**0.07**	**0.02**	**0.33**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.07**	**0.02**	**0.14**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**0.07**	**0.02**	**0.31**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.4**	**98.8**	**102**	**98.1**	**96.3**
13C8-PFOA	----	0.02	%		**101**	**95.2**	**99.0**	**99.6**	**101**

Analytical Results

Sub-Matrix: **GROUNDWATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW240_20221107	0906_MW246_20221107	0906_MW247_20221109	0906_MW256_20221108	0906_MW257_20221109
				Sampling date / time	07-Nov-2022 00:00	07-Nov-2022 00:00	09-Nov-2022 00:00	08-Nov-2022 00:00	09-Nov-2022 00:00
					EM2222399-006	EM2222399-007	EM2222399-008	EM2222399-009	EM2222399-010
					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		**0.17**	<0.01	<0.01	**0.04**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.04**	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.05**	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<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	0906_MW240_20221107	0906_MW246_20221107	0906_MW247_20221109	0906_MW256_20221108	0906_MW257_20221109
				Sampling date / time	07-Nov-2022 00:00	07-Nov-2022 00:00	09-Nov-2022 00:00	08-Nov-2022 00:00	09-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		EM2222399-006	EM2222399-007	EM2222399-008	EM2222399-009	EM2222399-010
					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	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**0.30**	<0.01	<0.01	**0.04**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.21**	<0.01	<0.01	**0.04**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.28**	<0.01	<0.01	**0.04**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**95.8**	**102**	**105**	**96.3**	**92.3**
13C8-PFOA	----	0.02	%		**99.4**	**101**	**98.8**	**99.5**	**100**

Analytical Results

Sub-Matrix: **GROUNDWATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW248_20221109	0906_MW244_20221109	0906_MW250_20221109	----	----
				Sampling date / time	09-Nov-2022 00:00	09-Nov-2022 00:00	09-Nov-2022 00:00	----	----
					EM2222399-011	EM2222399-012	EM2222399-024	--------	--------
					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		**0.05**	<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		**0.07**	<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		**0.03**	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.03**	<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: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW248_20221109	0906_MW244_20221109	0906_MW250_20221109	----	----
				Sampling date / time	09-Nov-2022 00:00	09-Nov-2022 00:00	09-Nov-2022 00:00	----	----
Compound	CAS Number	LOR	Unit		EM2222399-011	EM2222399-012	EM2222399-024	--------	--------
					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		**0.20**	<0.01	**0.01**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.12**	<0.01	**0.01**	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.18**	<0.01	**0.01**	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**100**	**101**	**91.1**	----	----
13C8-PFOA	----	0.02	%		**96.6**	**99.2**	**94.5**	----	----

Analytical Results

Sub-Matrix: **SURFACE WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW262_20221108	0906_SW310_20221104	0906_SW234_20221108	0906_SW240_20221104	0906_SW286_20221108
				Sampling date / time	08-Nov-2022 00:00	04-Nov-2022 00:00	08-Nov-2022 00:00	04-Nov-2022 00:00	08-Nov-2022 00:00
					EM2222399-013	EM2222399-014	EM2222399-015	EM2222399-016	EM2222399-017
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.13**	<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	**0.55**	**0.02**	**0.01**	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.03**	<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: SURFACE WATER (Matrix: WATER)				Sample ID	0906_SW262_20221108	0906_SW310_20221104	0906_SW234_20221108	0906_SW240_20221104	0906_SW286_20221108
				Sampling date / time	08-Nov-2022 00:00	04-Nov-2022 00:00	08-Nov-2022 00:00	04-Nov-2022 00:00	08-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		EM2222399-013	EM2222399-014	EM2222399-015	EM2222399-016	EM2222399-017
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
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	**0.72**	**0.02**	**0.01**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.68**	**0.02**	**0.01**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.72**	**0.02**	**0.01**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.4**	**110**	**96.4**	**102**	**103**
13C8-PFOA	----	0.02	%		**100**	**101**	**98.1**	**100**	**99.0**

Analytical Results

Sub-Matrix: **SURFACE WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW289_20221109	0906_SW228_20221109	0906_SW236_20221104	0906_SW288_20221109	0906_SW218_20221104
				Sampling date / time	09-Nov-2022 00:00	09-Nov-2022 00:00	04-Nov-2022 00:00	09-Nov-2022 00:00	04-Nov-2022 00:00
					EM2222399-018	EM2222399-019	EM2222399-020	EM2222399-021	EM2222399-022
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.17**	**0.06**	<0.02	<0.02	**0.04**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.11**	**0.08**	<0.02	<0.02	**0.04**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**1.14**	**0.76**	<0.01	<0.01	**0.34**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.08**	**0.05**	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**1.54**	**1.17**	<0.01	**0.02**	**0.63**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.08**	**0.06**	<0.02	<0.02	**0.04**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.35**	**0.27**	<0.02	<0.02	**0.10**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.04**	**0.03**	<0.02	<0.02	**0.02**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.08**	**0.06**	<0.01	<0.01	**0.04**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
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	0906_SW289_20221109	0906_SW228_20221109	0906_SW236_20221104	0906_SW288_20221109	0906_SW218_20221104
				Sampling date / time	09-Nov-2022 00:00	09-Nov-2022 00:00	04-Nov-2022 00:00	09-Nov-2022 00:00	04-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		EM2222399-018	EM2222399-019	EM2222399-020	EM2222399-021	EM2222399-022
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**3.59**	**2.54**	<0.01	**0.02**	**1.25**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**2.68**	**1.93**	<0.01	**0.02**	**0.97**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**3.40**	**2.41**	<0.01	**0.02**	**1.21**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**100**	**105**	**94.5**	**88.2**	**102**
13C8-PFOA	----	0.02	%		**102**	**100**	**97.6**	**96.7**	**94.9**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0906_SW206_20221104	----	----	----	----
				Sampling date / time	04-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222399-023	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.18**	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.12**	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**1.06**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.06**	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**2.01**	----	----	----	----
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		**0.10**	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.29**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.05**	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.09**	----	----	----	----
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	0906_SW206_20221104	----	----	----	----
				Sampling date / time	04-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222399-023	--------	--------	--------	--------
					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		**3.96**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**3.07**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**3.78**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**101**	----	----	----	----
13C8-PFOA	----	0.02	%		**95.2**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: **SURFACE WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EM2222399**	Page	: 1 of 10
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-PO7.xls	Issue Date	: 18-Nov-2022
Sampler	: MB		
Site	: Wagga-PO7		
Quote number	: EN/024/		
No. of samples received	: 24		
No. of samples analysed	: 24		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 4703149)									
EM2222399-004	0906_MW253_20221107	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2222399-007	0906_MW246_20221107	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4703161)									
EM2222399-020	0906_SW236_20221104	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: 4703149)									
EM2222399-004	0906_MW253_20221107	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

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: 4703149) - continued									
EM2222399-004	0906_MW253_20221107	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
EM2222399-007	0906_MW246_20221107	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: 4703161)									
EM2222399-020	0906_SW236_20221104	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: 4703149)									
EM2222399-004	0906_MW253_20221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703149) - continued									
EM2222399-004	0906_MW253_20221107	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
EM2222399-007	0906_MW246_20221107	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: 4703161)									
EM2222399-020	0906_SW236_20221104	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: 4703149)									
EM2222399-004	0906_MW253_20221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory 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: 4703149) - continued									
EM2222399-007	0906_MW246_20221107	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: 4703161)									
EM2222399-020	0906_SW236_20221104	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: 4703149)									
EM2222399-004	0906_MW253_20221107	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.03	40.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.02	0.03	40.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.02	0.03	40.0	No Limit
EM2222399-007	0906_MW246_20221107	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4703161)									
EM2222399-020	0906_SW236_20221104	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **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: 4703149)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	106	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	96.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	103	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	93.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	92.6	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703161)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.3	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	99.1	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	97.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	101	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	90.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703149)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	95.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	94.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	91.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.3	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	95.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.6	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	98.5	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	103	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703161)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	96.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	95.5	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	93.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	94.5	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.8	69.0	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: 4703161) - continued								
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	99.9	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.3	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	101	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703149)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.6	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.3	70.0	130
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	99.2	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703161)								
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	83.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	84.6	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.3	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	87.2	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	97.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703149)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	97.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	99.6	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	77.7	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703161)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	99.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	103	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	110	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	81.4	70.0	130
EP231P: PFAS Sums (QCLot: 4703149)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231P: PFAS Sums (QCLot: 4703149) - continued								
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4703161)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 4703149)							
EM2222399-004	0906_MW253_20221107	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	111	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	99.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	96.9	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	94.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	91.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	76.1	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703161)							
EM2222399-023	0906_SW206_20221104	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	99.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	98.2	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	103	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	85.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703149)							
EM2222399-004	0906_MW253_20221107	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.3	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	98.1	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	97.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.8	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: 4703149) - continued							
EM2222399-004	0906_MW253_20221107	EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	89.6	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	88.8	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	87.2	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	84.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	86.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703161)							
EM2222399-023	0906_SW206_20221104	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	83.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	93.7	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	87.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	91.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	92.0	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	83.4	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	76.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	78.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703149)							
EM2222399-004	0906_MW253_20221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	87.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.7	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	78.3	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	87.1	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	87.6	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	79.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.2	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703161)							
EM2222399-023	0906_SW206_20221104	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	82.3	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	79.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	71.3	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	75.6	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703161) - continued							
EM2222399-023	0906_SW206_20221104	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	91.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	96.7	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	82.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703149)							
EM2222399-004	0906_MW253_20221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	107	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	107	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	103	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	74.0	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703161)							
EM2222399-023	0906_SW206_20221104	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	96.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	97.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	101	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	72.0	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222399**	Page	: 1 of 6
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO7	Issue Date	: 18-Nov-2022
Sampler	: MB	No. of samples received	: 24
Order number	: ----	No. of samples analysed	: 24

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2222399--023	0906_SW206_20221104	**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	EM2222399--023	0906_SW206_20221104	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	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: **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)								
0906_SW310_20221104,	0906_SW240_20221104,	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
0906_SW236_20221104,	0906_SW218_20221104,							
0906_SW206_20221104								
HDPE (no PTFE) (EP231X)								
0906_MW253_20221107,	0906_MW254_20221107,	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
0906_MW240_20221107,	0906_MW246_20221107							
HDPE (no PTFE) (EP231X)								
0906_MW255_20221108,	0906_MW256_20221108,	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
0906_SW262_20221108,	0906_SW234_20221108,							
0906_SW286_20221108								
HDPE (no PTFE) (EP231X)								
0906_MW245_20221109,	0906_MW249_20221109,	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
0906_MW247_20221109,	0906_MW257_20221109,							
0906_MW248_20221109,	0906_MW244_20221109,							
0906_SW289_20221109,	0906_SW228_20221109,							
0906_SW288_20221109,	0906_MW250_20221109							

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) 0906_SW310_20221104, 0906_SW240_20221104, 0906_SW236_20221104, 0906_SW218_20221104, 0906_SW206_20221104	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW253_20221107, 0906_MW254_20221107, 0906_MW240_20221107, 0906_MW246_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW255_20221108, 0906_MW256_20221108, 0906_SW262_20221108, 0906_SW234_20221108, 0906_SW286_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW245_20221109, 0906_MW249_20221109, 0906_MW247_20221109, 0906_MW257_20221109, 0906_MW248_20221109, 0906_MW244_20221109, 0906_SW289_20221109, 0906_SW228_20221109, 0906_SW288_20221109, 0906_MW250_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_SW310_20221104, 0906_SW240_20221104, 0906_SW236_20221104, 0906_SW218_20221104, 0906_SW206_20221104	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW253_20221107, 0906_MW254_20221107, 0906_MW240_20221107, 0906_MW246_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW255_20221108, 0906_MW256_20221108, 0906_SW262_20221108, 0906_SW234_20221108, 0906_SW286_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW245_20221109, 0906_MW249_20221109, 0906_MW247_20221109, 0906_MW257_20221109, 0906_MW248_20221109, 0906_MW244_20221109, 0906_SW289_20221109, 0906_SW228_20221109, 0906_SW288_20221109, 0906_MW250_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_SW310_20221104, 0906_SW240_20221104, 0906_SW236_20221104, 0906_SW218_20221104, 0906_SW206_20221104	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW253_20221107, 0906_MW254_20221107, 0906_MW240_20221107, 0906_MW246_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW255_20221108, 0906_MW256_20221108, 0906_SW262_20221108, 0906_SW234_20221108, 0906_SW286_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW245_20221109, 0906_MW249_20221109, 0906_MW247_20221109, 0906_MW257_20221109, 0906_MW248_20221109, 0906_MW244_20221109, 0906_SW289_20221109, 0906_SW228_20221109, 0906_SW288_20221109, 0906_MW250_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_SW310_20221104, 0906_SW240_20221104, 0906_SW236_20221104, 0906_SW218_20221104, 0906_SW206_20221104	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW253_20221107, 0906_MW254_20221107, 0906_MW240_20221107, 0906_MW246_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW255_20221108, 0906_MW256_20221108, 0906_SW262_20221108, 0906_SW234_20221108, 0906_SW286_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X) 0906_MW245_20221109, 0906_MW249_20221109, 0906_MW247_20221109, 0906_MW257_20221109, 0906_MW248_20221109, 0906_MW244_20221109, 0906_SW289_20221109, 0906_SW228_20221109, 0906_SW288_20221109, 0906_MW250_20221109	**09-Nov-2022**	**15-Nov-2022**	08-May-2023	✓	**15-Nov-2022**	08-May-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	3	27	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	27	**7.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	27	**7.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	27	**7.41**	**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.

Cardno

Chain of Custody

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to **all** listed): [redacted]
- derp.labreports@esdat.com.au
Project Number: NSW_0906_PFASOMP Site:
Laboratory (name, phone, & contact person): ALS [redacted]

Environmental Division
Melbourne
Work Order Reference
EM2222404
Telephone [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Sediment	Groundwater	Surface Water	Water		Sample preservation: Ice/ Ice Bricks				Analysis: PFAS Standard Suite											
0906_SW104_20221105	1	x2	5/11/2022				x			x				x											
0906_MW308_20221107	2	x2	7/11/2022			x				x				x											
0906_MW302_20221107	3	x2	7/11/2022			x				x				x											
0906_MW306_20221107	4	x2	7/11/2022			x				x				x											
0906_MW214_20221107	5	x2	7/11/2022			x				x				x											
0906_MW304_20221107	6	x6	7/11/2022			x				x				x											
0906_MW243_20221107	7	x2	7/11/2022			x				x				x											
0906_MW300_20221107	8	x2 6	7/11/2022			x				x				x											
0906_MW310_20221108	9	x2	8/11/2022			x				x				x											
0906_MW311_20221108	10	x2	8/11/2022			x				x				x											
0906_QC101_20221104	11	x2	4/11/2022				x			x				x											
0906_QC102_20221105	12	x2	5/11/2022				x			x				x											
0906_QC301_20221104	13	x2	4/11/2022					x		x				x											
0906_QC501_20221104	14	x2	4/11/2022					x		x				x											
0906_QC103_20221107	15	x2	7/11/2022				x			x				x											
0906_QC104_20221107	16	x2	7/11/2022				x			x				x											
0906_QC105_20221107	17	x2	7/11/2022				x			x				x											
0906_QC302_20221105	18	x2	5/11/2022					x		x				x											
0906_QC502_20221105	19	x2	5/11/2022					x		x				x											
0906_QC303_20221107	20	x2	7/11/2022					x		x				x											
0906_QC503_20221107	21	x2	7/11/2022					x		x				x											

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: (print and signature) Maya Brennan Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22	Time 17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

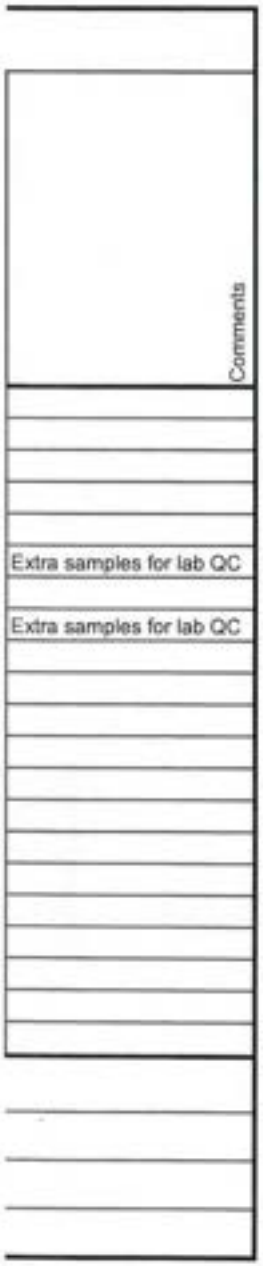
Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

Revision 1
Approved 23 May 2013

COC Wagga - Base.xls

Printed 11/11/2022


Comments
Extra samples for lab QC
Extra samples for lab QC

Base.

Chain of Custody

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to **all** listed):
Project Num/ Site:
Laboratory (name, phone, & contact person): ALS

Sample ID	Laboratory ID	Container	Sampling		Sample Matrix					Sample preservation				Analysis												
			Date	Time	Sediment	Groundwater	Surface Water	Water		Ice/ Ice Bricks				PFAS Standard Suite												
0906_QC304_20221108		x2	8/11/2022	22				x						x												
0906_QC504_20221108		x2	8/11/2022	23				x						x												
0906_QC106_20221108		x2	8/11/2022	24			x							x												
0906_QC305_20221109		x2	9/11/2022	25				x						x												
0906_QC505_20221109		x2	9/11/2022	26				x						x												

Sampler: I attest that the proper field sampling proceedures were used during the		**Sampler name:** (print and signature) Maya Brennan		Date: 11/11/22	
Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/· Please circle

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2222404**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: +[redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 3
Order number	: ----	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: COC Wagga-Base.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-Base		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 14-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°c - Ice present
Receipt Detail	:	No. of samples received / analysed	: 26 / 26

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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222404-001	05-Nov-2022 00:00	0906_SW104_20221105	✓
EM2222404-002	07-Nov-2022 00:00	0906_MW308_20221107	✓
EM2222404-003	07-Nov-2022 00:00	0906_MW302_20221107	✓
EM2222404-004	07-Nov-2022 00:00	0906_MW306_20221107	✓
EM2222404-005	07-Nov-2022 00:00	0906_MW214_20221107	✓
EM2222404-006	07-Nov-2022 00:00	0906_MW304_20221107	✓
EM2222404-007	07-Nov-2022 00:00	0906_MW243_20221107	✓
EM2222404-008	07-Nov-2022 00:00	0906_MW300_20221107	✓
EM2222404-009	08-Nov-2022 00:00	0906_MW310_20221108	✓
EM2222404-010	08-Nov-2022 00:00	0906_MW311_20221108	✓
EM2222404-011	04-Nov-2022 00:00	0906_QC101_20221104	✓
EM2222404-012	05-Nov-2022 00:00	0906_QC102_20221105	✓
EM2222404-013	04-Nov-2022 00:00	0906_QC301_20221104	✓
EM2222404-014	04-Nov-2022 00:00	0906_QC501_20221104	✓
EM2222404-015	07-Nov-2022 00:00	0906_QC103_20221107	✓
EM2222404-016	07-Nov-2022 00:00	0906_QC104_20221107	✓
EM2222404-017	07-Nov-2022 00:00	0906_QC105_20221107	✓
EM2222404-018	05-Nov-2022 00:00	0906_QC302_20221105	✓
EM2222404-019	05-Nov-2022 00:00	0906_QC502_20221105	✓
EM2222404-020	07-Nov-2022 00:00	0906_QC303_20221107	✓
EM2222404-021	07-Nov-2022 00:00	0906_QC503_20221107	✓
EM2222404-022	08-Nov-2022 00:00	0906_QC304_20221108	✓
EM2222404-023	08-Nov-2022 00:00	0906_QC504_20221108	✓
EM2222404-024	08-Nov-2022 00:00	0906_QC106_20221108	✓
EM2222404-025	09-Nov-2022 00:00	0906_QC305_20221109	✓
EM2222404-026	09-Nov-2022 00:00	0906_QC505_20221109	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)	Email
[redacted]	
- *AU Certificate of Analysis - NATA (COA)	Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email
- Chain of Custody (CoC) (COC)	Email
- EDI Format - ESDAT (ESDAT)	Email
- EDI Format - XTab (XTAB)	Email

DERP LAB REPORTS

- EDI Format - ESDAT (ESDAT)	Email
- Electronic SRN for ESdat (ESRN_ESDAT)	Email

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222404**	Page	: 1 of 15
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-Base.xls	Issue Date	: 08-Dec-2022 11:38
Sampler	: MB		
Site	: Wagga-Base		
Quote number	: EN/024/		
No. of samples received	: 26		
No. of samples analysed	: 25		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X: Samples (EM2222404) required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- 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 (21/11/22):This report was opened for amended following the request from B.W of Stantec to add samples 0906_QC501_20221015, 0906_QC502_20221015, 0906_QC503_20221015 from EM2220286 (#84-86). This request was later revoked by M.B of Stantec (23/11/22). Report rereleased unchanged.
- Amendment (8/12/22):This report has been amended following a request from M.B to transfer sample #24 (QC106) to EM2222399
- 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	0906_MW308_20221107	0906_MW302_20221107	0906_MW306_20221107	0906_MW214_20221107	0906_MW304_20221107
				Sampling date / time	07-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00
					EM2222404-002	EM2222404-003	EM2222404-004	EM2222404-005	EM2222404-006
					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**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_MW308_20221107	0906_MW302_20221107	0906_MW306_20221107	0906_MW214_20221107	0906_MW304_20221107
				Sampling date / time	07-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00
					EM2222404-002	EM2222404-003	EM2222404-004	EM2222404-005	EM2222404-006
					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	%		**102**	**91.3**	**88.0**	**92.2**	**108**
13C8-PFOA	----	0.02	%		**95.1**	**93.4**	**93.6**	**96.0**	**100**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0906_MW243_20221107	0906_MW300_20221107	0906_MW310_20221108	0906_MW311_20221108	----
			Sampling date / time	07-Nov-2022 00:00	07-Nov-2022 00:00	08-Nov-2022 00:00	08-Nov-2022 00:00	----
Compound	CAS Number	LOR	Unit	EM2222404-007	EM2222404-008	EM2222404-009	EM2222404-010	--------
				Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	**0.10**	<0.02	**0.05**	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	**0.04**	<0.02	**0.06**	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	**0.13**	<0.01	**0.49**	----
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	**0.06**	<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: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW243_20221107	0906_MW300_20221107	0906_MW310_20221108	0906_MW311_20221108	----
				Sampling date / time	07-Nov-2022 00:00	07-Nov-2022 00:00	08-Nov-2022 00:00	08-Nov-2022 00:00	----
Compound	CAS Number	LOR	Unit		EM2222404-007	EM2222404-008	EM2222404-009	EM2222404-010	--------
					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	**0.35**	<0.01	**0.60**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.13**	<0.01	**0.49**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.31**	<0.01	**0.54**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**87.5**	**94.1**	**97.2**	**96.0**	----
13C8-PFOA	----	0.02	%		**91.1**	**96.0**	**96.4**	**95.8**	----

Analytical Results

Sub-Matrix: **SURFACE WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW104_20221105	0906_QC101_20221104	0906_QC102_20221105	0906_QC103_20221107	0906_QC104_20221107
				Sampling date / time	05-Nov-2022 00:00	04-Nov-2022 00:00	05-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00
					EM2222404-001	EM2222404-011	EM2222404-012	EM2222404-015	EM2222404-016
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.19**	<0.02	**0.20**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.19**	<0.02	**0.18**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**1.54**	**0.12**	**1.44**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.08**	<0.02	**0.09**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**3.34**	**0.48**	**3.19**	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.2	<0.1	<0.2	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.10**	<0.02	**0.10**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.37**	**0.03**	**0.35**	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.05**	<0.02	**0.04**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.11**	**0.01**	**0.10**	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.09	<0.05	<0.09	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.09	<0.05	<0.09	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.09	<0.05	<0.09	<0.05	<0.05

Analytical Results

Sub-Matrix: **SURFACE WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_SW104_20221105	0906_QC101_20221104	0906_QC102_20221105	0906_QC103_20221107	0906_QC104_20221107
				Sampling date / time	05-Nov-2022 00:00	04-Nov-2022 00:00	05-Nov-2022 00:00	07-Nov-2022 00:00	07-Nov-2022 00:00
					EM2222404-001	EM2222404-011	EM2222404-012	EM2222404-015	EM2222404-016
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.09	<0.05	<0.09	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.09	<0.05	<0.09	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.04	<0.02	<0.04	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.04	<0.02	<0.04	<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		**5.97**	**0.64**	**5.74**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**4.88**	**0.60**	**4.63**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**5.70**	**0.64**	**5.47**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**102**	**90.7**	**100**	**99.8**	**98.3**
13C8-PFOA	----	0.02	%		**90.5**	**90.7**	**83.8**	**95.7**	**100**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0906_QC105_20221107	----	----	----	----
				Sampling date / time	07-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222404-017	--------	--------	--------	--------
					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	0906_QC105_20221107	----	----	----	----
				Sampling date / time	07-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222404-017	--------	--------	--------	--------
					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	%		**89.3**	----	----	----	----
13C8-PFOA	----	0.02	%		**98.1**	----	----	----	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC301_20221104	0906_QC501_20221104	0906_QC302_20221105	0906_QC502_20221105	0906_QC303_20221107
				Sampling date / time	04-Nov-2022 00:00	04-Nov-2022 00:00	05-Nov-2022 00:00	05-Nov-2022 00:00	07-Nov-2022 00:00
					EM2222404-013	EM2222404-014	EM2222404-018	EM2222404-019	EM2222404-020
					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: WATER (Matrix: WATER)				Sample ID	0906_QC301_20221104	0906_QC501_20221104	0906_QC302_20221105	0906_QC502_20221105	0906_QC303_20221107
				Sampling date / time	04-Nov-2022 00:00	04-Nov-2022 00:00	05-Nov-2022 00:00	05-Nov-2022 00:00	07-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		EM2222404-013	EM2222404-014	EM2222404-018	EM2222404-019	EM2222404-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<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	%		**100**	**93.6**	**89.8**	**99.9**	**102**
13C8-PFOA	----	0.02	%		**95.2**	**93.8**	**98.2**	**95.0**	**102**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	0906_QC503_20221107	0906_QC304_20221108	0906_QC504_20221108	0906_QC305_20221109	0906_QC505_20221109
				Sampling date / time	07-Nov-2022 00:00	08-Nov-2022 00:00	08-Nov-2022 00:00	09-Nov-2022 00:00	09-Nov-2022 00:00
					EM2222404-021	EM2222404-022	EM2222404-023	EM2222404-025	EM2222404-026
					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: WATER (Matrix: WATER)				Sample ID	0906_QC503_20221107	0906_QC304_20221108	0906_QC504_20221108	0906_QC305_20221109	0906_QC505_20221109
				Sampling date / time	07-Nov-2022 00:00	08-Nov-2022 00:00	08-Nov-2022 00:00	09-Nov-2022 00:00	09-Nov-2022 00:00
Compound	CAS Number	LOR	Unit		EM2222404-021	EM2222404-022	EM2222404-023	EM2222404-025	EM2222404-026
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<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	%		**107**	**98.7**	**98.7**	**104**	**91.7**
13C8-PFOA	----	0.02	%		**99.0**	**102**	**99.3**	**97.5**	**98.3**

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: **SURFACE WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222404**	Page	: 1 of 10
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: COC Wagga-Base.xls	Issue Date	: 08-Dec-2022
Sampler	: MB		
Site	: Wagga-Base		
Quote number	: EN/024/		
No. of samples received	: 26		
No. of samples analysed	: 25		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 4703667)									
EM2222404-006	0906_MW304_20221107	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
EM2222404-008	0906_MW300_20221107	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.13	0.14	0.0	0% - 50%
		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	0.10	0.10	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
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4704849)									
EM2222407-026	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.10	0.10	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.13	0.14	12.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703667)									
EM2222404-006	0906_MW304_20221107	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

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: 4703667) - continued									
EM2222404-006	0906_MW304_20221107	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
EM2222404-008	0906_MW300_20221107	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	0.06	0.06	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: 4704849)									
EM2222407-026	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: 4703667)									
EM2222404-006	0906_MW304_20221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703667) - continued									
EM2222404-006	0906_MW304_20221107	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
EM2222404-008	0906_MW300_20221107	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: 4704849)									
EM2222407-026	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: 4703667)									
EM2222404-006	0906_MW304_20221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory 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: 4703667) - continued									
EM2222404-008	0906_MW300_20221107	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: 4704849)									
EM2222407-026	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: 4703667)									
EM2222404-006	0906_MW304_20221107	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EM2222404-008	0906_MW300_20221107	EP231X: Sum of PFAS	----	0.01	µg/L	0.35	0.36	2.8	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.13	0.14	7.4	0% - 50%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.31	0.32	3.2	0% - 20%
EP231P: PFAS Sums (QC Lot: 4704849)									
EM2222407-026	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.23	0.26	12.2	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.23	0.24	4.3	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.23	0.26	12.2	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: 4703667)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	93.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	98.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	102	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	101	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	96.9	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4704849)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	101	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	95.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	93.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	97.7	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	97.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.6	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703667)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	98.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	95.9	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	97.9	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	95.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	106	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4704849)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	93.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.0	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	96.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	101	69.0	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: 4704849) - continued								
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	96.3	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703667)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	99.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	117	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.5	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	93.3	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	95.3	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	85.9	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4704849)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	114	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	105	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.6	70.0	130
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	91.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703667)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	102	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	100.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	108	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	75.8	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4704849)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	97.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	103	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	103	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	81.7	70.0	130
EP231P: PFAS Sums (QCLot: 4703667)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231P: PFAS Sums (QCLot: 4703667) - continued								
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4704849)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 4703667)							
EM2222404-006	0906_MW304_20221107	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	102	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	90.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	92.0	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	91.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	85.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	84.2	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4704849)							
EM2222407-026	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	102	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	90.1	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	95.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	99.2	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	98.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	93.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703667)							
EM2222404-006	0906_MW304_20221107	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	73.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	89.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	86.6	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	87.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	91.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.5	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	93.7	71.0	129

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703667) - continued							
EM2222404-006	0906_MW304_20221107	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	85.8	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	79.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	75.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4704849)							
EM2222407-026	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	74.0	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	79.8	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	91.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.9	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	92.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	92.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.2	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	84.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	91.6	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703667)							
EM2222404-006	0906_MW304_20221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.2	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	88.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	84.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	75.2	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	81.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	84.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	66.1	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4704849)							
EM2222407-026	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	94.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	92.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	83.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	93.6	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	90.9	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4704849) - continued							
EM2222407-026	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	75.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703667)							
EM2222404-006	0906_MW304_20221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	91.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	98.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	108	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	77.8	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4704849)							
EM2222407-026	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	98.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	107	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	93.6	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	78.3	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222404**	Page	: 1 of 6
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: +[redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-Base	Issue Date	: 08-Dec-2022
Sampler	: MB	No. of samples received	: 26
Order number	: ----	No. of samples analysed	: 25

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **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	3	33	9.09	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0906_QC101_20221104, 0906_QC501_20221104	0906_QC301_20221104,	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_SW104_20221105, 0906_QC302_20221105,	0906_QC102_20221105, 0906_QC502_20221105	**05-Nov-2022**	**15-Nov-2022**	04-May-2023	✓	**15-Nov-2022**	04-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_MW308_20221107, 0906_MW306_20221107, 0906_MW304_20221107, 0906_MW300_20221107, 0906_QC104_20221107,	0906_MW302_20221107, 0906_MW214_20221107, 0906_MW243_20221107, 0906_QC103_20221107, 0906_QC105_20221107	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC303_20221107,	0906_QC503_20221107	**07-Nov-2022**	**16-Nov-2022**	06-May-2023	✓	**16-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_20221108,	0906_MW311_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_20221108,	0906_QC504_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20221109,	0906_QC505_20221109	**09-Nov-2022**	**16-Nov-2022**	08-May-2023	✓	**16-Nov-2022**	08-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_QC101_20221104,	0906_QC301_20221104,	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
0906_QC501_20221104								
HDPE (no PTFE) (EP231X)								
0906_SW104_20221105,	0906_QC102_20221105,	**05-Nov-2022**	**15-Nov-2022**	04-May-2023	✓	**15-Nov-2022**	04-May-2023	✓
0906_QC302_20221105,	0906_QC502_20221105							
HDPE (no PTFE) (EP231X)								
0906_MW308_20221107,	0906_MW302_20221107,	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
0906_MW306_20221107,	0906_MW214_20221107,							
0906_MW304_20221107,	0906_MW243_20221107,							
0906_MW300_20221107,	0906_QC103_20221107,							
0906_QC104_20221107,	0906_QC105_20221107							
HDPE (no PTFE) (EP231X)								
0906_QC303_20221107,	0906_QC503_20221107	**07-Nov-2022**	**16-Nov-2022**	06-May-2023	✓	**16-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_20221108,	0906_MW311_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_20221108,	0906_QC504_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20221109,	0906_QC505_20221109	**09-Nov-2022**	**16-Nov-2022**	08-May-2023	✓	**16-Nov-2022**	08-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0906_QC101_20221104,	0906_QC301_20221104,	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
0906_QC501_20221104								
HDPE (no PTFE) (EP231X)								
0906_SW104_20221105,	0906_QC102_20221105,	**05-Nov-2022**	**15-Nov-2022**	04-May-2023	✓	**15-Nov-2022**	04-May-2023	✓
0906_QC302_20221105,	0906_QC502_20221105							
HDPE (no PTFE) (EP231X)								
0906_MW308_20221107,	0906_MW302_20221107,	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
0906_MW306_20221107,	0906_MW214_20221107,							
0906_MW304_20221107,	0906_MW243_20221107,							
0906_MW300_20221107,	0906_QC103_20221107,							
0906_QC104_20221107,	0906_QC105_20221107							
HDPE (no PTFE) (EP231X)								
0906_QC303_20221107,	0906_QC503_20221107	**07-Nov-2022**	**16-Nov-2022**	06-May-2023	✓	**16-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_20221108,	0906_MW311_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_20221108,	0906_QC504_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20221109,	0906_QC505_20221109	**09-Nov-2022**	**16-Nov-2022**	08-May-2023	✓	**16-Nov-2022**	08-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0906_QC101_20221104,	0906_QC301_20221104,	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
0906_QC501_20221104								
HDPE (no PTFE) (EP231X)								
0906_SW104_20221105,	0906_QC102_20221105,	**05-Nov-2022**	**15-Nov-2022**	04-May-2023	✓	**15-Nov-2022**	04-May-2023	✓
0906_QC302_20221105,	0906_QC502_20221105							
HDPE (no PTFE) (EP231X)								
0906_MW308_20221107,	0906_MW302_20221107,	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
0906_MW306_20221107,	0906_MW214_20221107,							
0906_MW304_20221107,	0906_MW243_20221107,							
0906_MW300_20221107,	0906_QC103_20221107,							
0906_QC104_20221107,	0906_QC105_20221107							
HDPE (no PTFE) (EP231X)								
0906_QC303_20221107,	0906_QC503_20221107	**07-Nov-2022**	**16-Nov-2022**	06-May-2023	✓	**16-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_20221108,	0906_MW311_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_20221108,	0906_QC504_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20221109,	0906_QC505_20221109	**09-Nov-2022**	**16-Nov-2022**	08-May-2023	✓	**16-Nov-2022**	08-May-2023	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0906_QC101_20221104,	0906_QC301_20221104,	**04-Nov-2022**	**15-Nov-2022**	03-May-2023	✓	**15-Nov-2022**	03-May-2023	✓
0906_QC501_20221104								
HDPE (no PTFE) (EP231X)								
0906_SW104_20221105,	0906_QC102_20221105,	**05-Nov-2022**	**15-Nov-2022**	04-May-2023	✓	**15-Nov-2022**	04-May-2023	✓
0906_QC302_20221105,	0906_QC502_20221105							
HDPE (no PTFE) (EP231X)								
0906_MW308_20221107,	0906_MW302_20221107,	**07-Nov-2022**	**15-Nov-2022**	06-May-2023	✓	**15-Nov-2022**	06-May-2023	✓
0906_MW306_20221107,	0906_MW214_20221107,							
0906_MW304_20221107,	0906_MW243_20221107,							
0906_MW300_20221107,	0906_QC103_20221107,							
0906_QC104_20221107,	0906_QC105_20221107							
HDPE (no PTFE) (EP231X)								
0906_QC303_20221107,	0906_QC503_20221107	**07-Nov-2022**	**16-Nov-2022**	06-May-2023	✓	**16-Nov-2022**	06-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_20221108,	0906_MW311_20221108	**08-Nov-2022**	**15-Nov-2022**	07-May-2023	✓	**15-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_20221108,	0906_QC504_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
HDPE (no PTFE) (EP231X)								
0906_QC305_20221109,	0906_QC505_20221109	**09-Nov-2022**	**16-Nov-2022**	08-May-2023	✓	**16-Nov-2022**	08-May-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	3	33	**9.09**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	33	**6.06**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	33	**6.06**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	33	**6.06**	**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.

Cardno

Chain of Custody

Sheet 1 of 2

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed): [redacted]
- derp.labreports@esdat.com.au
Project Number: NSW_0906_PFASOMP Site:
Laboratory (name, phone, & contact person): ALS [redacted]

Environmental Division
Melbourne
Work Order Reference
EM2222404
Telephone [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sediment	Groundwater	Surface Water	Water	Ice/ Ice Bricks	PFAS Standard Suite
0906_SW104_20221105	1	x2	5/11/2022				x		x	x
0906_MW308_20221107	2	x2	7/11/2022			x			x	x
0906_MW302_20221107	3	x2	7/11/2022			x			x	x
0906_MW306_20221107	4	x2	7/11/2022			x			x	x
0906_MW214_20221107	5	x2	7/11/2022			x			x	x
0906_MW304_20221107	6	x6	7/11/2022			x			x	x
0906_MW243_20221107	7	x2	7/11/2022			x			x	x
0906_MW300_20221107	8	x2 6	7/11/2022			x			x	x
0906_MW310_20221108	9	x2	8/11/2022			x			x	x
0906_MW311_20221108	10	x2	8/11/2022			x			x	x
0906_QC101_20221104	11	x2	4/11/2022				x		x	x
0906_QC102_20221105	12	x2	5/11/2022				x		x	x
0906_QC301_20221104	13	x2	4/11/2022					x	x	x
0906_QC501_20221104	14	x2	4/11/2022					x	x	x
0906_QC103_20221107	15	x2	7/11/2022				x		x	x
0906_QC104_20221107	16	x2	7/11/2022				x		x	x
0906_QC105_20221107	17	x2	7/11/2022				x		x	x
0906_QC302_20221105	18	x2	5/11/2022					x	x	x
0906_QC502_20221105	19	x2	5/11/2022					x	x	x
0906_QC303_20221107	20	x2	7/11/2022					x	x	x
0906_QC503_20221107	21	x2	7/11/2022					x	x	x

SCANNED

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. **Sampler name:** (print and signature) Maya Brennan Date: 11/11/22

Relinquished by (Sampler): (print and signature) [redacted]	Date 11/11/22	Time	Received by (Courier/Lab): (print and s [redacted]	Date 11/11/22	Time 17:20
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2222499**

Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]g	Contact	: [redacted]
Address	: [redacted], VIC 3000	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: +[redacted]
Facsimile	: ----	Facsimile	: +[redacted]
Project	: NSW_0906_PFASOMP	Page	: 1 of 2
Order number	:	Quote number	: EP2022MWHAUS0030 (EN/024/)
C-O-C number	: Wagga-PO9.xls	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga-PO9		
Sampler	: MB		

Dates

Date Samples Received	: 11-Nov-2022 17:20	Issue Date	: 16-Nov-2022
Client Requested Due Date	: 21-Nov-2022	Scheduled Reporting Date	: **21-Nov-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 9	Temperature	: 11.4°C
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2222499-001	08-Nov-2022 00:00	0906_MW312_20221108	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ACCOUNTS ADDRESS
- A4 - AU Tax Invoice (INV) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

DERP LAB REPORTS
- EDI Format - ESDAT (ESDAT) Email
- Electronic SRN for ESdat (ESRN_ESDAT) Email

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2222499**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022 17:20
Order number	:	Date Analysis Commenced	: 15-Nov-2022
C-O-C number	: Wagga-PO9.xls	Issue Date	: 21-Nov-2022 16:04
Sampler	: MB		
Site	: Wagga-PO9		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW312_20221108	----	----	----	----
				Sampling date / time	08-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222499-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0906_MW312_20221108	----	----	----	----
				Sampling date / time	08-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2222499-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.1**	----	----	----	----
13C8-PFOA	----	0.02	%		**98.3**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2222499**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Order number	:	Date Analysis Commenced	: 15-Nov-2022
C-O-C number	: Wagga-PO9.xls	Issue Date	: 21-Nov-2022
Sampler	: MB		
Site	: Wagga-PO9		
Quote number	: EN/024/		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 4706376)									
EM2222447-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.06	0.05	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.21	0.22	0.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4706376)									
EM2222447-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4706376)									
EM2222447-001	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

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: 4706376) - continued									
EM2222447-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4706376)									
EM2222447-001	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: 4706376)									
EM2222447-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.30	0.30	0.0	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.27	0.27	0.0	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.30	0.30	0.0	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4706376)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	99.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	99.1	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	96.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	98.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	89.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4706376)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	95.9	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	95.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	95.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	96.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.9	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	103	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4706376)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	101	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	108	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	98.5	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	79.1	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4706376)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	97.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	104	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4706376) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	71.9	70.0	130
EP231P: PFAS Sums (QCLot: 4706376)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2222499**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: Wagga-PO9	Issue Date	: 21-Nov-2022
Sampler	: MB	No. of samples received	: 1
Order number	:	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

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / ***Container*** / Client Sample ID(s)	***Sample Date***	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW312_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW312_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW312_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW312_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW312_20221108	**08-Nov-2022**	**16-Nov-2022**	07-May-2023	✓	**16-Nov-2022**	07-May-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	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	9	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

APPENDIX

D

FIELD RECORDS & CALIBRATION CERTIFICATES

Cardno

now

Stantec

Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Duplicate Samples	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)	Aquifer
MW200	Off-site	540489.09	6111231.75	8/11/2022	-	183.137	-	-	Clear	Low	No well present, sample taken from aqua pond fill point.	-	19.1	3.72	1210	786.5	6.62	92.6	Lachlan
MW204	Off-site	540107.16	6110883.61	8/11/2022	36.4	183.024	14.845	168.179	Clear	Low	Black sediment in base of sleeve, no odour	-	18.4	0.81	414.5	269.4	6.97	-69.9	Lachlan
MW208	Off-site	539924.30	6112236.46	-	-	-	-	-	-	-	Not sampled - no access	-	-	-	-	-	-	-	Lachlan
MW209	Off-site	542521.77	6114403.23	9/11/2022	-	-	16.733	-	Clear	Low	Sampled from outflow pipe, well depth in excess of 100m, water clear, no odour, no particulates	-	18.8	6.32	285.9	185.8	6.65	45.8	Lachlan
MW210	Off-site	540664.20	6114397.70	7/11/2022	-	-		-	Clear	Low	Ran for 5 mins then sampled.	-	16	6.81	193.2	125.6	6.32	172.9	Lachlan
MW211	On-site	535735.79	6113725.27	7/11/2022	-	181.707		-	Clear	Low	Pump left running for 5 minutes prior to sampling. Sampled using the tap.	-	18.3	0.91	219.7	142.8	6.13	142.9	Lachlan
MW212	On-site	535681.87	6113475.53	7/11/2022	-	181.215		-	Clear	Low	Pump left running for 5 minutes prior to sampling. Sampled using the tap.	-	20.6	1.81	379.1	246.4	7.02	-135.9	Lachlan
MW213	On-site	536651.55	6114239.35	-	-	180.533	-	-	-	-	Not sampled - bore uder water and not operational	-	-	-	-	-	-	-	Lachlan
MW214	On-site	542678.11	6111434.75	7/11/2022	-	186.043		-			Keys required from Downer on base. Sampled from tap after a few mins running. Water colour brown then grey when turned on, turned clear	-	21.3	2.27	513	333.5	5.12	32.6	Lachlan
MW215	On-site	542678.11	6111434.75	-	49.02	-	-	-	-	-	Not sampled- data logger only	-	-	-	-	-	-	-	Lachlan
MW231	On-site	540910.71	6113541.05	9/11/2022	-	-		-	Brown	High	Sample taken from bore pump. Water initially brown allowed to run for 5 minutes prior to sampling. When sampled water was clear, no odour, no particulates	-	20	5.75	448.6	291.6	6.52	30.3	Lachlan
MW233	Off-site	539802.59	6112448.66	6/11/2022	-	-		-	Clear	Low	Pump left running 5 minutes prior to sampling. Sample taken from tap attached to bore.	-	21.2	0.44	915	594.8	7.07	-182.7	Cowra
MW235	Off-site	[redacted]	[redacted]	6/11/2022	NM	-		-	Clear	Low	No odour	-	18.8	1.57	138.6	90.09	6.39	113.3	Lachlan
MW238	Off-site	540682.06	6112227.81	8/11/2022	56.17	182.88	14.317	168.563	Clear	Low	No odour	-	20.5	0.84	706	458.9	6.36	152.2	Lachlan
MW239	Off-site	540678.34	6112216.01	8/11/2022	20.95	182.8	14.7	168.1	Brown	High	No odour, sediment in base of sleeve	-	19.3	5.88	1627	1058	6.69	159.4	Cowra
MW240	Off-site	538090.54	6112266.06	6/11/2022	27.56	182.54	13.961	168.579	Cloudy	Moderate	No odour, sediment in base of sleeve	-	20.2	2.8	587	381.6	6.4	152.6	Cowra
MW241	Off-site	544118.31	6109524.74	8/11/2022	75.6	200.07	13.81	186.26			-	-	20.4	0.4	1164	756.6	11.09	-145.2	Lachlan
MW242	Off-site	544118.75	6109538.52	8/11/2022	62.48	199.89	13.88	186.01	Cloudy	Moderate	No odour	-	20.9	0.27	530	344.5	7.19	34.3	Lachlan
MW243	On-site	542979.06	6110074.36	6/11/2022	53.62	211.48	39.721	171.759	Clear	Low	No odour	0906_QC103_20221107 & 0906_QC203_20221107	19.9	1.86	1133	736.5	6.23	191.8	Lachlan
MW244	Off-site	536997.10	6113055.36	8/11/2022	60.25	180.37	6.109	174.261	Cloudy	Moderate	No odour	-	19.3	1	202.1	131.4	6.43	130.7	Lachlan
MW245	Off-site	537011.85	6113066.50	8/11/2022	20.96	180.37	5.847	174.523	Cloudy	Moderate	No odour	-	18.6	0.47	339	220.4	6.04	141.6	Cowra
MW246	Off-site	541737.871	6110580.212	6/11/2022	48.91	189.563	19.425	170.138	Clear	Low	No odour	Internal lab QC	19.7	0.51	391.1	254.2	6.4	55.2	Lachlan
MW247	Off-site	536050.951	6112506.299	9/11/2022	35.41	181.343	13.182	168.161	Cloudy	Modeate	No odour, sediment in base of sleeve	-	22.5	1.06	1058	687.7	6.98	-22.2	Cowra
MW248	Off-site	536049.397	6112509.06	9/11/2022	25.17	181.361	13.046	168.315	Cloudy	Moderate	No odour, sediment in base of sleeve	-	22.3	1.49	2151	1398	6.45	84.2	Lachlan
MW249	Off-site	536082.812	6113454.968	8/11/2022	NM	180.008	5.17	174.838	Clear	Low	No odour	-	17.4	1.42	221.8	144.2	6.26	166.8	Cowra
MW250	Off-site	536087.341	6113452.451	8/11/2022	NM	179.936	6.416	173.52	Clear	Low	No odour	-	16.7	3.44	636	413.4	6.42	166.8	Lachlan
MW251	Off-site	536569.189	6113765.545	-	-	178.394	-	-	-	-	Not sampled - unable to access location due to flood water	-	-	-	-	-	-	-	Cowra
MW252	Off-site	536569.976	6113769.891	-	-	178.607	-	-	-	-	Not sampled - unable to access location due to flood water	-	-	-	-	-	-	-	Lachlan
MW253	Off-site	537469.028	6112456.611	6/11/2022	49.17	180.991	8.691	172.3	Clear	Low	No odour, ants in well head	Internal lab QC	17.7	2.05	3269	2125	6.32	175.5	Cowra
MW254	Off-site	537469.851	6112462.06	6/11/2022	26.14	181.122	12.644	168.478	Cloudy	Low	No odour	-	18	2.86	285.6	185.6	5.94	187.4	Lachlan
MW255	Off-site	539219.759	6112296.567	7/11/2022	52.95	182.094	13.059	169.035	Cloudy	Moderate	No odour	0906_QC106_20221108 & 0906_QC206_20221108	20	0.95	709	460.9	6.22	173	Cowra
MW256	Off-site	539217.619	6112291.105	7/11/2022	22.57	182.128	14.137	167.991	Clear	Low	No odour	-	20.3	1.52	1426	926.9	6.26	165.6	Lachlan
MW257	Off-site	538761.456	6111519.667	8/11/2022	16.36	182.37	14.561	167.809	Cloudy	Low	No odour, small amount of water in sleeve	-	19.4	3.90	3339	2170	6.28	115.8	Cowra
MW300	On-site	542277.11	6110129.15	6/11/2022	60.85	200.538	30.291	170.247	Cloudy	Low	No odour	Internal lab QC	19.2	3.27	1258	817.7	6.05	195.5	Cowra
MW301	On-site	542281.27	6110125.89	-	18.8	200.705	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Lachlan
MW302	On-site	542356.16	6109473.31	7/11/2022	65.48	209.607	39.086	170.521	Clear	Low	No odour	0906_QC104_20221107 & 0906_QC204_20221107	22.9	2.56	939	610.4	6.46	140.1	Cowra
MW303	On-site	542358.37	6109470.43	-	21.46	209.568	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Lachlan
MW304	On-site	541367.48	6108802.00	6/11/2022	58.16	211.767	39.192	172.575	Brown	High	No odour, brwon sediment in sleeve	Internal lab QC	20.7	0.62	1616	1050	6.66	142.2	Lachlan
MW305	On-site	541363.15	6108795.52	-	24.93	211.774	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Cowra
MW306	On-site	542799.42	6107013.89	7/11/2022	60.835	233.058	44.891	188.167	Cloudy	Low	No odour, sediment in sleeve	-	22.8	1.66	2085	1355	6.93	127.6	Lachlan
MW307	On-site	542791.05	6107014.44	-	30.55	232.904	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Cowra
MW308	On-site	543139.39	6109381.63	7/11/2022	66.25	213.901	42.211	171.69	Brown	High	No odour, sediment in sleeve	0906_QC105_20221107 & 0906_QC205_20221107	21.9	2.85	645	419.3	6.17	153.4	Cowra

Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Duplicate Samples	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)	Aquifer
MW309	On-site	543133.57	6109377.71	-	24.805	213.826	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Lachlan
MW310	On-site	543564.83	6108980.78	8/11/2022	58.39	210.274	24.31	-	Cloudy	Moderate	No odour, sediment in sleeve	-	21.6	1.53	1081	702.7	6.82	127.6	Lachlan
MW311	On-site	543566.06	6108977.08	8/11/2022	21.78	210.651	19.23	191.421	Cloudy	Moderate	No odour, brown/orange sediment in sleeve	-	20.7	3.88	3966	2578	6.70	131.5	Cowra
MW312	Off-site	[redacted]	[redacted]	8/11/2022	60.64	182.97	13.665	169.305	Clear	Low	Orange sediment in sleeve	-	21.6	0.53	558	362.7	6.57	126.3	Lachlan
MW313	Off-site	[redacted]	[redacted]	-	11.93	182.99	-	-	-	-	Location Dry	-	-	-	-	-	-	-	Cowra

Sample ID	Property	Easting	Northing	Monitoring Date	Sample Depth (m)	Water Body Depth (m)	Flow Rate	Water Colour	Turbidity	Other Observations	Duplicate Samples	Temp (C^0)	DO (mg/L)	EC (us/Cm)	TDS (mg/L)	pH	Eh (mV)
SW104	On-site	542263.80	6110131.68	5/11/2022	0.1	0.1	Medium	Clear	Low	-	0906_QC102_20221104 & 0906_QC202_20221104	16.8	5.41	738	479.7	7.9	88.3
SW206	Off-site	541675.39	6110527.28	4/11/2022	0.1	1.5	Low	Clear	Low	-	Internal lab QC	16.6	5.68	788	512.2	8.6	-62.2
SW212	Off-site	539563.37	6114381.22	Inaccessible due to flood water													
SW218	Off-site	541679.77	6110529.39	4/11/2022	0.1	1.5	Low	Cloudy	High	Brown cloudy sediment within water flowing from pipe		16.9	0.09	53.9	35.0	7.7	168.8
SW228	Off-site	543262.03	6112272.39	9/11/2022	0.1	0.2	Low	Cloudy	Medium	Sewage odour		22.9	12.90	545	354.3	9.0	32.6
SW234	Off-site	536166.15	6112334.13	8/11/2022	0.1	2	Low	Cloudy	Medium	-		23.1	4.06	161.3	104.8	7.1	145.6
SW236	Off-site	543767.40	6112318.00	4/11/2022	0.1	0.5	Low	Cloudy	Medium	High water level, brown water	Internal lab QC	15.3	5.54	194.6	126.5	7.0	112.2
SW240	Off-site	545028.00	6110672.00	4/11/2022	0.1		High	Clear	Low	Fast flowing water		18.7	2.77	169.2	110.0	6.7	-33.3
SW261	Off-site	534761.81	6114107.59	Inaccessible due to flood water													
SW262	Off-site	534970.84	6113903.83	8/11/2022	0.1	0.2	High	Cloudy	Medium	Sampled on flood plain 15m south of historic location, junction of creek and river not visible.		17	4.93	123.9	80.5	7.5	139.4
SW286	Off-site	543605.67	6114255.45	8/11/2022	0.1	0.5	High	Cloudy	Medium	No odour, minimal particulates, river flowing rapidly		20.3	2.36	229.9	149.4	6.9	133.4
SW288	Off-site	542930.77	6112004.76	9/11/2022	0.1	0.2	High	Brown	High	Strong sewage odour, particulates present in sample		21.2	0.42	947	615.6	7.9	-160.4
SW289	Off-site	543054.42	6112176.56	9/11/2022	0.1	0.2	High	Brown	High	Sewage odour		21.2	0.24	850	552.5	7.4	-50
SW294	Off-site	535307.66	6113375.69	Inaccessible due to flood water													
SW309	Off-site	535436.96	6113744.17	8/11/2022	0.1	0.5	High	Cloudy	Medium	High water level, sampled over river bank		18	4.55	129.7	84.3	6.9	149.5
SW310	Off-site	538809.34	6111596.73	4/11/2022	0.1	0.4	High	Cloudy	Medium	Reeds and grasses observed, high water level and flow. Foam observed during sampling.	0906_QC101_20221104 & 0906_QC201_20221104	19.9	4.91	124.5	80.9	6.9	-48.9

Multi Parameter Water Meter

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Instrument	YSI Quatro Pro Plus
Serial No.	11E101629

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
2. pH 7.00		pH 7.00		386467	pH 7.00
3. pH 4.00		pH 4.00		394432	pH 3.94
4. mV		238.46mV		390802/387761	237.8mV
5. EC		2.76mS		385041	2.76mS
6. Temp		20.7°C		MultiTherm	20.7°C
7. DO		0ppm		379624	0.01ppm

Calibrated by: [redacted]

Calibration date: **31/10/2022**

Next calibration due: **30/11/2022**

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Equipment Calibration Report

Equipment Report – TPS 90FLMV Water Quality Meter

This TPS 90FLMV Water Quality Meter (*Unit*) has been performance checked as per the manufacture's guidelines[1]. – IIE101629

The Unit has been checked for and comprises of the following items:

Present	Damaged	Item
☑	☐	Orange carry case
☑	☐	90FLMV Unit
☑	☐	Dissolved Oxygen (YSI5739) Sensor
☑	☐	pH Sensor
☑	☐	Conductivity/ TDS/ Temperature Sensor
☑	☐	Redox (ORP) Sensor
☑	☐	Battery Charger
☑	☐	Syringe with storage solution (pH 2) for pH & ORP sensors, and a moist sponge for storage of DO sensor.
☑	☐	Instruction Manual
☑	☐	Calibration solutions kit

The following tests and operational checks have been conducted on the Unit:

Test Completed	Test Passed	Item
☐	☑	WQM Unit Cleaned & Decontaminated using Decon 90
☑	☑	Operations check (screen functions)
☑	☑	Battery Voltage <7.2 V (_____V)

The Unit has been performance checked and calibrated as follows:

Parameter	Calibration Values		
Temperature	Thermometer: 15.0 °C	Instrument: 14.9 °C	☑ Calibrated
Dissolved Oxygen	☑ 100% Saturation in Air	☑ 0.00 ppm in Na_2SO_4 solution	
Conductivity	☑ 0 µS/cm	☑ 2,760 µS/cm	
pH	☑ pH 4.00	☑ pH 6.88	☑ pH 9.22

Checked / Calibrated by: [redacted]

Signed: [redacted]

Date: 7/11/2022

[1] 90-FLMV Manual; Version 6.02, TPS, 2006.

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Instrument Quality Report
Interface Meter

enqip

Enqip #:	18035
Company:	Stantec Australia Pty Ltd
Consultant:	[redacted]
PO #:	DEF19008
Certificate #:	26478

INSTRUMENT IDENTIFICATION

Instrument Type:	Solinst Interface Meter
Model Number:	122
Serial Number:	IM-1607

INSPECTION RECORD

Battery:	PASS	**Water Tone:**	PASS
Tape Condition:	PASS	**Hydrocarbon Tone:**	PASS

Tested By: [redacted]

Test Date: 31/10/2022

enqip
116 Thistlethwaite St, South Melbourne 3205
P [redacted]
E info@enqip.com.au | W www.enqip.com.au

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Instrument Quality Report
Interface Meter

enqip

Enqip #:	18035
Company:	Stantec Australia Pty Ltd
Consultant:	[redacted]
PO #:	DEF19008
Certificate #:	26479

INSTRUMENT IDENTIFICATION

Instrument Type:	Solinst Interface Meter
Model Number:	122
Serial Number:	313058

INSPECTION RECORD

Battery:	PASS	**Water Tone:**	PASS
Tape Condition:	PASS	**Hydrocarbon Tone:**	PASS

Tested By: [redacted] **Test Date:** 31/10/2022

enqip
116 Thistlethwaite St, South Melbourne 3205
P [redacted]
E info@enqip.com.au | W www.enqip.com.au

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Instrument Quality Report
Interface Meter

Enqip #: 18035
Company: Stantec Australia Pty Ltd
Consultant: [redacted]
PO #: DEF19008
Certificate #: 26566

INSTRUMENT IDENTIFICATION

Instrument Type: Solinst Interface Meter
Model Number: 122
Serial Number: 313054

INSPECTION RECORD

Battery:	PASS	**Water Tone:**	PASS
Tape Condition:	PASS	**Hydrocarbon Tone:**	PASS

Tested By: [redacted]

Test Date: 8/11/2022

enqip
116 Thistlethwaite St, South Melbourne 3205
P [redacted]
E info@enqip.com.au | W www.enqip.com.au

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Instrument Quality Report
Interface Meter

enqip

Enqip #:	18035
Company:	Stantec Australia Pty Ltd
Consultant:	[redacted]
PO #:	DEF19008
Certificate #:	26567

INSTRUMENT IDENTIFICATION

Instrument Type:	Solinst Interface Meter
Model Number:	122
Serial Number:	313052

INSPECTION RECORD

Battery:	PASS	**Water Tone:**	PASS
Tape Condition:	PASS	**Hydrocarbon Tone:**	PASS

Tested By: [redacted] **Test Date:** 8/11/2022

enqip
116 Thistlethwaite St, South Melbourne 3205
P [redacted]
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Date of Bump Test	Job Number	Unit Brand/ Model	Ambient Air Oxygen Calibration	Zero % Oxygen Solution Calibration	Standard Concentrations	Ambient Temperature (°C)	Bump Test Reading	Bump Test Readings within ±5%?	Comment	Test by (Name)	(Signature)
4/11	DEF19008	11E101629	100% Saturation? (Y) N	0% Calibration? (Y) N NA	pH 4.00 (Y) / N pH 6.88 (Y) / N pH 9.22 (Y) / N EC: 2,760µS/cm (Y) / N	15.6	pH 4.00: 4.02 pH 6.88: 6.90 pH 9.22: 9.26 Temp: 15.0 EC: 2720	pH 4.00: (± pH 0.2) (Y) / N pH 6.88: (± pH 0.2) (Y) / N pH 9.22: (± pH 0.2) (Y) / N Temp: (± 2°C) (Y) / N EC: (± 150µS/cm) (Y) N	N/A	MB	[redacted]
5/11	〃	〃	100% Saturation? (Y) N	0% Calibration? (Y) N NA	pH 4.00 (Y) / N pH 6.88 (Y) / N pH 9.22 (Y) / N EC: 2,760µS/cm (Y) / N	16.8	pH 4.00: 4.19 pH 6.88: 6.99 pH 9.22: 9.27 Temp: 16.9 EC: 2750	pH 4.00: (± pH 0.2) (Y) / N pH 6.88: (± pH 0.2) (Y) / N pH 9.22: (± pH 0.2) (Y) / N Temp: (± 2°C) (Y) / N EC: (± 150µS/cm) (Y) / N	N/A	MB	[redacted]
8/11	〃	〃	100% Saturation? (Y) N	0% Calibration? (Y) N NA	pH 4.00 (Y) / N pH 6.88 (Y) / N pH 9.22 (Y) / N EC: 2,760µS/cm (Y) / N	20.1	pH 4.00: 4.17 pH 6.88: 6.91 pH 9.22: 9.26 Temp: 20.0 EC: 2719	pH 4.00: (± pH 0.2) (Y) / N pH 6.88: (± pH 0.2) (Y) / N pH 9.22: (± pH 0.2) (Y) / N Temp: (± 2°C) (Y) / N EC: (± 150µS/cm) (Y) / N	N/A	MB	[redacted]
9/11	〃	〃	100% Saturation? (Y) N	0% Calibration? (Y) N NA	pH 4.00 (Y) / N pH 6.88 (Y) / N pH 9.22 (Y) / N EC: 2,760µS/cm (Y) / N	19.8	pH 4.00: 4.18 pH 6.88: 6.98 pH 9.22: 9.29 Temp: 19.9 EC: 2726	pH 4.00: (± pH 0.2) (Y) / N pH 6.88: (± pH 0.2) (Y) / N pH 9.22: (± pH 0.2) (Y) / N Temp: (± 2°C) (Y) / N EC: (± 150µS/cm) (Y) / N	N/A	MB	[redacted]
			100% Saturation? Y N	0% Calibration? Y N NA	pH 4.00 Y / N pH 6.88 Y / N pH 9.22 Y / N EC: 2,760µS/cm Y / N		pH 4.00: pH 6.88: pH 9.22: Temp: EC:	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N			
			100% Saturation? Y N	0% Calibration? Y N NA	pH 4.00 Y / N pH 6.88 Y / N pH 9.22 Y / N EC: 2,760µS/cm Y / N		pH 4.00: pH 6.88: pH 9.22: Temp: EC:	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N			
			100% Saturation? Y N	0% Calibration? Y N NA	pH 4.00 Y / N pH 6.88 Y / N pH 9.22 Y / N EC: 2,760µS/cm Y / N		pH 4.00: pH 6.88: pH 9.22: Temp: EC:	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N			
			100% Saturation? Y N	0% Calibration? Y N NA	pH 4.00 Y / N pH 6.88 Y / N pH 9.22 Y / N EC: 2,760µS/cm Y / N		pH 4.00: pH 6.88: pH 9.22: Temp: EC:	pH 4.00: (± pH 0.2) Y / N pH 6.88: (± pH 0.2) Y / N pH 9.22: (± pH 0.2) Y / N Temp: (± 2°C) Y / N EC: (± 150µS/cm) Y / N			

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APPENDIX

E

DATA QUALITY REVIEW

Cardno

now

Stantec

Data Quality Review
RAAF Base Wagga, NSW, 2650

This Appendix reviews the Quality Assurance (QA) and Quality Control (QC) documentation. Quality assurance encompasses the actions, procedures, checks and decisions undertaken to ensure sample integrity and representativeness, and the reliability and accuracy of analysis results. The QA documentation should also include an indication of the Data Quality Objectives sought in relation to each significant action, test or process involved in the Assessment.

QC activities measure the effectiveness of the QA procedures by undertaking testing, and then comparing results to previously established objectives. QC work will include the internal laboratory testing as well as results of QC samples submitted such as trip blanks and duplicates. The quality of the information and/or data is deemed satisfactory when the QC results demonstrate that agreed objectives have been met.

Cardno undertook a review of its QA/QC as part of the data validation exercise. The findings are summarised below.

QA/QC Aspects	Evidence and Evaluation
	QA Documentation
Sampling and Analysis Quality Plan and Data Quality Objectives	Cardno was engaged by Department of Defence (the client) to carry out the PFAS Ongoing Monitoring Plan (OMP) of RAAF Base Wagga, NSW, 2650 (the site). The monitoring event commenced on 4 November 2022 until 9 November 2022 and is in general accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP) of 24 October 2022 (Our Ref: 20191021_OMP002_Wagga_ SAQP_Rev7). The assessment was carried out in general compliance with the following: ▪ Australian Standard AS 4482-2005 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds. ▪ Department of Defence (2019a), Contamination Management Manual (DCMM), August 2019. ▪ Department of Defence (2019b), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring. ▪ Department of Defence, Department of Energy, 2018, Quality System Manual Schedule B15. ▪ EPA Victoria (2009), Industrial Waste Resources Guidelines, Sampling and Analysis of Waters, Wastewaters, Soils and Wastes, Publication 701. ▪ Heads of Environmental Protection Authority's Australia and New Zealand (HEPA) (2020), PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020. ▪ National Environment Protection Council (NEPC), 1999, National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM). ▪ National Health and Medical Research Council (NHMRC) (2019), Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water, August 2019. ▪ USEPA (2000), Guidance for the Data Quality Objectives Process (EPA QA/G-4).

QA/QC Aspects	Evidence and Evaluation
	A quality control program was implemented during the investigation and the quality assurance procedures used have been reiterated in the report. The investigation was carried out in accordance with the Safe Work method Statements (SWMS) and Occupational Health and Safety (OHS) plan for the site. Detailed work plans were also provided for each phase of investigation and are outlined in the SAQP. The Data Quality Objectives were expressed in terms of the purpose of the assessment and the relevant assessment criteria.
Data Validation Report	This review constitutes a data validation review. This was supported by an Esdat generated "QAQC Checker" excel report, summarised in Tables B3 and B4, Appendix B.
Data Representativeness	
Holding Times	Groundwater and surface water sample analysis holding times were in conformance with EPA Publication IWRG701 2009 *'Sampling and Analysis of Waters, Wastewaters, Soils and Wastes*.
Background Samples	No background samples were collected as part of this assessment.
Equipment Decontamination	The decontamination methodology conducted during this investigation is documented in the body of the report, and was in general conformance with the SAQP and work plans. ▪ All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection.
Lab Reports Considered for this Assessment	Please refer to Appendix C
Data Precision and Accuracy	
QC Testing – Blind Replicates (Primary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 36 ▪ Blind Replicate Samples Analysed: 4 ▪ Blind Replicate Analyte Pairs: 112 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances reported for PFAS compounds. RPD results are presented in Table B3, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 13 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 56 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances reported for PFAS compounds. RPD results are presented in Table B3, Appendix B.
QC Testing – Field Splits (Secondary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 36 ▪ Blind Replicate Samples Analysed: 4 ▪ Blind Replicate Analyte Pairs: 112 (excludes 'analytes' that are a summation of other analytes)

QA/QC Aspects	Evidence and Evaluation
	▪ Number of Analyte Pairs Exceeding Criteria: 3 ▪ Percentage of Analyte Pairs Exceeding Criteria: 2.7% The RPD exceedances observed for PFAS compounds were considered to be minor and are due to low reported concentrations of analytes close to the LOR where small discrepancies can lead to disproportionately large RPDs and where larger RPDs are acceptable (e.g. for ALS, the permitted ranges for the RPD of laboratory duplicates are dependent on the magnitude of results in comparison to the LOR and results <10 times LOR have no limit to RPDs). Since they are within the same order of magnitude, it is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 13 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 56 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 2 ▪ Percentage of Analyte Pairs Exceeding Criteria: 3.6% The RPD exceedances associated with PFAS compounds are considered to be minor and likely attributed to low concentrations of analyte pairs. It is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B.
Trip Blanks	Five (5) trip blanks were collected and laboratory tested for PFAS. All analytes were reported below the limit of reporting (LOR). Trip blank results are presented in Table B4, Appendix B.
Laboratory Internal QC	Evidence of the laboratories internal QC testing is present and complete. Both ALS (the primary laboratory) and Eurofins-mgt performed internal QC with adequate testing and satisfactory results for matrix spikes, method blanks and laboratory duplicates.
Laboratory Method Detection Limit	Laboratory reports indicate the method detection limits were lower than the respective assessment criteria.
NATA endorsement of laboratory reports	Laboratory reports were stamped with the NATA endorsement stamp and signature. Laboratory reports are included in Appendix C of this report.
Calibration of Field Equipment	All field equipment used was calibrated by the equipment supplier. Additionally, daily bump tests were performed of the water quality meter throughout the monitoring event. Certificates are included in Appendix D of this report.
Decontamination and Equipment Blanks	All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection. Five (5) rinsate blanks were collected and laboratory tested for PFAS. No PFAS compounds reported above LOR in any rinsate blank sample, indicating that decontamination was adequate. Rinsate blank samples were tested for PFAS which all reported a concentration below the laboratory LOR. Results are shown in Table B4, Appendix B.
Data Comparability	
Full Review of Data	Once all results have been received, Cardno undertook a full review of the data for any anomalies in consideration of historical data at each location (where available), such as first-time detections or exceedances being reported at locations which have not had detections or exceedances previously. Where potentially anomalous data is identified or suspected, further confirmatory measures were undertaken such as re-extraction and reanalysis of the sample by the laboratory and/or additional data quality review. The following samples were re-extracted and reanalysed: MW311, SW206, SW240, SW288. All original results were confirmed.

QA/QC Aspects	Evidence and Evaluation
Standard Procedures	Fieldwork procedures are detailed in the report and followed the work methods outlined in the SAQP.
Qualified Personnel	Staff involved in managing and reviewing the project and those involved in fieldwork are qualified personnel.
Volatile Losses	Volatile losses are not applicable to PFAS.
Sample Integrity	Field Chain of Custody forms are included in Appendix C of this report and demonstrate sample integrity.
Data Completeness	
Completeness of Test Program	The scope of work undertaken was generally consistent with that set out in the Sampling and Analysis Quality Plan (SAQP). Variations to the SAQP are detailed in the Factual Report.
Validity of Data Set	The data quality review indicates no significant systematic errors in the data collection process for surface water and groundwater and therefore, the data set used as the basis for the assessment is considered valid and complete.

APPENDIX

F

INFORMATION ABOUT ENVIRONMENTAL REPORTS

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About Site Environmental Assessment Reports

1. Introduction

This document explains the Environmental Site Assessment (ESA) process and the context that applies to the use of Environmental Reports issued by Cardno.

2. What is an ESA?

Environmental Site Assessments (ESA) are undertaken for a range of purposes, specific to the brief issued by the client in each case. The scope may include one or a combination of any of the following:

- A factual report of the condition of a portion of the site or one aspect of an entire site.
- Assessment of the contamination levels in soil to be removed from a site – a waste classification assessment.
- Validation of the success of remediation of a site or a portion of a site.
- Provision of a professional opinion about the suitability of a site for one or more uses, in terms of its contamination status.

The scope of any ESA needs to be defined at the outset.

An ESA is not an Environmental Audit. Such audits are undertaken in accordance with the provisions of regulations enacted in various states of Australia, and are referred to as Site Audits in some jurisdictions. Statutory audits provide certification by EPA accredited auditors that a site is suitable for one or more uses. An ESA may provide similar advice but cannot be used in place of an audit if the latter is required by regulation in any instance. However in some circumstances and jurisdictions an ESA is sufficient to provide "environmental sign-off" of a site.

An ESA may be undertaken for due diligence purposes, to establish whether the site has been impacted to the extent that some beneficial uses of the site may be precluded. Due diligence audits in many cases may be completed as non-statutory Audits, although in some jurisdictions they can also be statutory audits, if defined as such at the outset.

3. The ESA Process

The Client generally initiates the ESA process by specifying a brief which identifies the specific objectives of the assessment. If not, it is the consultants' duty to so specify the ESA

In the case of an ESA to provide an opinion about the suitability of the site for use, it would be conducted in accordance with NEPM (Site Assessment). Such ESA would not commence until a thorough site history assessment (Phase 1 Assessment: to identify the potential for significant contamination at a site) is conducted. However, where the history is unclear, a broad screening of chemical parameters can be used to test environmental media. This normally includes a broad range of organic and inorganic compounds and elements, often referred to as an Environmental Screen.

(In the case of an ESA for a purpose other than to provide an opinion about the suitability of the site for use, it is not always necessary to undertake a Phase 1 assessment.)

The ESA requires sampling of soil at representative locations across the site. A NATA accredited laboratory performs the analysis of soil. It is impractical for all of the soil to be assessed. The ESA is often based on a statistical method of grid or random sampling, augmented by targeted sampling at locations known or suspected to be contaminated. Guidance on sampling strategy and density is provided in Australian Standard AS4482.1–2005. However, some considerable degree of judgement is still required in the application of any sampling and testing strategy. For example the blanket application of the "hot spot" method presented in this standard is often inappropriate given its limitations.

The field program also investigates the likelihood of contamination below the site surface. Field investigations must sample and test fill as well as the natural soils. If contamination is found then it is common for further work to be undertaken to characterise, to the extent practical, its vertical and horizontal extent. However, where fill is encountered and testing shows it to be uncontaminated, it must be realised that the heterogeneous nature of the material might mean that not all pockets of contaminated material can be detected using normal sampling regimes.

EPA guidelines for auditors, that may be relevant for an ESA, indicate the need in all cases to consider the potential for groundwater contamination in any site. This does not mean all sites need to be drilled to sample groundwater, but it is most often the case. Most hydrogeological settings and groundwater conditions are complex and vary in space and time. The condition of groundwater is investigated to identify if any beneficial use or environmental value of groundwater is precluded due to contamination.

As previously stated for soil, all groundwater at the site cannot be tested. The environmental investigations are conducted in accordance with industry standards and guidelines (e.g. EPA Vic Pub 668). This provides a level of confidence that a sufficiently comprehensive assessment of the groundwater at the site is achieved.

Where an investigation shows that groundwater is polluted, consideration should be given to assessing the risks and the need for and practicality of any clean up.

4. Environmental Assessment Report

The ESA Report details the findings of the ESA. It provides summary information on the site definition, the reasons for the assessment and other relevant facts. It reviews the scope and quality of the site investigations, laboratory testing and data analyses undertaken. These reports also present a review of the contamination status of the site, the need for any further clean up, and an opinion on the suitability of the site for a range of beneficial uses and land uses such as “residential – low density”, “commercial” etc, as appropriate.

However, as noted above, some ESA have a narrow scope such as for classification of waste soil for removal from site, and do not make conclusions on suitability of site for use.

The ESA Report generally includes copies of other documents and reports, necessary to support the assessment findings, presented as appendices. These can contain more detailed information than the body of the ESA Report. Care should be taken to also read the appended documents and the ESA report in full.

Cardno generally issues reports in electronic form (e-Report) on CD ROM. ESA Reports are issued in this format as Adobe Acrobat™ PDF files. However, a paper copy of the executive summary of the ESA Report is generally issued to the client, and others as required by the brief or by regulation.

5. Limitations of Environmental Assessment Report

The ESA Report is prepared in a manner that can be easily read by a lay person with a legitimate interest in the contamination status of the site, such as the site owner or occupier, EPA and Local Planning Authority. The ESA report is not intended for use by other parties or for other purposes. Anyone who uses the assessment report for purposes other than specified in the report, does so at their own risk.

The site should only be used for one or more of the beneficial uses and land uses identified in the ESA as suitable.

The conditions and qualifications may apply to the suitability of the site for use, and it is the responsibility of the Client to be cognizant of and accept these in accepting the report. Cardno are only responsible for the issuing of the ESA report but accepts no liability for the costs incurred in the implementation of ESA findings.

The ESA provides a “snapshot” of the site conditions at the time of the site investigation. Consequently, the report may not be valid at a later time if there has been any change to the contamination status of the site in that time. Verification of the status of the site may be required in cases where a significant time has elapsed, or site conditions have changed since the assessment and audit.

The ESA is necessarily limited by constraints such as time, cost and available information; although normal professional practice at the time has been applied with all due care to prepare the report. A necessary requirement of this process is the horizontal and vertical interpolation of data from discrete locations. However, site conditions are generally not homogenous and some discrepancies will occur between the actual and predicted results at locations not directly sampled. There is a risk that contamination may occur at the site and not be identified by a competent investigation and assessment. The approach adopted in sampling (a combination of statistically based grid and judgmental sampling) seeks to reduce, but cannot eliminate, this risk.

Where unexpected occurrences of contamination arise, subsequent to the issue of the ESA Report, Cardno should be permitted to make an interpretation of these facts in relation to the ESA Report findings. Consequently, the Client should inform Cardno and seek their opinion. Cardno accepts no liability for costs incurred due to such

unexpected occurrences, given the inherent uncertainties in the assessment process.

Cardno uses information provided by other parties as the basis for the ESA, and reliance on this information is at the discretion of Cardno. However, however Cardno cannot guarantee any of the facts, findings or conclusions presented by other parties. Cardno will not be liable for the use of information, provided by others that is subsequently found to be intentionally misleading.

The ESA Report is not and does not purport to be anything other than a contaminated land ESA. It is not a geotechnical report and bore logs reproduced are for interpretation of the likely distribution of contamination. They are not intended for geotechnical interpretations and may not be adequate for this purpose.

The ESA Report is not intended to be a comprehensive analysis of the presence and associated risk of asbestos in buildings and services. Where asbestos in buildings and services is known or likely, the report may only caution that an appropriately qualified person be engaged to undertake demolition to avoid contamination of the site.

Cardno

13 August 2015

APPENDIX

J

E8 FACTUAL REPORT

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PFAS OMP Factual Report

Biannual Sampling Event October 2023

RAAF Base Wagga

DEF19008

Prepared for
Department of Defence

21 February 2024

Cardno

now

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Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Cardno is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

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List of Abbreviations and Units

Chemical Names

DO	Dissolved Oxygen
PFAS	Per- and Poly-fluoroalkyl Substances
PFHxS	Perfluorohexane sulfonate
PFOA	Per-fluoro-octanoic Acid
PFOS	Per-fluoro-octane Sulfonate
TDS	Total Dissolved Solids (salinity of water)

Technical Terms

AFFF	Aqueous Film-Forming Foam
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
AS	Australian Standard
BGL	Below Ground Level
COC	Chain of Custody
DSI	Detailed Site Investigation
EC	Electrical Conductivity
EPA	Environmental Protection Authority
LOR	Limit of Reporting
N/A	Not Applicable
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environmental Protection Measure
ORP	Oxidation Reduction Potential
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan
SWL	Standing Water Level

Units

ha	Hectares
mAHD	Metres above Australian Height Datum
mBGL	Metres Below Ground Level
mbTOC	Metres below Top of Casing
mg/kg	Milligrams per Kilogram (approximately equivalent to ppm)
mg/L	Milligrams per Litre
mm	Millimetre
mV	Millivolt

ppm	Parts per Million
µg/L	Micrograms per Litre
µS/cm	Micro Siemens per Centimetre (Electrical Conductivity – Water)

Site Specific

OMP	Ongoing Monitoring Plan
DCMM	Defence Contamination Management Manual
Esdat	Environmental data management software
WWCDA	Wagga Wagga City Domestic Airport

1 Introduction

1 1 Background

Cardno (now Stantec) was engaged by the Australian Department of Defence (Defence) to carry out the Per- and Poly-Fluoroalkyl Substances (PFAS) Ongoing Monitoring Plan (OMP; Jacobs, 2019b) of groundwater and surface water at RAAF Base Wagga ("the Site"). The Site is located outside of Wagga Wagga in Forest Hill, New South Wales, as shown in Figure 1, Appendix A.

The OMP was carried out in accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP):

> Cardno, 20 October 2023, Reference: DEF19008, PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP) Rev9, RAAF Base Wagga Wagga.

For the purposes of this report:

> RAAF Base Wagga is defined as "the Site", which also represents the "On-Site Monitoring Area". The Site is inclusive of the RAAF Base as well as an operational civilian airfield, Wagga Wagga City Domestic Airport (WWCDA), which is operated by the Wagga Wagga City Council (Council) (Figure 1, Appendix A).

> The "Off-Site Monitoring Area" comprise areas to the east, north, west and north-west of the Site (Figure 1, Appendix A).

> The "Monitoring Area" (MA) is comprised of the "On-Site Monitoring Area" and the "Off-Site Monitoring Area" (Figure 1, Appendix A).

1 Purpose Ob ectives

The objective of the OMP is to assess the changes in the nature and extent of PFAS in groundwater and surface water within the environment, specifically where there is an identified potentially elevated risk to a receptor or a potential future risk to a receptor associated with Defence's historical use of Aqueous Film-Forming Foam (AFFF) including PFAS.

The purpose of this PFAS OMP factual report is to provide an up-to-date status of the condition of the Site as it is currently understood in relation to the most recent sampling event.

The objectives of the report are:

> To provide a succinct summary of the October 2023 sampling event and provision of analytical results with supporting tables and figures.

> To provide confirmation of the current understanding of risk.

> To provide supporting data for the assessment of management actions, where relevant.

1 Relevant Guidelines

This assessment has been undertaken in general accordance with applicable industry standards for a site investigation for the purpose, objectives and scope identified in this report. These standards are set out in:

> Australian and New Zealand Guidelines, (2018), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.

> Department of Defence, Department of Energy, 2018, *Quality System Manual Schedule B15*.

> Heads of Environmental Protection Authority's Australia and New Zealand (HEPA), (2020), *PFAS National Environmental Management Plan (NEMP)*, Version 2.0, January 2020.

> National Environment Protection Council (NEPC), (1999), *National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM)*.

> National Health and Medical Research Council (NHMRC), (2019), *Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water*, August 2019.

> Standards Australia, (1998), *AS/NZ 5667:1998, Water quality – sampling*.

> U.S. Environmental Protection Agency (EPA), (2000), *Guidance for the Data Quality Objectives Process (EPA QA/G-4)*.

> USEPA, (2002), *Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8)*.

Scope of Work

Cardno carried out the following tasks in order to satisfy the purpose and objectives of this assessment.

1 Review / Revision o the SAQP

Cardno undertook a review of the SAQP prior to commencement of sampling and completed updates to bring the SAQP in line with the *PFAS Ongoing Monitoring Program Sampling, Analysis and Quality Plan Guidance* (2023) document. The SAQP (Cardno, 2023) will be reviewed and revised (as required) prior to the next monitoring event scheduled for April 2024.

Groundwater Monitoring

Sampling of groundwater bores was performed in accordance with the SAQP, applying methods set out in Section 3 of this report. The groundwater bores monitored as part of the OMP are presented in Table 2-1, and are shown in Figure 4, Appendix A.

Table 2-1 Groundwater Monitoring Locations (47)

Monitoring Area	Location ID
On-Site	MW243, MW300, MW301, MW302, MW303, MW304, MW305, MW306, MW307, MW308, MW309, MW310, MW311.
Gumly Gumly Wetland	MW200, MW204, MW233, MW312, MW313.
Down-gradient of Gumly Gumly Wetland	MW238, MW239, MW240, MW244, MW245, MW247, MW248, MW249, MW250, MW251, MW252, MW253, MW254, MW255, MW256, MW257.
Off-Site to the north and north-west of Site	MW214[1], MW231, MW235, MW246.
Drinking water supply bores to the north and north-west of Site	MW209, MW210, MW211, MW212, MW213.
Property to the east of the Site	MW241, MW242.
Sentinel wells – up-gradient of the Drinking Water Supply bores	MW258, MW259.

1. MW214 is the current production bore supplying irrigation water to the Base.

Data loggers previously installed in 13 groundwater monitoring locations to monitor water levels over time were retrieved and the data downloaded: MW215, MW242, MW243, MW304, MW312, MW238, MW239, MW245, MW244, MW247, MW248, MW249 and MW250. The data will be assessed and reported as part of the Ongoing Monitoring Report (OMR) for 2022 and 2023.

Sur ace Water Monitoring

Sampling of surface water locations was performed in accordance with the SAQP. Applied methods are set out in Section 3 of this report. The surface water locations monitored as part of the OMP are presented in Table 2-2, and are shown in Figure 5, Appendix A.

Table 2-2 Surface Water Monitoring Locations (16)

Monitoring Area	Location ID
Surface Water Inflows – drains discharging from the Site	SW104, SW206.
Surface Water Outflows – drain parallel to Forest Hill Rural Fire Service	SW218.
Marshalls Creek downstream of Gumly Gumly Wetland	SW234, SW262, SW294, SW310.

Monitoring Area	Location ID
Murrumbidgee River	SW212, SW261, SW286, SW309.
Kyeamba Creek	SW236, SW240.
Forest Hill Sewage Treatment Plant	SW228, SW288, SW289.

Data Management

All the data included in the report has been collected, uploaded to the Defence ESdat database and reviewed according to the data management requirements of the Defence Contamination Management Manual (DCMM) Annex L.

Deviations rom the OMP SAQP

Deviations from the SAQP were encountered during this event, as summarised in Table 2-3 and below. On-Site and off-Site sampling and testing was undertaken at 40 groundwater monitoring wells, and 16 surface water locations.

Six groundwater monitoring wells could not be sampled as the wells were found to be dry or had insufficient water for sampling.

Groundwater location MW210 (PO3) has historically been taken from a tap at the base of a bore pump, however this was found to no longer be in operation as a result of recent earthworks, which has cut the power required by the pump. The sample was taken approximately 20 m to the north-east from a gate valve, which is drawn from a bore screened within the same aquifer (Lachlan) and located in the same general area as MW210. This sampling location has been assigned location code MW260.

Groundwater location MW235 (P06) was unable to be sampled as the bore from which the sample has historically been taken was not in operation. The property has recently been sold. The new owner was unsure of how the bores are activated. The previous owner was unable to be contacted for information. The new property owner verbally advised field staff that the bore will be required for irrigation, and that an update of the bore status would be provided prior to April 2024.

Table 2-3 Deviations from the SAQP

Location	Deviation	Comment/ usti ication	Impact on E isting Dataset
Groundwater			
MW210	Not Sampled. Alternate location sampled.	Due to the previous sampling point being decommissioned, a nearby sampling point connected to a bore screened within the same aquifer (i.e. Lachlan) and located approximately 20 m from MW210, was identified in consultation with the Gumly Irrigation District representative (MW260).	Minimal impact – Sampled location (MW260) is screened within the same aquifer as MW210 and located in the same general area so is considered representative.
MW235	Not Sampled.	MW235 had not been brought into operation as a new property owner has taken over the groundwater bore system used for irrigation which the sampling location is connected to.	Minimal impact – Location last sampled in the November 2022 sampling event. Historical results at this location have been <LOR. The bore system used for irrigation is currently offline, eliminating any potential exposure pathways.
MW301	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.

Location	Deviation	Comment/ usti ication	Impact on E isting Dataset
MW303	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW305	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW307	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW309	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.
MW313	Not Sampled.	Location dry	No impact – wells historically have been dry throughout the DSI and OMP.

Impact on the understanding of the risk profile is considered to be minimal to none for following locations:

- Alternative sampling point for MW210: This is considered to have no impact as the gate valve is connected to a bore screened within the Lachlan aquifer and located in the same general area.
- MW235: The potential impact of this is considered low, as this location has been sampled in every event, with results below LOR. As advised by the new property owner, the irrigation system is currently not in use, with no current exposure pathway.

Overall, the deviations do not represent significant data gaps and therefore the impact on the understanding of the risk profile is negligible.

Methodology

1 Groundwater Sampling Methodology

Groundwater monitoring was undertaken as detailed in Table 3-1.

Table 3-1 Groundwater Sampling Method

Activity	Details
Dates of Field Activity	12 to 17 October 2023
Well Gauging	Standing Water Levels (SWL) were gauged using an interface probe. All wells were measured against a specified surveyed mark at the top of the well casing.
Groundwater Field Parameters	Groundwater water quality parameter field measurements (field parameters) were recorded with a water quality meter before sample collection (with the sample in a clean jar). The following field parameters were recorded using a water quality meter: ▪ pH. ▪ electrical conductivity (EC). ▪ oxidation reduction potential (ORP). ▪ dissolved oxygen (DO). ▪ temperature. Field parameters measured by the water quality meter were recorded on field data records. All field instruments (e.g. water quality meter) were calibrated by the equipment supplier or trained Cardno staff to optimise the accuracy of the measurements taken. Bump tests were also completed daily by field staff during the monitoring event. Calibration certificates and bump test records are provided in Appendix D.
Deployment of HydraSleeves®	The HydraSleeves® were deployed with attached weights in order for sample collection to begin at the lowest point of the well screen. All existing HydraSleeves® which had not been redeployed during the April 2023 event were deployed during the initial gauging round on 12 October 2023. HydraSleeves® were left in wells for a minimum of 24 hours to allow restabilisation of the groundwater following the slight disturbance caused by sampler deployment, before sampling.

Activity	Details
Retrieval of HydraSleeves® (Sample Collection)	Samples were collected via continuous pull method at a rate allowing the water to pass through the check valve into the sample sleeve. Samples were discharged immediately (to minimise changes in chemistry) into laboratory sample bottles via a discharge tube. All HydraSleeves® were replaced with new HydraSleeves® after sampling in preparation for the next sampling event.
Decontamination Procedure	New HydraSleeves® were used at each groundwater monitoring well, thus removing the need for decontamination. All re-usable sampling or down-hole equipment was thoroughly washed using phosphate-free detergent (Liquinox), then double rinsed with de-ionised water before the sample collection.
Sample identification, preservation transport and holding times	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Samples were collected directly into appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under Chain of Custody (CoC) documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998 and AS 4482.1 as appropriate).
Laboratory Testing	All groundwater samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and Chain of Custody documentation are included in Appendix C.
Laboratory Testing – Quality Control	Groundwater quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples (5 samples). ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples (5 samples). ▪ Rinsate blank samples at 1 per day [collected off re-used sampling/down-hole equipment (e.g. interface probe)] (5 samples total). ▪ Trip blank samples of 1 per shipment included in the chilled sample containers upon transport to the laboratory (6 samples total).

Sur ace Water Sampling Methodology

Surface water monitoring was undertaken using a grab method as detailed in Table 3-2.

Table 3-2 Surface Water Sampling Method

Item	Details
Dates of Field Activity	12 to 17 October 2023
Water Level Gauging	Water depths were measured where relevant with a measuring pole following sample collection.

Item	Details
Surface Water Field Parameters	Surface water field parameters (i.e. pH, EC, ORP, DO, and temperature) were recorded at the time of sampling using a pre-calibrated water quality meter. All field instruments (e.g. water quality meter) were calibrated by the equipment supplier or trained Cardno staff to optimise the accuracy of the measurements taken. Bump tests were also completed daily by field staff during the monitoring event. Calibration certificates and bump test records are provided in Appendix D. Field observations such as colour, odours, suspended solids, sheen presence, condition of the water body that was sampled from such as the type (lake, stream etc.) and channel width were recorded on field sampling sheets, as applicable. Flow rates were also quantitatively recorded where possible using the Float Method (whereby the time it takes a buoyant object to float 10 m downstream is measured and converted to a m/s flow rate). Qualitative flow rates were recorded where quantitative measurements were unable to be taken by field staff (such as when environmental conditions significantly limited visibility or there were access constraints).
Sampling Method	Where possible, the samples were collected directly into sample containers. The sample bottles were positioned at least 10 cm below the surface water level and above the sediment bed and orientated with the opening facing downwards to avoid the collection of surface films. Where access to surface water samples was difficult, the samples were collected using a long-handled sampling device with a glass container (scoop) that was lowered directly into the water body. Samples were then decanted into the laboratory-supplied sample containers. Samples were collected in accordance with Australian/New Zealand Standards (AS/NZS 5667.1:1998) '*Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples'*.
Decontamination Procedure	All re-usable sampling equipment was thoroughly washed using phosphate-free detergent (Liquinox), and subsequently double rinsed with de-ionised water before the sample collection.
Sample identification, preservation, transport and holding times.	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM. Samples were contained in appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under Chain of Custody (COC) documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998 and NEPC 1999 as appropriate).
Laboratory Testing	All surface water samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and Chain of Custody documentation are included in Appendix C.
Laboratory Testing – Quality Control	Surface water quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples (2 samples). ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples (2 samples). ▪ Rinsate blank samples at 1 per day [collected off re-used sampling equipment (e.g. long-handled sampling device)] (5 samples total). ▪ Trip blank samples of 1 per shipment included in the chilled sample containers upon transport to the laboratory (6 samples total).

Quality Assurance / Quality Control QA/QC

A critical aspect of site assessments is the demonstration of the quality of the data used as the basis for the assessment. This is achieved through a Data Validation process which includes a review of the following data quality indicators, as described in the SAQP:

- QA documentation.
- Bias.
- Data Representativeness.
- Data Precision & Accuracy.
- Data Comparability.
- Data Set Completeness.

A detailed review of these aspects has been undertaken, the results of which are presented in Appendix E. A summary of the data validation from the QA/QC review is included in Section 4.4 below.

Assessment Criteria

The adopted assessment criteria for groundwater and surface water are detailed in Table 3-3.

Table 3-3 Criteria for Groundwater and Surface Water

E posure Scenario	Adopted Assessment Criteria		Guidance
	PFH S / PFOS	PFOA	
	µg/L		
Human Health – Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Human Health - Surface Water Recreational	2[2]	10	HEPA 2020
Ecological	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2019b).

Field Observations and Results

1 Conditions Impacting the Sampling Event

In the seven days prior to the sampling event, 17.6 mm of rain was recorded at the nearest weather station (072150), located approximately 1 km south of the Site. October 2023 rainfall was 33.0 mm, which is considerably lower than that recorded in April 2023 (61.8 mm), October 2022 (145.8 mm) and October 2021 (44.2 mm). However, October 2023 rainfall is higher than October 2020, which saw no rainfall[1].

No on-Site activities with the potential to impact sample collection or the results were noted.

Groundwater

1 Summary o Field Observations

4.2.1.1 Water quality parameter field measurements

Stabilised water quality field parameters, water colour and turbidity observations recorded during the groundwater sampling program are presented in field sampling record sheets, included in Appendix D. Water quality field parameters were generally consistent with April 2023. Groundwater varied from clear to brown with no/low to high turbidity. Notable changes recorded relative to previous monitoring events include:

[1]http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=136&p_display_type=dailyDataFile&p_startYear=&p_c=&p_stn_num=072150

- MW204 DO concentration decreased by an order of magnitude from 0.93 mg/L to 0.08 mg/L.
- MW231 redox potential decreased from 52.2 mV to -0.8 mV.
- MW241 DO concentration increased by an order of magnitude from 0.51 mg/L to 5.34 mg/L.
- MW245 redox potential increased from -10.3 mV to 123.6 mV.
- MW246 EC increased from 420 µS/cm to 3,810 µS/cm.
- MW250 redox potential decreased from 122.8 mV to -195 mV.
- MW251 redox potential increased from -30.7 mV to 33.0 mV.
- MW252 redox potential decreased from 83.9 mV to -14.7 mV.
- MW255 redox potential increased from -3.1 mV to 11.3 mV.
- MW306 DO concentration increased from 0.57 mg/L to 3.56 mg/L.
- MW306 saw a decrease in redox potential from 22.3 mV to -2.6 mV.

4.2.1.2 Groundwater Elevation and Migration

Groundwater elevation ranges encountered for the two aquifers during this sampling event are as follows:

- Shallow aquifer – from 167.594 mAHD (MW251) to 171.344 mAHD (MW259) for the Cowra Formation
- Deep aquifer – from 166.098 mAHD (MW249) to 202.54 mAHD (MW306) for the Lachlan Formation

Overall groundwater elevations for the shallow aquifer were substantially lower than the April 2023 and November 2022 events, however, the maximum groundwater elevation within the deeper aquifer was substantially higher.

Groundwater flow for both aquifers is interpreted to be in a north-westerly direction from the wells located on and within the vicinity of the Site, consistent with the previous monitoring events.

Within the previous monitoring event (April 2023), groundwater levels were noticeably higher in both the Cowra and Lachlan wells in the north-west near the Murrumbidgee River and Marshalls Creek (MW244, MW245, MW247, MW248, MW249, MW250, MW251, MW252), in comparison to the wells to the south-east near the Gumly Gumly Wetland, with depressed groundwater levels (i.e. lower groundwater elevation relative to surrounding area) around MW255 within the Lachlan aquifer and around MW240, MW254, MW256, and MW257 within the Cowra aquifer. Groundwater gauging undertaken within this event indicates that this may have been a temporary change in the groundwater flow regime (e.g. as a result of meteorological factors), and is not likely to have implications upon the risk profile.

Groundwater elevation contours and flow directions are shown in Figures 2 and 3, Appendix A. Gauging records are presented in Appendix D.

Groundwater Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, and are presented in Table B1, Appendix B, and summarised in Table 4-1 below. Of the 40 primary samples that were tested, PFOA was reported above the limit of reporting (LOR) in 4 samples, and Sum of PFHxS and PFOS in 11 samples.

Table 4-1 Summary of Groundwater Results Exceeding Adopted Criteria

Analytes	Locations E ceeding Criteria	Adopted Criteria µg/L)	Ma Conc (µg/L)	No Analytical Results LOR	No Results Above Criteria	Signi icant Concentration Changes
PFOS	MW200, MW233, MW254	0.13[2]	0.30	10	3	-
PFOA	None	0.56[1]	0.14	4	0	-
Sum of PFHxS and PFOS	MW200, MW233, MW240, MW248, MW253, MW254, MW300, MW311	0.07[1]	0.90	13	8	-

Analytes	Locations E ceeding Criteria	Adopted Criteria µg/L)	Ma Conc (µg/L)	No Analytical Results LOR	No Results Above Criteria	Signi icant Concentration Changes
1. Drinking water assessment criteria 2. Ecological assessment criteria 3. Significant concentration change defined as an order of magnitude increase or decrease 4. The most sensitive adopted guideline value for each analyte is displayed						

Laboratory results have also been compared to available historical data. No locations reported a significant change in concentration for this monitoring event.

No first-time detections of PFOS, PFOS+PFHxS or PFOA or new exceedances of guideline values were reported. The laboratory reports are provided in Appendix C.

Summary o Monitoring Network Condition and Repairs

The monitoring network was observed to be generally in good condition.

The existing lock on well MW215 was found to be rusted and difficult to open. Cardno purchased new combination locks and replaced the rusted locks. The combination was set as 0906.

MW243 was noted as suctioning air down the well when field staff conducted sampling on the 17th of October 2023, consistent with observations from the April 2023 event. It was noted that there appeared to be an induced vacuum coming from within the well, and that a hissing sound was observed when the well was closed. This may be a result of differential pressure between the Cowra and Lachlan aquifers (e.g. as a result of pumping activities). However, suction was not noted as occurring until E7 (April 2023), with both the standing water level and water quality parameters in E7 and E8 consistent with historical results.

The concrete base surrounding MW244 had previously been noted as cracked, potentially allowing for the ingress of surface water into the well. The concrete base around MW244 was removed, and a new concrete base was constructed to ensure the integrity of the well.

No other changes to the monitoring network condition were noted.

Sur ace Water

1 Summary o Field Observations

4.3.1.1 Water quality parameter field measurements

Stabilised water quality field parameters, water colour and turbidity observations recorded during the surface water sampling program are presented in field sampling record sheets, included in Appendix D. Field parameters were generally consistent with historical observations. Surface water varied from clear to brown with low to high turbidity. In general, water clarity was consistent with the previous monitoring round in November 2022, while turbidity was slightly lower. Notable changes recorded relative to previous monitoring events include:

- SW228 DO concentration decreased from 10.44 mg/L to 0.97 mg/L.
- SW228 redox potential increased from -15.2 mV to 2.0 mV.
- SW286 EC decreased from 3,205 µS/cm to 98 µS/cm.
- SW294 redox potential increased from -48.2 mV to 59.8 mV.

Sur ace Water Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, presented in Table B2, Appendix B, and summarised in Table 4-2 below. Of the 16 primary samples that were tested, PFOA was reported above the limit of reporting in three samples, and Sum of PFHxS and PFOS in eight samples.

Table 4-2 Summary of Surface Water Results Exceeding Adopted Criteria

Analytes	Locations E ceeding Criteria	Adopted Criteria (µg/L)	Ma Conc (µg/L)	No Analytical Results LOR	No Results Above Criteria	Signi icant Concentration Changes
PFOS	SW104, SW228, SW289, SW310	0.13[2]	1.03	8	4	SW206 (decrease)
PFOA	-	0.56[1]	0.04	3	-	-
Sum of PFHxS and PFOS	SW104, SW206, SW228, SW289, SW310	0.07[1]	1.57	8	5	SW234 (decrease)

1. Drinking water assessment criteria
2. Ecological assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease
4. The most sensitive assessment criteria for each analyte has been adopted

Results have also been compared to available historical data. Two locations have reported a significant change in concentrations for this monitoring event.

- SW206: PFOS has decreased by one order of magnitude from a previous result of 1.05 µg/L in April 2023 to 0.10 µg/L in this event.
- SW234: Sum of PFHxS and PFOS has decreased by one order of magnitude from a previous result of 0.21 µg/L to 0.02 µg/L in this event.

All other concentrations reported during this event were generally consistent (within the same order of magnitude) with previous sampling events.

No first-time detections of PFOS, PFOS+PFHxS or PFOA or new exceedances of guideline values were reported. The laboratory reports are provided in Appendix C.

Data alidation

The data validation process has concluded that there are no significant systematic errors in the data collection process. Therefore, the data set used as the basis for the surface water and groundwater assessment is considered valid and complete. A detailed Data Quality Review is included in Appendix E.

Risk Pro ile

The risk profile for the Site is detailed in the latest Annual Interpretive Report provided by Cardno (Reference: DEF19008, *'PFAS OMP Annual Interpretive Report -, April and October 2021, Sampling Events RAAF Base Wagga'*. Please refer to this for a detailed discussion.

Summary and Conclusions

Cardno conducted the October 2023 biannual groundwater and surface water monitoring event at RAAF Base Wagga as part of the PFAS OMP. On-Site and off-Site sampling and testing was undertaken at 40 groundwater monitoring wells and 16 surface water locations.

Groundwater levels were gauged in all accessible wells before sampling. Groundwater within both aquifers was interpreted to flow in a north-westerly direction from the wells located around the Site, consistent with the previous monitoring events.

The results of the October 2023 monitoring event do not indicate any changes in the risk profile associated with Defence's historical use of AFFF since the previous monitoring event in April 2023.

Table 5-1 Summary of Results

Activity	Details
Deviations from OMP SAQP	> Six groundwater wells were not sampled due to the wells being dry (MW301, MW303, MW305, MW307, MW309 and MW313). > One groundwater location was not sampled as the bore was not in operation. > Bore MW210 had been decommissioned. Monitoring and sampling was conducted at replacement location MW260, providing representative data for that area of the Site / aquifer.
Groundwater Analytical Results	> 40 groundwater samples were collected in total. > No locations reported a first-time detection for PFOS, PFOA, or PFOS+PFHxS. > No locations reported a new exceedance of the lowest adopted assessment criteria for PFOS, PFOA or PFOS+PFHxS. > All other groundwater results reported during this event were generally consistent with previous sampling events.
Surface Water Analytical Results	> 16 surface water samples were collected in total. > No locations reported a first-time detection for PFOS, PFOA, or PFOS+PFHxS. > No locations reported a new exceedance of the lowest adopted assessment criteria for PFOS, PFOA or PFOS+PFHxS. > One sample reported an order of magnitude decrease in PFOS results compared to the previous event (SW206). > One sample reported an order of magnitude decrease in Sum of PFHxS and PFOS results compared to the previous event (SW234). > All other surface water results reported during this event were generally consistent with the previous monitoring event.
Next Scheduled Monitoring Event	> The next OMP monitoring event is scheduled for April 2024. > SAQP to be reviewed and updated as required prior to the next monitoring event.

References

General Re erences

1. Australian and New Zealand Guidelines, (2018), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.
2. Department of Defence (2021a) *Defence OMP Factual Report Preparation Guidance*, Revised May 2021.
3. Department of Defence (2021b), Defence Contamination Management Manual (DCMM), Annex L – Data Management, August 2018, Amended June 2021.
4. Environmental Protection Agency (United States EPA; 2002) EPA/240/R-02/004 *Guidance on Environmental Data Verification and Data Validation,* November 2002.
5. The Heads of EPAs Australia and New Zealand (HEPA; 2020) *PFAS National Environmental Management Plan (NEMP) Version 2.0*, January 2020.
6. National Environment Protection Council (NEPC; 1999 - amended 2013) *National Environmental Protection (Assessment of Site Contamination) Measure (as amended),* registered May 2013.
7. National Health and Medical Research Council (2011 – updated 2018) *National Water Quality Management Strategy Australian Drinking Water Guidelines*, 6 August 2018.
8. Nation Health and Medical Research Council (NHMRC; 2019) *Guidance on Per and Poly-fluoroalkyl Substances (PFAS) in Recreational Water,* August 2019.
9. Standards Australia/Standards New Zealand (1998) AS5667.1:1998 *Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*.
10. US EPA (2006) *Guidance for the Data Quality Objectives Process* (EPA QA/G-4), United States Environmental Protection Agency.
11. US EPA (2002) *Guidance on Environmental Data Verification and Data Validation,* Reference: EPA/240/R-02/004, United States Environmental Protection Agency, November 2002.

Site Speci ic Re erences

12. Jacobs (2018a) *Comprehensive Investigation of Per- And Poly- Fluoroalkyl Substances (PFAS) at RAAF Base Wagga. Detailed Site Investigation*, June 2018.
13. Jacobs (2018b) *Human Health and Ecological Risk Assessment for the RAAF Base Wagga PFAS Investigation*, 6 November 2018.
14. Jacobs (2019a) *RAAF Base Wagga; PFAS Management Area Plan*, September 2019.
15. Jacobs (2019b) *PFAS Ongoing Monitoring Plan*, September 2019.
16. Jacobs (2020) *RAAF Base Wagga Comprehensive PFAS Investigation - Ongoing Monitoring Program Groundwater Well Installation Report.* Prepared for Department of Defence, December 2020.
17. Cardno (2023) *PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP),* RAAF Base Wagga. Prepared for Department of Defence, October 2023.

APPENDIX

A

FIGURES

Cardno

now

Stantec

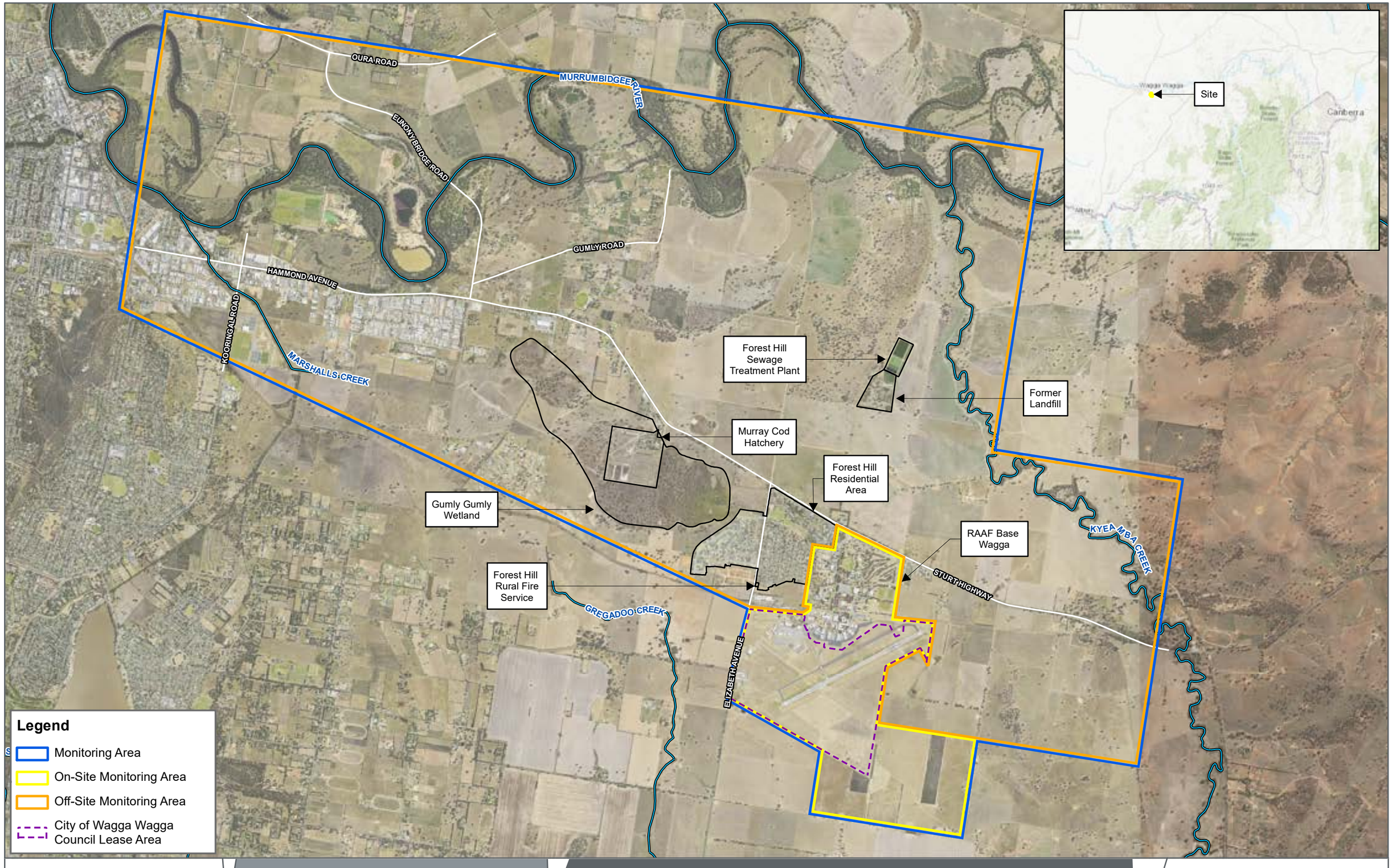

FIGURE 1

1:40,000 Scale at A3

Metres

0 1,000 2,000

Site Locality Plan

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2022-06-07 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-032-SiteLocalityPlan_WW_.mxd 07
Aerial Imagery Supplied by Metromap (February, 2022)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK

MW251 167.594
MW250 167.656
MW245 169.506
MW259 171.344
MW248 171.334
MW254 169.379
MW240 169.955
MW256 169.808
MW233
MW239 169.495
MW257 169.62
MW301
MW303
MW309
MW311
MW305
MW307 202.386

168m
169m
170m
171m
172m
173m
174m
175m
176m
177m
178m
179m
180m
181m
182m
183m
184m
185m
186m
187m
189m
190m
191m
192m

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Interpreted Groundwater Flow Direction
- Groundwater Elevation Contour (mAHD)
- Groundwater Monitoring Well – Dry
- Groundwater Monitoring Well - Gauged
- Groundwater Monitoring Well - Not Gauged

Some monitoring locations are not shown due to privacy reasons

FIGURE 2

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Elevation Contours - Cowra Aquifer (October, 2023)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

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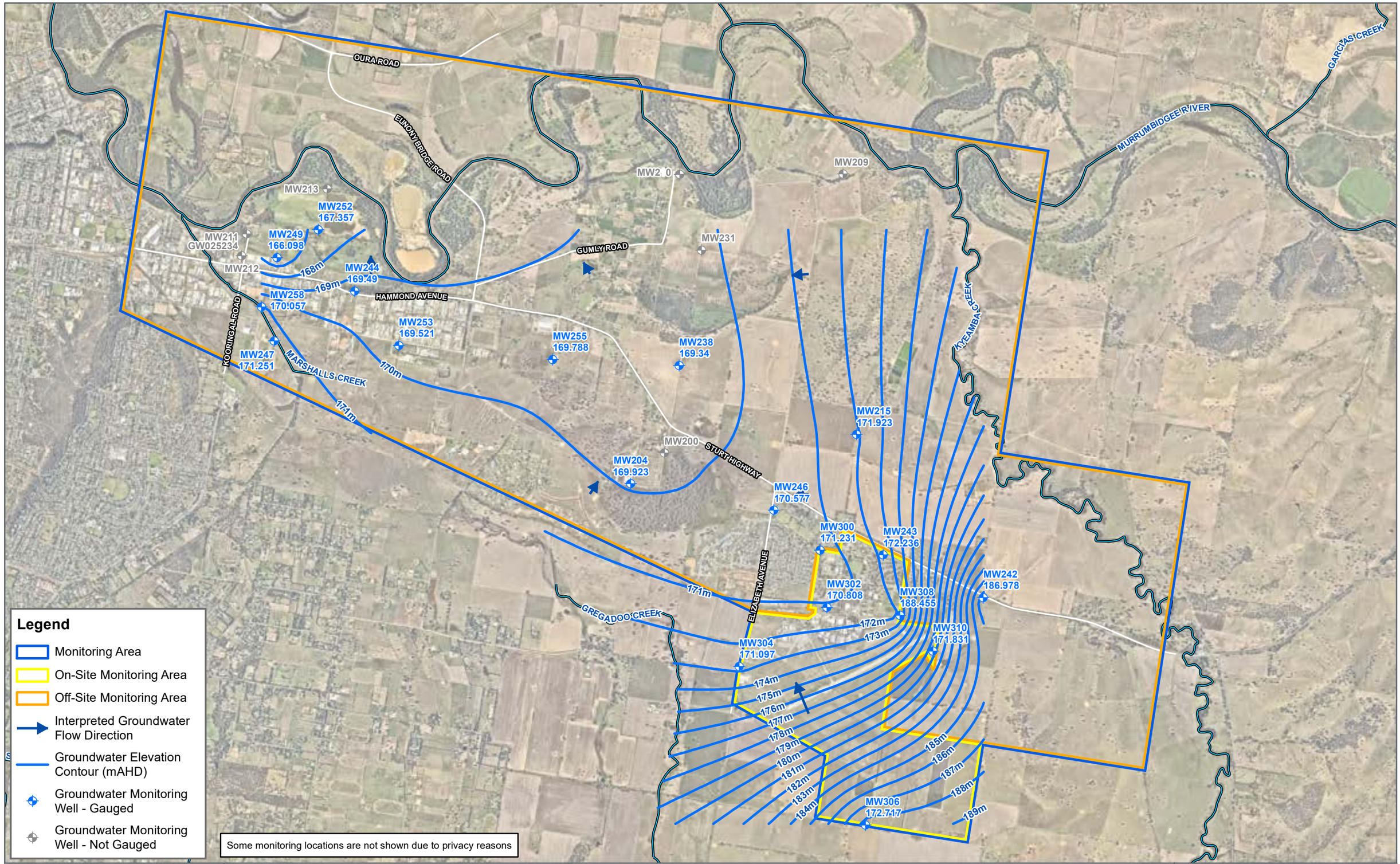
Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2023-11-15 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0387-GWContoursSA_CowraE8_WW.mxd 01
Aerial Imagery Supplied by Nearmap (February, 2023)


OURA ROAD
EUNONY BRIDGE ROAD
GARCIAS CREEK
MURRUMBIDGEE RIVER
MW213
MW252
167.357
MW211
GW025234
MW249
166.098
MW212
168m
MW244
169.49
169m
MW258
170.057
HAMMOND AVENUE
GUMLY ROAD
MW210
MW209
MW231
KYEAMBA CREEK
KOORINGAL ROAD
MW247
171.251
MARSHALLS CREEK
MW253
169.521
170m
MW255
169.788
MW238
169.34
171m
MW215
171.923
MW200
STURT HIGHWAY
MW204
169.923
MW246
170.577
MW300
171.231
MW243
172.236
ELIZABETH AVENUE
MW242
186.978
MW302
170.808
MW308
188.455
GREGADOO CREEK
172m
173m
MW310
171.831
MW304
171.097
174m
175m
176m
177m
178m
179m
180m
181m
182m
183m
184m
185m
186m
187m
188m
189m
MW306
172.717
Legend
Monitoring Area
On-Site Monitoring Area
Off-Site Monitoring Area
Interpreted Groundwater Flow Direction
Groundwater Elevation Contour (mAHD)
Groundwater Monitoring Well - Gauged
Groundwater Monitoring Well - Not Gauged
Some monitoring locations are not shown due to privacy reasons
FIGURE 3
1:40,000 Scale at A3
Metres
0
1,000
2,000
Groundwater Elevation Contours - Lachlan Aquifer (October, 2023)
BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE
N
Cardno — Stantec
Map Produced by Cardno now Stantec
Date: 2023-11-15 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0388-GWContoursDA_LachlanE8_WW.mxd 01
Aerial Imagery Supplied by Nearmap (February, 2023)

OURA ROAD
EUNONY ERIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK

MW213
MW211
MW251
MW212
MW252
MW250
MW249
MW244
MW245
MW259
MW258
MW248
MW247
MW253
MW254
MW240
MW255
MW256
MW233
MW208
MW239
MW238
MW257
MW200
MW204
MW246
MW300
MW301
MW243
MW302
MW303
MW308
MW309
MW242
MW241
MW310
MW311
MW304
MW305
MW306
MW307
MW2 0
MW209
MW231
MW215
MW214

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Dry / Insufficient water
- Sampled, 'No New Detection Or Exceedance'

Some monitoring locations are not shown due to privacy reasons

FIGURE 4

1:40,000 Scale at A3

Metres

0 1,000 2,000

PFAS Results Summary - Groundwater (October, 2023)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-11-15 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0389-GW_PFAS_SummaryE8_WW.mxd 01
Aerial Imagery Supplied by Nearmap (February, 2023)

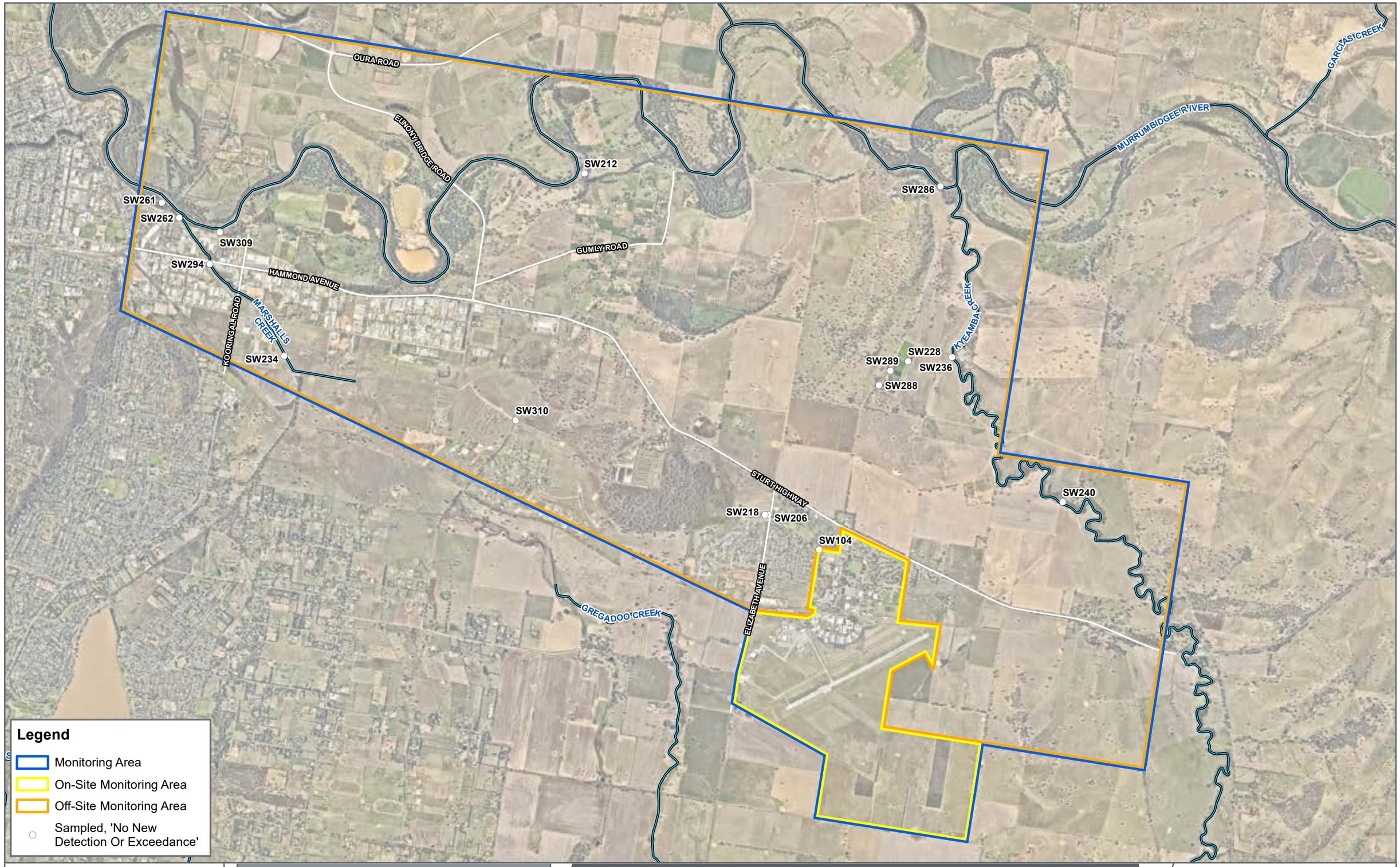


FIGURE 5

1:40,000 Scale at A3

Metres

0 800 1,600

PFAS Results Summary - Surface Water (October, 2023)

BIANNUAL SAMPLING EVENT
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-11-15 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0390-SW_PFAS_SummaryE8_WW.mxd 01
Aerial Imagery Supplied by Nearmap (February, 2023)

APPENDIX

B

DATA ASSESSMENT TABLES

Cardno

now

Stantec

								Perfluorocarbons													
								Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
								µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L
LOR								0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water									**0.56**	**0.07**														
PFAS NEMP 2.0 Table 1 Health Recreational Water									*10*	*2*														
PFAS NEMP 2.0 Table 5 Freshwater 95%								0.13	220															
Location Code	**Location Type**	**Monitoring Zone**	**Location Alt. Name**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
MW200	**Off-base**	**PO1**	**GW200**	**07 Jul 2017**	**0906_GW200_D_07072017**	**Normal**	**ES1716876**	1.36	0.08	**3.36**	-	0.34	0.29	2.00	0.08	<0.02	<0.1	0.10	0.32	-	0.05	<0.02	<0.02	<0.02
				25 Mar 2020	**0906_MW200_20200325**	**Normal**	**ES2011455**	0.75	0.05	**1.90**	-	0.18	0.19	1.15	0.04	<0.02	<0.1	0.05	0.26	-	0.03	<0.02	<0.02	<0.02
				30 Sep 2020	**0906_MW200_20200930**	**Normal**	**ES2034893**	0.60	0.04	**1.56**	-	0.14	0.18	0.96	0.05	<0.02	<0.1	0.04	0.26	-	0.03	<0.02	<0.02	<0.02
				23 Apr 2021	**0906_MW200_20210423**	**Normal**	**ES2116296**	0.39	0.04	**1.39**	-	0.14	0.15	1.00	<0.02	<0.02	<0.1	0.05	0.24	-	0.03	<0.02	<0.02	<0.02
				21 Oct 2021	**0906_MW200_20211021**	**Normal**	**ES2139300**	0.31	0.02	**0.86**	-	0.10	0.10	0.55	0.03	<0.02	<0.1	0.03	0.15	-	<0.02	<0.02	<0.02	<0.02
				03 May 2022	**0906_MW200_20220503**	**Normal**	**EM2208337**	0.28	0.03	**0.92**	-	0.09	0.10	0.64	0.02	<0.02	<0.1	0.03	0.14	-	<0.02	<0.02	<0.02	<0.02
				08 Nov 2022	**0906_MW200_20221108**	**Normal**	**EM2222380**	0.28	0.02	**0.92**	-	0.10	0.10	0.64	0.02	<0.02	<0.1	0.03	0.14	-	<0.02	<0.02	<0.02	<0.02
				13 Apr 2023	**0906_MW200_20230413**	**Normal**	**EM2306915**	0.30	0.02	**0.96**	-	0.09	0.12	0.66	0.03	<0.02	<0.1	0.03	0.16	-	<0.02	<0.02	<0.02	<0.02
				13 Oct 2023	**0906_MW200_231013**	**Normal**	**EM2318608**	0.30	0.02	**0.90**	-	0.08	0.09	0.60	0.03	<0.02	<0.1	0.03	0.14	-	<0.02	<0.02	<0.02	<0.02
MW204	**Off-base**	**PO1**	**GW204**	**07 Jul 2017**	**0906_GW204_D_07072017**	**Normal**	**ES1716876**	0.03	<0.01	0.07	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC101_07072017	**Field_D**	**ES1716876**	0.04	<0.01	**0.08**	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC201_07072017	**Interlab_D**	**553701**	0.02	<0.01	-	-	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
				18 Jan 2018	**0906_MW204_D_180118**	**Normal**	**ES1802488**	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
							ES1803668	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					0906_QC101_180118	**Field_D**	**ES1802488**	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC201_180118	**Interlab_D**	**581448**	0.01	<0.01	0.04	-	<0.01	<0.01	0.03	<0.01	<0.01	<0.05	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
				20 Feb 2018	**0906_MW204_D_180220**	**Normal**	**ES1805693**	0.03	<0.01	0.05	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				30 Mar 2020	**0906_MW204_20200330**	**Normal**	**ES2011455**	<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
				01 Oct 2020	**0906_MW204_20201001**	**Normal**	**ES2034893**	<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
				23 Apr 2021	**0906_MW204_20210423**	**Normal**	**ES2116296**	<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
				21 Oct 2021	**0906_MW204_20211021**	**Normal**	**ES2139300**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				03 May 2022	**0906_MW204_20220503**	**Normal**	**EM2208337**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				09 Nov 2022	**0906_MW204_20221109**	**Normal**	**EM2222380**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				13 Apr 2023	**0906_MW204_20230413**	**Normal**	**EM2306915**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				13 Oct 2023	**0906_MW204_231013**	**Normal**	**EM2318608**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW209	**Off-base**	**PO2**	**GW209**	**07 Sep 2017**	**0906_GW209_D_170907**	**Normal**	**EM1712263**	<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
					0906_QC101_170907	**Field_D**	**EM1712263**	<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
					0906_QC201_170907	**Interlab_D**	**562566**	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
				12 Jan 2018	**0906_MW209_D_180112**	**Normal**	**ES1801990**	<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
				31 Mar 2020	**0906_MW209_20200331**	**Normal**	**ES2011456**	<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
				30 Sep 2020	**0906_MW209_20200930**	**Normal**	**ES2034898**	<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
				22 Apr 2021	**0906_MW209_20210422**	**Normal**	**ES2116325**	<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
				21 Oct 2021	**0906_MW209_20211021**	**Normal**	**ES2139301**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				03 May 2022	**0906_MW209_20220503**	**Normal**	**EM2208336**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				09 Nov 2022	**0906_MW209_20221109**	**Normal**	**EM2222392**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				18 Apr 2023	**0906_MW209_20230418**	**Normal**	**EM2306916**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Oct 2023	**0906_MW209_231016**	**Normal**	**EM2318609**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW210	**Off-base**	**PO3**	**OS002**	**20 Jun 2017**	**0906_OS002_170620**	**Normal**	**ES1715329**	<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
					0906_QC101_170620	**Field_D**	**ES1715329**	<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
					0906_QC201_170620	**Interlab_D**	**551365**	<0.01	<0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
				18 Jan 2018	**0906_MW210_D_180112**	**Normal**	**ES1802470**	0.03	<0.01	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				21 Feb 2018	**0906_MW210_D_180221**	**Normal**	**ES1805664**	<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
				17 Jul 2018	**0906_MW210_D_180717**	**Normal**	**EM1811457**	<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
					0906_QC101_180717	**Field_D**	**EM1811457**	<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
					0906_QC201_180717	**Interlab_D**	**608455**	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
				26 Mar 2020	**0906_MW210_20200326**	**Normal**	**ES2011461**	<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
				01 Oct 2020	**0906_MW210_20201001**	**Normal**	**ES2034897**	<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
				23 Apr 2021	**0906_MW210_20210423**	**Normal**	**ES2116321**	<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
				21 Oct 2021	**0906_MW210_20211021**	**Normal**	**ES2139302**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				03 May 2022	**0906_MW210_20220503**	**Normal**	**EM2208335**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				08 Nov 2022	**0906_MW210_20221108**	**Normal**	**EM2222395**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				18 Apr 2023	**0906_MW210_20230418**	**Normal**	**EM2306917**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW211	**Off-base**	**PO4**	**EWB1**	**20 Jun 2017**	**0906_EWB1_170620**	**Normal**	**ES1715334**	<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
				04 Dec 2017	**0906_EWB1_171204**	**Normal**	**ES1731229**	<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
				27 Mar 2020	**0906_MW211_20200327**	**Normal**	**ES2011459**	<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
				28 Sep 2020	**0906_MW211_20200928**	**Normal**	**ES2034885**	<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
				20 Apr 2021	**0906_MW211_20210420**	**Normal**	**ES2116324**	<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
				20 Oct 2021	**0906_MW211_20211020**	**Normal**	**ES2139303**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				08 Nov 2022	**0906_MW211_20221108**	**Normal**	**EM2222397**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				12 Oct 2023	**0906_MW211_231012**	**Normal**	**EM2318611**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02

								Perfluorocarbons														
								Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
								µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L
MW212	Off-base	PO4	EWB2	20 Jun 2017	0906_EWB2_170620	Normal	ES1715334	<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
				04 Dec 2017	0906_EWB2_171204	Normal	ES1731229	<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
				27 Mar 2020	0906_MW212_20200327	Normal	ES2011459	<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
				28 Sep 2020	0906_MW212_20200928	Normal	ES2034885	<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
				20 Apr 2021	0906_MW212_20210420	Normal	ES2116324	<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
				20 Oct 2021	0906_MW212_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				02 May 2022	0906_MW212_20220502	Normal	EM2208334	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				08 Nov 2022	0906_MW212_20221109	Normal	EM2222397	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				12 Oct 2023	0906_MW212_231012	Normal	EM2318611	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW213	Off-base	PO4	EWB3	20 Jun 2017	0906_EWB3_170620	Normal	ES1715334	<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
				04 Dec 2017	0906_EWB3_171204	Normal	ES1731229	<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
				27 Mar 2020	0906_MW213_20200327	Normal	ES2011459	<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
					0906_QC101_20200327	Field_D	ES2011459	<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
					0906_QC201_20200327	Interlab_D	712442	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				28 Sep 2020	0906_MW213_20200928	Normal	ES2034885	<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
					0906_QC101_20200928	Field_D	ES2034862-AA	<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
					0906_QC201_20200928	Interlab_D	749083	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				20 Apr 2021	0906_MW213_20210420	Normal	ES2116324	<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
				20 Oct 2021	0906_MW213_20211020	Normal	ES2139303	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC104_20211020	Field_D	ES2139231	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC204_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				02 May 2022	0906_MW213_20220502	Normal	EM2208334	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				12 Oct 2023	0906_MW213_231012	Normal	EM2318611	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW214	Off-base	Base	GW047279	20 Jun 2017	0906_GW047279_170620	Normal	ES1715334	<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
				18 Jan 2018	0906_MW214_D_180118	Normal	ES1802545	<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
				31 Mar 2020	0906_MW214_20200331	Normal	ES2011568	<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
				01 Oct 2020	0906_MW214_20201001	Normal	ES2034891	<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
				27 Apr 2021	0906_MW214_20210427	Normal	ES2116327	<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
				21 Oct 2021	0906_MW214_20211021	Normal	ES2139228	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				04 May 2022	0906_MW214_20220503	Normal	EM2208338	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				07 Nov 2022	0906_MW214_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				14 Apr 2023	0906_MW214_20230414	Normal	EM2306945	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Oct 2023	0906_MW214_231016	Normal	EM2318641	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW215	Off-base	Base	GW047281	20 Jun 2017	0906_GW047281_170620	Normal	ES1715334	0.06	<0.01	0.06	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Jan 2018	0906_MW215_D_180116	Normal	ES1802545	<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
MW231	Off-base	PO2	GW028840	12 Jan 2018	0906_MW231_D_180112	Normal	ES1802473	<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
				26 Mar 2020	0906_MW231_20200326	Normal	ES2011456	<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
							ES2011459	<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
				30 Sep 2020	0906_MW231_20200930	Normal	ES2034898	<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
				23 Apr 2021	0906_MW231_20210423	Normal	ES2116325	<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
				22 Oct 2021	0906_MW231_20211022	Normal	ES2139301	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				04 May 2022	0906_MW231_20220504	Normal	EM2208336	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				09 Nov 2022	0906_MW231_20221109	Normal	EM2222392	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				18 Apr 2023	0906_MW231_20230418	Normal	EM2306916	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Oct 2023	0906_MW231_231016	Normal	EM2318609	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW233	Off-base	PO5	GW064412	20 Feb 2018	0906_MW233_I_180220	Normal	ES1805656	0.08	<0.01	**0.18**	-	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	0.02	-	<0.02	<0.02	<0.02	<0.02
				25 Mar 2020	0906_MW233_20200325	Normal	ES2011451	0.18	<0.01	**0.37**	-	<0.02	0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	<0.02	<0.02
				30 Sep 2020	0906_MW233_20200930	Normal	ES2034890	0.25	<0.01	**0.44**	-	0.02	0.03	0.19	<0.02	<0.02	<0.1	<0.02	0.05	-	<0.02	<0.02	<0.02	<0.02
				22 Apr 2021	0906_MW233_20210422	Normal	ES2116319	0.17	<0.01	**0.38**	-	0.02	0.02	0.21	<0.02	<0.02	<0.1	<0.02	0.05	-	<0.02	<0.02	<0.02	<0.02
				19 Oct 2021	0906_MW233_20211019	Normal	ES2139304	0.28	<0.01	**0.52**	-	0.03	0.04	0.24	<0.02	<0.02	<0.1	<0.02	0.05	-	<0.02	<0.02	<0.02	<0.02
				02 May 2022	0906_MW233_20220502	Normal	EM2208333	0.20	<0.01	**0.39**	-	0.02	0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	<0.02	<0.02
				07 Nov 2022	0906_MW233_20221107	Normal	EM2222376	0.24	<0.01	**0.47**	-	0.03	0.03	0.23	<0.02	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	<0.02	<0.02
				13 Apr 2023	0906_MW233_ 20230413	Normal	EM2306918	0.20	<0.01	**0.41**	-	0.02	0.04	0.21	<0.02	<0.02	<0.1	<0.02	0.05	-	<0.02	<0.02	<0.02	<0.02
				16 Oct 2023	0906_MW233_231016	Normal	EM2318613	0.18	<0.01	**0.36**	-	<0.02	0.02	0.18	<0.02	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	<0.02	<0.02
MW235	Off-base	PO6	GW055402	11 Jan 2018	0906_MW235_D_180111	Normal	ES1802460	<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
				19 Dec 2019	0906_MW235_D_191219	Normal	ES1942606-AC	<0.01	<0.01	<0.01	-	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	-	<0.02	-	-	-
				27 Mar 2020	0906_MW235_20200327	Normal	ES2011450	<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
				30 Sep 2020	0906_MW235_20200930	Normal	ES2034899	<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
				20 Apr 2021	0906_MW235_20210420	Normal	ES2115488	<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
				20 Oct 2021	0906_MW235_20211020	Normal	ES2139305	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				01 May 2022	0906_MW235_20220501	Normal	EM2208341	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				07 Nov 2022	0906_MW235_20221107	Normal	EM2222377	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				13 Apr 2023	0906_MW235_20230413	Normal	EM2306920	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02

							Perfluorocarbons															
							Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
							µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L
MW238	Off-base	PO2	OMP-MW3	21 Nov 2019	0906_MW238_18_191121	Normal	ES1939538	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					0906_MW238_36_191121	Normal	ES1939538	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				12 Dec 2019	0906_MW238_I_191212	Normal	ES1941492-AC	<0.01	<0.01	<0.01	-	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	-	<0.02	-	-	-
				30 Mar 2020	0906_MW238_20200330	Normal	ES2011456	<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
				30 Sep 2020	0906_MW238_20200930	Normal	ES2034898	<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
				23 Apr 2021	0906_MW238_20210423	Normal	ES2116325	<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
				21 Oct 2021	0906_MW238_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				03 May 2022	0906_MW238_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	0.03	<0.02	-	<0.02	<0.02	<0.02	<0.02
				08 Nov 2022	0906_MW238_20221108	Normal	EM2222392	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				18 Apr 2023	0906_MW238_20230418	Normal	EM2306916	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Oct 2023	0906_MW238_231015	Normal	EM2318609	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW239	Off-base	PO2	OMP-MW7	12 Dec 2019	0906_MW239_S_191212	Normal	ES1941492-AC	<0.01	<0.01	<0.01	-	<0.02	-	<0.02	-	-	<0.1	<0.02	<0.02	-	<0.02	-	-	-
				30 Mar 2020	0906_MW239_20200330	Normal	ES2011456	<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
				01 Oct 2020	0906_MW239_20201001	Normal	ES2034898	<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
				23 Apr 2021	0906_MW239_20210423	Normal	ES2116325	<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
				21 Oct 2021	0906_MW239_20211021	Normal	ES2139301	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				03 May 2022	0906_MW239_20220503	Normal	EM2208336	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				08 Nov 2022	0906_MW239_20221108	Normal	EM2222392	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				18 Apr 2023	0906_MW239_20230418	Normal	EM2306916	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Oct 2023	0906_MW239_231015	Normal	EM2318609	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW240	Off-base	PO7	OMP-MW2	12 Dec 2019	0906_MW240_D_191212	Normal	ES1941492-AD	0.05	<0.01	**0.26**	-	0.04	-	0.21	-	-	<0.1	<0.02	0.06	-	<0.02	-	-	-
					0906_QC101_191212	Field_D	ES1941492-AD	0.04	<0.01	**0.33**	-	0.05	-	0.29	-	-	<0.1	<0.02	0.08	-	<0.02	-	-	-
				19 Dec 2019	0906_MW240_I_191219	Normal	ES1942606-AB	0.02	<0.01	**0.19**	-	0.03	-	0.17	-	-	<0.1	<0.02	0.04	-	<0.02	-	-	-
					0906_QC101_191219	Field_D	ES1942606-AB	0.02	<0.01	**0.19**	-	0.03	-	0.17	-	-	<0.1	<0.02	0.05	-	<0.02	-	-	-
					0906_QC201_191219	Interlab_D	695221	0.01	<0.01	**0.12**	<0.01	0.02	0.01	0.11	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01
				01 Apr 2020	0906_MW240_20200330	Normal	ES2011453	0.01	<0.01	**0.11**	-	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
				30 Sep 2020	0906_MW240_20200930	Normal	ES2034866	0.06	0.02	**0.41**	-	0.04	0.05	0.35	<0.02	<0.02	<0.1	0.02	0.10	-	<0.02	<0.02	<0.02	<0.02
				20 Apr 2021	0906_MW240_20210420	Normal	ES2116333	0.04	0.01	**0.27**	-	0.04	0.03	0.23	<0.02	<0.02	<0.1	<0.02	0.07	-	<0.02	<0.02	<0.02	<0.02
				19 Oct 2021	0906_MW240_20211019	Normal	ES2139237	0.04	<0.01	**0.19**	-	0.02	0.02	0.15	<0.02	<0.02	<0.1	<0.02	0.05	-	<0.02	<0.02	<0.02	<0.02
				01 May 2022	0906_MW240_20220501	Normal	EM2208150	0.04	<0.01	**0.19**	-	<0.02	0.02	0.15	<0.02	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	<0.02	<0.02
				07 Nov 2022	0906_MW240_20221107	Normal	EM2222399	0.04	<0.01	**0.21**	-	0.02	0.02	0.17	<0.02	<0.02	<0.1	<0.02	0.05	-	<0.02	<0.02	<0.02	<0.02
				17 Apr 2023	0906_MW240_20230417	Normal	EM2306921	0.05	<0.01	**0.19**	-	<0.02	<0.02	0.14	<0.02	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	<0.02	<0.02
				16 Oct 2023	0906_MW240_231016	Normal	EM2318614	0.06	<0.01	**0.20**	-	<0.02	<0.02	0.14	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
MW241	Off-base	PO8	OMP-MW5	18 Mar 2020	0906_MW241_D_200318	Normal	ES2009949	<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
				31 Mar 2020	0906_MW241_20200331	Normal	ES2011462	<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
				01 Oct 2020	0906_MW241_20201001	Normal	ES2034889	<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
				22 Apr 2021	0906_MW241_20210422	Normal	ES2116320	<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
				24 Oct 2021	0906_MW241_20211024	Normal	ES2139236	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				02 May 2022	0906_MW241_20220502	Normal	EM2208340	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				08 Nov 2022	0906_MW241_20221108	Normal	EM2222383	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				13 Apr 2023	0906_MW241_20230413	Normal	EM2306922	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				13 Oct 2023	0906_MW241_231013	Normal	EM2318617	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW242	Off-base	PO8	OMP-MW6	12 Mar 2020	0906_MW242_I_200312	Normal	ES2008845	<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
				31 Mar 2020	0906_MW242_20200331	Normal	ES2011462	<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
				01 Oct 2020	0906_MW242_20201001	Normal	ES2034889	<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
				22 Apr 2021	0906_MW242_20210422	Normal	ES2116320	<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
				22 Oct 2021	0906_MW242_20211022	Normal	ES2139236	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				02 May 2022	0906_MW242_20220502	Normal	EM2208340	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				08 Nov 2022	0906_MW242_20221108	Normal	EM2222383	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				14 Apr 2023	0906_MW242_20230414	Normal	EM2306922	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				13 Oct 2023	0906_MW242_231013	Normal	EM2318617	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW243	On-base	Base	OMP-MW4	10 Mar 2020	0906_MW243_I_200310	Normal	ES2008845	<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
					0906_QC201_200310	Interlab_D	707955	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				30 Mar 2020	0906_MW243_20200330	Normal	ES2011457	<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
				01 Oct 2020	0906_MW243_20201001	Normal	ES2034862-AB	<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
				23 Apr 2021	0906_MW243_20210423	Normal	ES2116327	<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
					0906_QC106_20210423	Field_D	ES2116327	<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
					0906_QC206_20210423	Interlab_D	792771	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				20 Oct 2021	0906_MW243_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				02 May 2022	0906_MW243_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				07 Nov 2022	0906_MW243_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC103_20221107	Field_D	EM2222404	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC203_20221107	Interlab_D	940477	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				17 Apr 2023	0906_MW243_20230417	Normal	EM2306945	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				14 Oct 2023	0906_MW243_231014	Normal	EM2318641	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC100_231014	Field_D	EM2318641	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC200_20231014	Interlab_D	1036478	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

							Perfluorocarbons																
							Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
							µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L
MW244	Off-base	PO7	OMP-MW1	13 Mar 2020	0906_MW244_I_200313	Normal	ES2009442	<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
				01 Apr 2020	0906_MW244_20200401	Normal	ES2011562	<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
				01 Oct 2020	0906_MW244_20201001	Normal	ES2034866	<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
				20 Apr 2021	0906_MW244_20210420	Normal	ES2116333	<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
				19 Oct 2021	0906_MW244_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				03 May 2022	0906_MW244_20220503	Normal	EM2208150	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				09 Nov 2022	0906_MW244_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				14 Apr 2023	0906_MW244_20230414	Normal	EM2306921	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Aug 2023	0906_MW244_230816	Normal	EM2314805	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				14 Oct 2023	0906_MW244_231014	Normal	EM2318614	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC102_231014	Field_D	EM2318614	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC202_20231014	Interlab_D	1036481	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW245	Off-base	PO7	OMP-MW1A	13 Mar 2020	0906_MW245_S_200313	Normal	ES2009442	<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
				01 Apr 2020	0906_MW245_20200401	Normal	ES2011562	<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
				01 Oct 2020	0906_MW245_20201001	Normal	ES2034866	<0.01	<0.01	0.03	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				20 Apr 2021	0906_MW245_20210420	Normal	ES2116333	<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
				19 Oct 2021	0906_MW245_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				30 Apr 2022	0906_MW245_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				09 Nov 2022	0906_MW245_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				14 Apr 2023	0906_MW245_20230414	Normal	EM2306921	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Aug 2023	0906_MW245_230816	Normal	EM2314805	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				14 Oct 2023	0906_MW245_231014	Normal	EM2318614	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW246	Off-base	PO7		22 Jun 2020	0906_MW246_I_200622	Normal	ES2021594	<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
				30 Jul 2020	0906_MW246_I_200730	Normal	ES2026752	<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
					0906_QC202_200730	Normal	735782	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				20 Apr 2021	0906_MW246_20210420	Normal	ES2116333	<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
				20 Oct 2021	0906_MW246_20211020	Normal	ES2139237	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				01 May 2022	0906_MW246_20220501	Normal	EM2208150	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				07 Nov 2022	0906_MW246_20221107	Normal	EM2222399	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Apr 2023	0906_MW246_20230415	Normal	EM2306921	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Oct 2023	0906_MW246_231016	Normal	EM2318614	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW247	Off-base	PO7		30 Jul 2020	0906_MW247_I_200730	Normal	ES2026752	<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
				27 Apr 2021	0906_MW247_20210427	Normal	ES2116333	<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
				21 Oct 2021	0906_MW247_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				02 May 2022	0906_MW247_20220502	Normal	EM2208150	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				09 Nov 2022	0906_MW247_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Apr 2023	0906_MW247_20230415	Normal	EM2306921	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Aug 2023	0906_MW247_230816	Normal	EM2314805	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Oct 2023	0906_MW247_231015	Normal	EM2318614	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW248	Off-base	PO7		30 Jul 2020	0906_MW248_S_200730	Normal	ES2026752	0.09	0.01	**0.15**	-	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.04	0.04	-	0.02	0.02	<0.02	<0.02
				27 Apr 2021	0906_MW248_20210427	Normal	ES2116333	0.07	<0.01	**0.12**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				20 Oct 2021	0906_MW248_20211020	Normal	ES2139237	0.08	0.01	**0.14**	-	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.03	0.03	-	<0.02	0.03	<0.02	<0.02
				02 May 2022	0906_MW248_20220502	Normal	EM2208150	0.06	<0.01	**0.10**	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				09 Nov 2022	0906_MW248_20221109	Normal	EM2222399	0.07	<0.01	**0.12**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	0.03	0.03	-	<0.02	0.02	<0.02	<0.02
				15 Apr 2023	0906_MW248_20230415	Normal	EM2306921	0.07	0.01	**0.13**	-	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	0.04	0.03	-	<0.02	0.02	<0.02	<0.02
				16 Aug 2023	0906_MW248_230816	Normal	EM2314805	0.10	0.01	**0.18**	-	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	0.04	0.04	-	0.02	<0.02	<0.02	<0.02
				15 Oct 2023	0906_MW248_231015	Normal	EM2318614	0.08	0.01	**0.15**	-	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	0.04	0.04	-	0.02	<0.02	<0.02	<0.02
MW249	Off-base	PO7		30 Jul 2020	0906_MW249_I_200730	Normal	ES2026752	<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
				28 Apr 2021	0906_MW249_20210428	Normal	ES2116333	<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
				21 Oct 2021	0906_MW249_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				30 Apr 2022	0906_MW249_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				09 Nov 2022	0906_MW249_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Apr 2023	0906_MW249_20230415	Normal	EM2306921	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Aug 2023	0906_MW249_230816	Normal	EM2314805	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Oct 2023	0906_MW249_231015	Normal	EM2318614	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW250	Off-base	PO7		30 Jul 2020	0906_MW250_S_200730	Normal	ES2026752	<0.01	<0.01	0.03	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.03	0.02	-	<0.02	<0.02	<0.02	<0.02
				02 Sep 2020	0906_MW250_S_200902	Normal	ES2031377	<0.01	<0.01	0.03	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC202_200902	Interlab_D	742937	0.06	<0.01	**0.1**	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
				28 Apr 2021	0906_MW250_20210428	Normal	ES2116333	<0.01	<0.01	0.03	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.03	0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC107_20210428	Field_D	ES2116333	<0.01	<0.01	0.03	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.03	0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC207_20210428	Interlab_D	792804	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
				19 Oct 2021	0906_MW250_20211019	Normal	ES2139237	<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
				09 Nov 2022	0906_MW250_20221109	Normal	EM2222399	<0.01	<0.01	0.01	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Apr 2023	0906_MW250_20230415	Normal	EM2306921	<0.01	<0.01	0.01	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Aug 2023	0906_MW250_230816	Normal	EM2314805	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Oct 2023	0906_MW250_231015	Normal	EM2318614	<0.01	<0.01	0.01	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02

							Perfluorocarbons																
							Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
							µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L
MW251	Off-base	PO7		30 Jul 2020	0906_MW251_S_200730	Normal	ES2026752	<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
					0906_QC201_200730	Normal	735782	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				22 Apr 2021	0906_MW251_20210422	Normal	ES2118542	<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
				21 Oct 2021	0906_MW251_20211021	Normal	ES2139237	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				30 Apr 2022	0906_MW251_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				17 Apr 2023	0906_MW251_20230417	Normal	EM2306921	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Aug 2023	0906_MW251_230816	Normal	EM2314805	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				14 Oct 2023	0906_QC205_20231015	Interlab_D	1036481	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				15 Oct 2023	0906_MW251_231015	Normal	EM2318614	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC105_231015	Field_D	EM2318614	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW252	Off-base	PO7		30 Jul 2020	0906_MW252_I_200730	Normal	ES2026752	<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
				22 Apr 2021	0906_MW252_20210422	Normal	ES2118542	<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
				19 Oct 2021	0906_MW252_20211019	Normal	ES2139237	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				30 Apr 2022	0906_MW252_20220430	Normal	EM2208150	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				17 Apr 2023	0906_MW252_20230417	Normal	EM2306921	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Aug 2023	0906_MW252_230816	Normal	EM2314805	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Oct 2023	0906_MW252_231015	Normal	EM2318614	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW253	Off-base	PO7		30 Jul 2020	0906_MW253_I_200730	Normal	ES2026752	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				20 Apr 2021	0906_MW253_20210420	Normal	ES2116333	<0.01	<0.01	0.04	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				19 Oct 2021	0906_MW253_20211019	Normal	ES2139237	0.02	<0.01	0.05	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC102_20211019	Field_D	ES2139231	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC202_20211019	Interlab_D	837704	0.02	<0.01	0.06	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				30 Apr 2022	0906_MW253_20220430	Normal	EM2208150	<0.01	<0.01	0.03	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				07 Nov 2022	0906_MW253_20221107	Normal	EM2222399	<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
				17 Apr 2023	0906_MW253_20230417	Normal	EM2306921	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Aug 2023	0906_MW253_230816	Normal	EM2314805	0.05	0.01	**0.11**	-	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				14 Oct 2023	0906_QC206_20231015	Interlab_D	1036481	0.04	0.01	**0.1**	-	<0.01	<0.01	0.06	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				15 Oct 2023	0906_MW253_231015	Normal	EM2318614	0.03	<0.01	**0.08**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC106_231015	Field_D	EM2318614	0.06	0.01	**0.11**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW254	Off-base	PO7		30 Jul 2020	0906_MW254_S_200730	Normal	ES2026752	<0.01	0.14	**0.15**	-	0.02	0.03	0.15	<0.02	<0.02	<0.1	0.04	0.07	-	0.06	<0.02	<0.02	<0.02
				20 Apr 2021	0906_MW254_20210420	Normal	ES2116333	<0.01	0.14	**0.19**	-	0.04	0.03	0.19	<0.02	<0.02	<0.1	0.03	0.06	-	0.05	<0.02	<0.02	<0.02
				19 Oct 2021	0906_MW254_20211019	Normal	ES2139237	<0.01	0.08	**0.13**	-	0.02	0.02	0.13	<0.02	<0.02	<0.1	0.02	0.04	-	0.04	<0.02	<0.02	<0.02
					0906_QC101_20211019	Field_D	ES2139231	<0.01	0.12	**0.14**	-	0.02	0.02	0.14	<0.02	<0.02	<0.1	0.03	0.05	-	0.05	<0.02	<0.02	<0.02
					0906_QC201_20211019	Interlab_D	837704	<0.01	0.13	**0.14**	<0.01	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.03	0.05	<0.01	0.05	<0.01	<0.01	<0.01
				30 Apr 2022	0906_MW254_20220430	Normal	EM2208150	0.13	0.25	**0.33**	-	0.03	0.03	0.20	<0.02	<0.02	<0.1	0.08	0.09	-	0.08	<0.02	<0.02	<0.02
				07 Nov 2022	0906_MW254_20221107	Normal	EM2222399	0.02	0.10	**0.14**	-	<0.02	0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.04	-	0.03	<0.02	<0.02	<0.02
				17 Apr 2023	0906_MW254_20230417	Normal	EM2306921	0.02	0.10	**0.14**	-	<0.02	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.04	-	0.04	<0.02	<0.02	<0.02
				16 Aug 2023	0906_MW254_230816	Normal	EM2314805	0.32	0.14	**0.45**	-	<0.02	<0.02	0.13	<0.02	<0.02	<0.1	0.04	0.05	-	0.04	<0.02	<0.02	<0.02
				15 Oct 2023	0906_MW254_231015	Normal	EM2318614	0.27	0.14	**0.40**	-	<0.02	<0.02	0.13	<0.02	<0.02	<0.1	0.04	0.05	-	0.04	<0.02	<0.02	<0.02
MW255	Off-base	PO7		30 Jul 2020	0906_MW255_I_200730	Normal	ES2026752	<0.01	0.02	0.04	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				22 Apr 2021	0906_MW255_20210422	Normal	ES2116333	0.04	<0.01	**0.14**	-	0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				02 Jul 2021	0906_MW255_02072021	Normal	ES2124834	0.04	<0.01	**0.12**	-	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC101_02072021	Field_D	ES2124834	0.03	<0.01	**0.11**	-	<0.02	-	0.08	-	-	<0.1	<0.02	0.02	-	<0.02	-	-	-
					0906_QC201_210702	Interlab_D	808916	0.04	<0.01	**0.13**	-	-	-	0.09	-	-	-	-	-	-	-	-	-	-
				19 Oct 2021	0906_MW255_20211019	Normal	ES2139237	0.01	<0.01	0.05	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				30 Apr 2022	0906_MW255_20220430	Normal	EM2208150	<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
				08 Nov 2022	0906_MW255_20221108	Normal	EM2222399	0.02	<0.01	0.07	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC106_20221108	Field_D	EM2222404	0.02	<0.01	0.07	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC206_20221108	Interlab_D	940477	0.04	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
				15 Apr 2023	0906_MW255_20230415	Normal	EM2306921	0.02	<0.01	0.07	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Oct 2023	0906_MW255_231016	Normal	EM2318614	0.01	<0.01	0.05	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW256	Off-base	PO7		10 Sep 2020	0906_MW256_S_200910	Normal	ES2032277	0.04	<0.01	**0.32**	-	0.05	0.05	0.28	<0.02	<0.02	<0.1	<0.02	0.09	-	<0.02	<0.02	<0.02	<0.02
					0906_QC101_200910	Field_D	ES2032277	0.02	<0.01	**0.32**	-	0.06	-	0.30	-	-	<0.1	<0.02	0.10	-	<0.02	-	-	-
					0906_QC201_200910	Interlab_D	744316	<0.01	<0.01	**0.21**	-	-	-	0.21	-	-	-	-	-	-	-	-	-	-
				22 Apr 2021	0906_MW256_20210422	Normal	ES2116333	0.07	<0.01	**0.30**	-	0.07	0.04	0.23	<0.02	<0.02	<0.1	<0.02	0.05	-	<0.02	<0.02	<0.02	<0.02
				19 Oct 2021	0906_MW256_20211019	Normal	ES2139237	0.01	<0.01	**0.10**	-	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	0.02	-	<0.02	<0.02	<0.02	<0.02
				02 May 2022	0906_MW256_20220502	Normal	EM2208150	<0.01	<0.01	0.06	-	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				08 Nov 2022	0906_MW256_20221108	Normal	EM2222399	<0.01	<0.01	0.04	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Apr 2023	0906_MW256_20230415	Normal	EM2306921	<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
				16 Oct 2023	0906_MW256_231016	Normal	EM2318614	<0.01	<0.01	0.05	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW257	Off-base	PO7		10 Sep 2020	0906_MW257_S_200910	Normal	ES2032277	<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
				02 May 2022	0906_MW257_20220502	Normal	EM2208150	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				09 Nov 2022	0906_MW257_20221109	Normal	EM2222399	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Apr 2023	0906_MW257_20230415	Normal	EM2306921	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Oct 2023	0906_MW257_231016	Normal	EM2318614	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02

								Perfluorocarbons																
								Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
								µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L
MW258	GW	PO4		24 Jul 2023	0906_MW258_230724	Normal	ES2325225	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				11 Aug 2023	0906_MW258_230811	Normal	EM2314653	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				16 Aug 2023	0906_MW258_230816	Normal	EM2314805	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				12 Oct 2023	0906_MW258_231012	Normal	EM2318611	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				19 Dec 2023	0906_MW258_231219	Normal	EM2322880	0.01	<0.01	0.02	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW259	GW	PO4		24 Jul 2023	0906_MW259_230724	Normal	ES2325225	0.02	0.01	0.05	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				11 Aug 2023	0906_MW259_230811	Normal	EM2314653	0.02	0.01	0.06	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	0.02	0.02	-	0.03	<0.02	<0.02	<0.02
				16 Aug 2023	0906_MW259_230816	Normal	EM2314805	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				12 Oct 2023	0906_MW259_231012	Normal	EM2318611	0.02	0.02	0.06	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	0.02	-	0.02	<0.02	<0.02	<0.02
MW260	Off-base	PO3	OS002	13 Oct 2023	0906_MW260_231013	Normal	EM2318610	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW300	On-base	Base		12 Jan 2018	0906_MW300_D_180112	Normal	ES1802545	<0.01	<0.01	0.03	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				13 Apr 2018	0906_MW300_D_180413	Normal	EM1806331	<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
				30 Mar 2020	0906_MW300_20200330	Normal	ES2011457	<0.01	<0.01	0.03	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				29 Sep 2020	0906_MW300_20200929	Normal	ES2034862-AB	<0.01	<0.01	0.03	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				22 Apr 2021	0906_MW300_20210422	Normal	ES2116327	<0.01	<0.01	0.03	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC105_20210422	Field_D	ES2116327	<0.01	<0.01	0.03	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC205_20210422	Interlab_D	792803	<0.01	<0.01	0.02	<0.01	0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				20 Oct 2021	0906_MW300_20211020	Normal	ES2139228	<0.01	<0.01	0.05	-	0.04	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
					0906_QC106_20211020	Field_D	ES2139231	<0.01	<0.01	0.05	-	0.04	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
					0906_QC206_20211020	Interlab_D	837704	<0.01	<0.01	0.07	<0.01	0.04	0.02	0.07	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				01 May 2022	0906_MW300_20220501	Normal	EM2208338	<0.01	<0.01	**0.10**	-	0.05	0.03	0.10	<0.02	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	<0.02	<0.02
					0906_QC102_20220501	Field_D	EM2208338	<0.01	<0.01	**0.10**	-	0.06	0.03	0.10	<0.02	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	<0.02	<0.02
					0906_QC202_20220501	Interlab_D	889634	<0.01	<0.01	**0.13**	<0.01	0.08	0.03	0.13	<0.01	<0.01	<0.05	0.02	0.06	0.02	<0.01	<0.01	<0.01	<0.01
				07 Nov 2022	0906_MW300_20221107	Normal	EM2222404	<0.01	<0.01	**0.13**	-	0.10	0.04	0.13	<0.02	<0.02	<0.1	0.02	0.06	-	<0.02	<0.02	<0.02	<0.02
				15 Apr 2023	0906_MW300_20230415	Normal	EM2306945	0.01	<0.01	**0.15**	-	0.11	0.06	0.14	<0.02	<0.02	<0.1	0.03	0.08	-	<0.02	<0.02	<0.02	<0.02
					0906_QC103_20230415	Field_D	EM2306945	0.01	<0.01	**0.14**	-	0.12	0.05	0.13	<0.02	<0.02	<0.1	0.03	0.09	-	<0.02	<0.02	<0.02	<0.02
					0906_QC203_20230415	Interlab_D	982807	0.02	<0.01	**0.2**	-	0.14	0.06	0.18	<0.01	<0.01	<0.05	0.03	0.10	0.05	0.01	<0.01	<0.01	<0.01
				24 Jul 2023	0906_MW300_230724	Normal	ES2325225	0.02	<0.01	**0.16**	-	0.14	0.05	0.14	<0.02	<0.02	<0.1	0.03	0.09	-	<0.02	<0.02	<0.02	<0.02
				14 Oct 2023	0906_MW300_231014	Normal	EM2318641	0.02	<0.01	**0.18**	-	0.14	0.06	0.16	<0.02	<0.02	<0.1	0.03	0.10	-	<0.02	<0.02	<0.02	<0.02
MW302	On-base	Base		12 Jan 2018	0906_MW302_D_180112	Normal	ES1802545	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
				11 Apr 2018	0906_MW302_D_180411	Normal	EM1806331	<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
				30 Mar 2020	0906_MW302_20200330	Normal	ES2011457	<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
				29 Sep 2020	0906_MW302_20200929	Normal	ES2034862-AB	<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
					0906_QC102_20200929	Field_D	ES2034862-AB	<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
					0906_QC202_20200929	Interlab_D	749220	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				21 Apr 2021	0906_MW302_20210421	Normal	ES2116327	<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
					0906_QC103_20210421	Field_D	ES2116327	<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
					0906_QC203_20210421	Interlab_D	792803	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				20 Oct 2021	0906_MW302_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC107_20211020	Field_D	ES2139231	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC207_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				01 May 2022	0906_MW302_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC105_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC205_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				07 Nov 2022	0906_MW302_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC104_20221107	Field_D	EM2222404	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC204_20221107	Interlab_D	940477	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				15 Apr 2023	0906_MW302_20230415	Normal	EM2306945	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC104_20230415	Field_D	EM2306945	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC204_20230415	Interlab_D	982807	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				14 Oct 2023	0906_MW302_231014	Normal	EM2318641	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC101_231014	Field_D	EM2318641	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC201_20231014	Interlab_D	1036478	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW304	On-base	Base		16 Jan 2018	0906_MW304_D_180116	Normal	ES1802545	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
				13 Apr 2018	0906_MW304_D_180413	Normal	EM1806331	<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
				31 Mar 2020	0906_MW304_20200331	Normal	ES2011457	<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
				29 Sep 2020	0906_MW304_20200929	Normal	ES2034862-AB	<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
				28 Apr 2021	0906_MW304_20210428	Normal	ES2116327	<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
				20 Oct 2021	0906_MW304_20211020	Normal	ES2139228	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				01 May 2022	0906_MW304_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC104_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC204_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				07 Nov 2022	0906_MW304_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				15 Apr 2023	0906_MW304_20230415	Normal	EM2306945	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				14 Oct 2023	0906_MW304_231014	Normal	EM2318641	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02

							Perfluorocarbons																
							Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
							µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L
MW306	On-base	Base		16 Jan 2018	0906_MW306_D_180116	Normal	ES1802545	<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
				12 Apr 2018	0906_MW306_D_180412	Normal	EM1806331	<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
				30 Mar 2020	0906_MW306_20200330	Normal	ES2011457	<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
				29 Sep 2020	0906_MW306_20200929	Normal	ES2034862-AB	<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
				22 Apr 2021	0906_MW306_20210422	Normal	ES2116327	<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
				22 Oct 2021	0906_MW306_20211022	Normal	ES2139228	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				02 May 2022	0906_MW306_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				07 Nov 2022	0906_MW306_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				14 Apr 2023	0906_MW306_20230414	Normal	EM2306945	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC101_20230414	Field_D	EM2306945	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC201_20230414	Interlab_D	982807	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				16 Oct 2023	0906_MW306_231016	Normal	EM2318641	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW308	On-base	Base		15 Jan 2018	0906_MW308_D_180115	Normal	ES1802545	<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
					0906_QC103_180115	Field_D	ES1802545	<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
					0906_QC203_180115	Interlab_D	581313	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
				11 Apr 2018	0906_MW308_D_180411	Normal	EM1806331	<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
				30 Mar 2020	0906_MW308_20200330	Normal	ES2011457	<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
				29 Sep 2020	0906_MW308_20200929	Normal	ES2034862-AB	<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
				21 Apr 2021	0906_MW308_20210421	Normal	ES2116327	<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
				22 Apr 2021	0906_MW308_20210422	Normal	ES2116327	<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
				21 Oct 2021	0906_MW308_20211021	Normal	ES2139228	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				01 May 2022	0906_MW308_20220501	Normal	EM2208338	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC103_20220501	Field_D	EM2208338	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC203_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				07 Nov 2022	0906_MW308_20221107	Normal	EM2222404	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC105_20221107	Field_D	EM2222404	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC205_20221107	Interlab_D	940477	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				17 Apr 2023	0906_MW308_20230417	Normal	EM2306945	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC106_20230417	Field_D	EM2306945	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC206_20230417	Interlab_D	982807	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
				14 Oct 2023	0906_MW308_231014	Normal	EM2318641	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW309	On-base	Base		21 Apr 2021	0906_MW309_20210421	Normal	ES2116327	0.04	0.03	0.04	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
MW310	On-base	Base		16 Jan 2018	0906_MW310_D_180116	Normal	ES1802545	<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
				12 Apr 2018	0906_MW310_D_180412	Normal	EM1806331	<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
				31 Mar 2020	0906_MW310_20200331	Normal	ES2011457	<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
				30 Sep 2020	0906_MW310_20200930	Normal	ES2034862-AB	<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
				22 Apr 2021	0906_MW310_20210422	Normal	ES2116327	<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
				22 Oct 2021	0906_MW310_20211022	Normal	ES2139228	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				02 May 2022	0906_MW310_20220502	Normal	EM2208338	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				08 Nov 2022	0906_MW310_20221108	Normal	EM2222404	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				13 Apr 2023	0906_MW310_20230413	Normal	EM2306945	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				17 Oct 2023	0906_MW310_231017	Normal	EM2318641	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW311	On-base	Base		15 Jan 2018	0906_MW311_I_180115	Normal	ES1802545	0.01	<0.01	0.04	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
					0906_QC101_180115	Field_D	ES1802545	<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
					0906_QC201_180115	Interlab_D	581313	<0.01	<0.01	0.04	-	<0.01	<0.01	0.04	<0.01	<0.01	<0.05	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01
				31 Mar 2020	0906_MW311_20200331	Normal	ES2011457	<0.01	<0.01	0.04	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				08 Nov 2022	0906_MW311_20221108	Normal	EM2222404	<0.01	<0.01	**0.49**	-	0.05	0.06	0.49	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				13 Apr 2023	0906_MW311_20230413	Normal	EM2306945	<0.01	<0.01	**0.43**	-	0.04	0.06	0.43	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				17 Oct 2023	0906_MW311_2310117	Normal	EM2318641	<0.01	<0.01	**0.48**	-	0.03	0.05	0.48	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
MW312	Off-base	PO9		16 Jan 2018	0906_MW312_D_180115	Normal	ES1802566	0.02	<0.01	**0.10**	-	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				13 Apr 2018	0906_MW312_D_180413	Normal	EM1806331	0.02	<0.01	**0.08**	-	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				01 Apr 2020	0906_MW312_200401	Normal	ES2011454	0.01	<0.01	0.07	-	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				01 Oct 2020	0906_MW312_20201001	Normal	ES2034888	0.01	<0.01	0.06	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				21 Oct 2021	0906_MW312_20211021	Normal	ES2139399	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				03 May 2022	0906_MW312_20220503	Normal	EM2208339	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				08 Nov 2022	0906_MW312_20221108	Normal	EM2222499	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				17 Apr 2023	0906_MW312_20230417	Normal	EM2306923	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
				13 Oct 2023	0906_MW312_231013	Normal	EM2318618	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

								Perfluorocarbons														NA	
								Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
								µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L	µg/L	UG/L
LOR								0.01	0.01	0.01	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																										
PFAS NEMP 2.0 Table 1 Health Recreational Water																										
PFAS NEMP 2.0 Table 5 Freshwater 95%																										
Location Code	**Location Type**	**Monitoring Zone**	**Location Alt. Name**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																			
MW200	**Off-base**	**PO1**	**GW200**	**07 Jul 2017**	**0906_GW200_D_07072017**	**Normal**	**ES1716876**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.62	-	-	-	4.25
				25 Mar 2020	**0906_MW200_20200325**	**Normal**	**ES2011455**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.70	-	-	-	2.47
				30 Sep 2020	**0906_MW200_20200930**	**Normal**	**ES2034893**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.30	-	-	-	2.07
				23 Apr 2021	**0906_MW200_20210423**	**Normal**	**ES2116296**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.04	-	-	-	1.89
				21 Oct 2021	**0906_MW200_20211021**	**Normal**	**ES2139300**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.29	-	-	-	1.16
				03 May 2022	**0906_MW200_20220503**	**Normal**	**EM2208337**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.33	-	-	-	1.21
				08 Nov 2022	**0906_MW200_20221108**	**Normal**	**EM2222380**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.33	-	-	-	1.21
				13 Apr 2023	**0906_MW200_20230413**	**Normal**	**EM2306915**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.41	-	-	-	1.26
				13 Oct 2023	**0906_MW200_231013**	**Normal**	**EM2318608**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.29	-	-	-	1.17
MW204	**Off-base**	**PO1**	**GW204**	**07 Jul 2017**	**0906_GW204_D_07072017**	**Normal**	**ES1716876**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-	-	0.07
					0906_QC101_07072017	**Field_D**	**ES1716876**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-	-	0.08
					0906_QC201_07072017	**Interlab_D**	**553701**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-	-	-	-
				18 Jan 2018	**0906_MW204_D_180118**	**Normal**	**ES1802488**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-	-	-	0.01
							ES1803668	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					0906_QC101_180118	**Field_D**	**ES1802488**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
					0906_QC201_180118	**Interlab_D**	**581448**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-	-	-	<0.05
				20 Feb 2018	**0906_MW204_D_180220**	**Normal**	**ES1805693**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-	-	0.05
				30 Mar 2020	**0906_MW204_20200330**	**Normal**	**ES2011455**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				01 Oct 2020	**0906_MW204_20201001**	**Normal**	**ES2034893**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				23 Apr 2021	**0906_MW204_20210423**	**Normal**	**ES2116296**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				21 Oct 2021	**0906_MW204_20211021**	**Normal**	**ES2139300**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				03 May 2022	**0906_MW204_20220503**	**Normal**	**EM2208337**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				09 Nov 2022	**0906_MW204_20221109**	**Normal**	**EM2222380**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				13 Apr 2023	**0906_MW204_20230413**	**Normal**	**EM2306915**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				13 Oct 2023	**0906_MW204_231013**	**Normal**	**EM2318608**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW209	**Off-base**	**PO2**	**GW209**	**07 Sep 2017**	**0906_GW209_D_170907**	**Normal**	**EM1712263**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC101_170907	**Field_D**	**EM1712263**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC201_170907	**Interlab_D**	**562566**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-	-	-	<0.05
				12 Jan 2018	**0906_MW209_D_180112**	**Normal**	**ES1801990**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				31 Mar 2020	**0906_MW209_20200331**	**Normal**	**ES2011456**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Sep 2020	**0906_MW209_20200930**	**Normal**	**ES2034898**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				22 Apr 2021	**0906_MW209_20210422**	**Normal**	**ES2116325**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				21 Oct 2021	**0906_MW209_20211021**	**Normal**	**ES2139301**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				03 May 2022	**0906_MW209_20220503**	**Normal**	**EM2208336**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				09 Nov 2022	**0906_MW209_20221109**	**Normal**	**EM2222392**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				18 Apr 2023	**0906_MW209_20230418**	**Normal**	**EM2306916**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				16 Oct 2023	**0906_MW209_231016**	**Normal**	**EM2318609**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW210	**Off-base**	**PO3**	**OS002**	**20 Jun 2017**	**0906_0S002_170620**	**Normal**	**ES1715329**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC101_170620	**Field_D**	**ES1715329**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC201_170620	**Interlab_D**	**551365**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	-	-	-	-
				18 Jan 2018	**0906_MW210_D_180112**	**Normal**	**ES1802470**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
				21 Feb 2018	**0906_MW210_D_180221**	**Normal**	**ES1805664**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				17 Jul 2018	**0906_MW210_D_180717**	**Normal**	**EM1811457**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC101_180717	**Field_D**	**EM1811457**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC201_180717	**Interlab_D**	**608455**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				26 Mar 2020	**0906_MW210_20200326**	**Normal**	**ES2011461**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				01 Oct 2020	**0906_MW210_20201001**	**Normal**	**ES2034897**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				23 Apr 2021	**0906_MW210_20210423**	**Normal**	**ES2116321**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				21 Oct 2021	**0906_MW210_20211021**	**Normal**	**ES2139302**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				03 May 2022	**0906_MW210_20220503**	**Normal**	**EM2208335**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				08 Nov 2022	**0906_MW210_20221108**	**Normal**	**EM2222395**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				18 Apr 2023	**0906_MW210_20230418**	**Normal**	**EM2306917**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW211	**Off-base**	**PO4**	**EWB1**	**20 Jun 2017**	**0906_EWB1_170620**	**Normal**	**ES1715334**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				04 Dec 2017	**0906_EWB1_171204**	**Normal**	**ES1731229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				27 Mar 2020	**0906_MW211_20200327**	**Normal**	**ES2011459**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				28 Sep 2020	**0906_MW211_20200928**	**Normal**	**ES2034885**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				20 Apr 2021	**0906_MW211_20210420**	**Normal**	**ES2116324**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				20 Oct 2021	**0906_MW211_20211020**	**Normal**	**ES2139303**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				08 Nov 2022	**0906_MW211_20221108**	**Normal**	**EM2222397**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				12 Oct 2023	**0906_MW211_231012**	**Normal**	**EM2318611**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01

								Perfluorocarbons																	NA	
								Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
								µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L	µg/L	UG/L
MW212	Off-base	PO4	EWB2	20 Jun 2017	0906_EWB2_170620	Normal	ES1715334	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				04 Dec 2017	0906_EWB2_171204	Normal	ES1731229	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				27 Mar 2020	0906_MW212_20200327	Normal	ES2011459	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				28 Sep 2020	0906_MW212_20200928	Normal	ES2034885	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				20 Apr 2021	0906_MW212_20210420	Normal	ES2116324	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				20 Oct 2021	0906_MW212_20211020	Normal	ES2139303	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				02 May 2022	0906_MW212_20220502	Normal	EM2208334	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				08 Nov 2022	0906_MW212_20221109	Normal	EM2222397	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				12 Oct 2023	0906_MW212_231012	Normal	EM2318611	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW213	Off-base	PO4	EWB3	20 Jun 2017	0906_EWB3_170620	Normal	ES1715334	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				04 Dec 2017	0906_EWB3_171204	Normal	ES1731229	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				27 Mar 2020	0906_MW213_20200327	Normal	ES2011459	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC101_20200327	Field_D	ES2011459	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC201_20200327	Interlab_D	712442	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				28 Sep 2020	0906_MW213_20200928	Normal	ES2034885	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC101_20200928	Field_D	ES2034862-AA	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC201_20200928	Interlab_D	749083	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				20 Apr 2021	0906_MW213_20210420	Normal	ES2116324	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				20 Oct 2021	0906_MW213_20211020	Normal	ES2139303	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC104_20211020	Field_D	ES2139231	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC204_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				02 May 2022	0906_MW213_20220502	Normal	EM2208334	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				12 Oct 2023	0906_MW213_231012	Normal	EM2318611	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW214	Off-base	Base	GW047279	20 Jun 2017	0906_GW047279_170620	Normal	ES1715334	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				18 Jan 2018	0906_MW214_D_180118	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				31 Mar 2020	0906_MW214_20200331	Normal	ES2011568	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				01 Oct 2020	0906_MW214_20201001	Normal	ES2034891	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				27 Apr 2021	0906_MW214_20210427	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-
				21 Oct 2021	0906_MW214_20211021	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				04 May 2022	0906_MW214_20220503	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				07 Nov 2022	0906_MW214_20221107	Normal	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				14 Apr 2023	0906_MW214_20230414	Normal	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				16 Oct 2023	0906_MW214_231016	Normal	EM2318641	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW215	Off-base	Base	GW047281	20 Jun 2017	0906_GW047281_170620	Normal	ES1715334	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-	-	0.06
				16 Jan 2018	0906_MW215_D_180116	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW231	Off-base	PO2	GW028840	12 Jan 2018	0906_MW231_D_180112	Normal	ES1802473	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				26 Mar 2020	0906_MW231_20200326	Normal	ES2011456	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
							ES2011459	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Sep 2020	0906_MW231_20200930	Normal	ES2034898	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				23 Apr 2021	0906_MW231_20210423	Normal	ES2116325	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				22 Oct 2021	0906_MW231_20211022	Normal	ES2139301	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				04 May 2022	0906_MW231_20220504	Normal	EM2208336	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				09 Nov 2022	0906_MW231_20221109	Normal	EM2222392	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				18 Apr 2023	0906_MW231_20230418	Normal	EM2306916	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				16 Oct 2023	0906_MW231_231016	Normal	EM2318609	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW233	Off-base	PO5	GW064412	20 Feb 2018	0906_MW233_I_180220	Normal	ES1805656	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.20	-	-	-	0.20
				25 Mar 2020	0906_MW233_20200325	Normal	ES2011451	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-	-	-	0.41
				30 Sep 2020	0906_MW233_20200930	Normal	ES2034890	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	-	-	-	0.51
				22 Apr 2021	0906_MW233_20210422	Normal	ES2116319	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-	-	-	0.45
				19 Oct 2021	0906_MW233_20211019	Normal	ES2139304	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-	-	-	0.60
				02 May 2022	0906_MW233_20220502	Normal	EM2208333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-	-	-	0.45
				07 Nov 2022	0906_MW233_20221107	Normal	EM2222376	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.57	-	-	-	0.54
				13 Apr 2023	0906_MW233_ 20230413	Normal	EM2306918	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.52	-	-	-	0.48
				16 Oct 2023	0906_MW233_231016	Normal	EM2318613	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.42	-	-	-	0.40
MW235	Off-base	PO6	GW055402	11 Jan 2018	0906_MW235_D_180111	Normal	ES1802460	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				19 Dec 2019	0906_MW235_D_191219	Normal	ES1942606-AC	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-	<0.01
				27 Mar 2020	0906_MW235_20200327	Normal	ES2011450	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Sep 2020	0906_MW235_20200930	Normal	ES2034899	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				20 Apr 2021	0906_MW235_20210420	Normal	ES2115488	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				20 Oct 2021	0906_MW235_20211020	Normal	ES2139305	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				01 May 2022	0906_MW235_20220501	Normal	EM2208341	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				07 Nov 2022	0906_MW235_20221107	Normal	EM2222377	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				13 Apr 2023	0906_MW235_20230413	Normal	EM2306920	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01

								Perfluorocarbons																		NA	
								Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
								µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L	µg/L	UG/L
MW238	Off-base	PO2	OMP-MW3	21 Nov 2019	0906_MW238_18_191121	Normal	ES1939538	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					0906_MW238_36_191121	Normal	ES1939538	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				12 Dec 2019	0906_MW238_I_191212	Normal	ES1941492-AC	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-	<0.01
				30 Mar 2020	0906_MW238_20200330	Normal	ES2011456	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Sep 2020	0906_MW238_20200930	Normal	ES2034898	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				23 Apr 2021	0906_MW238_20210423	Normal	ES2116325	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				21 Oct 2021	0906_MW238_20211021	Normal	ES2139301	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				03 May 2022	0906_MW238_20220503	Normal	EM2208336	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
				08 Nov 2022	0906_MW238_20221108	Normal	EM2222392	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				18 Apr 2023	0906_MW238_20230418	Normal	EM2306916	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				15 Oct 2023	0906_MW238_231015	Normal	EM2318609	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW239	Off-base	PO2	OMP-MW7	12 Dec 2019	0906_MW239_S_191212	Normal	ES1941492-AC	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-	<0.01
				30 Mar 2020	0906_MW239_20200330	Normal	ES2011456	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				01 Oct 2020	0906_MW239_20201001	Normal	ES2034898	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				23 Apr 2021	0906_MW239_20210423	Normal	ES2116325	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				21 Oct 2021	0906_MW239_20211021	Normal	ES2139301	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				03 May 2022	0906_MW239_20220503	Normal	EM2208336	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				08 Nov 2022	0906_MW239_20221108	Normal	EM2222392	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				18 Apr 2023	0906_MW239_20230418	Normal	EM2306916	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				15 Oct 2023	0906_MW239_231015	Normal	EM2318609	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW240	Off-base	PO7	OMP-MW2	12 Dec 2019	0906_MW240_D_191212	Normal	ES1941492-AD	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-	0.36
					0906_QC101_191212	Field_D	ES1941492-AD	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-	0.46
				19 Dec 2019	0906_MW240_I_191219	Normal	ES1942606-AB	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-	0.26
					0906_QC101_191219	Field_D	ES1942606-AB	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-	0.27
					0906_QC201_191219	Interlab_D	695221	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.19	0.01	0.12	-	0.18
				01 Apr 2020	0906_MW240_20200330	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-	-	-	0.14
				30 Sep 2020	0906_MW240_20200930	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64	-	-	-	0.59
				20 Apr 2021	0906_MW240_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.42	-	-	-	0.39
				19 Oct 2021	0906_MW240_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	-	-	-	0.26
				01 May 2022	0906_MW240_20220501	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25	-	-	-	0.23
				07 Nov 2022	0906_MW240_20221107	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.30	-	-	-	0.28
				17 Apr 2023	0906_MW240_20230417	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-	-	0.23
				16 Oct 2023	0906_MW240_231016	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-	-	0.23
MW241	Off-base	PO8	OMP-MW5	18 Mar 2020	0906_MW241_D_200318	Normal	ES2009949	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				31 Mar 2020	0906_MW241_20200331	Normal	ES2011462	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.15	<0.05	<0.05	0.15	-	-	-	0.15
				01 Oct 2020	0906_MW241_20201001	Normal	ES2034889	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				22 Apr 2021	0906_MW241_20210422	Normal	ES2116320	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.12	<0.05	<0.05	0.12	-	-	-	0.12
				24 Oct 2021	0906_MW241_20211024	Normal	ES2139236	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				02 May 2022	0906_MW241_20220502	Normal	EM2208340	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				08 Nov 2022	0906_MW241_20221108	Normal	EM2222383	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				13 Apr 2023	0906_MW241_20230413	Normal	EM2306922	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				13 Oct 2023	0906_MW241_231013	Normal	EM2318617	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW242	Off-base	PO8	OMP-MW6	12 Mar 2020	0906_MW242_I_200312	Normal	ES2008845	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				31 Mar 2020	0906_MW242_20200331	Normal	ES2011462	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				01 Oct 2020	0906_MW242_20201001	Normal	ES2034889	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				22 Apr 2021	0906_MW242_20210422	Normal	ES2116320	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				22 Oct 2021	0906_MW242_20211022	Normal	ES2139236	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				02 May 2022	0906_MW242_20220502	Normal	EM2208340	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				08 Nov 2022	0906_MW242_20221108	Normal	EM2222383	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				14 Apr 2023	0906_MW242_20230414	Normal	EM2306922	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				13 Oct 2023	0906_MW242_231013	Normal	EM2318617	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW243	On-base	Base	OMP-MW4	10 Mar 2020	0906_MW243_I_200310	Normal	ES2008845	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC201_200310	Interlab_D	707955	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				30 Mar 2020	0906_MW243_20200330	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				01 Oct 2020	0906_MW243_20201001	Normal	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				23 Apr 2021	0906_MW243_20210423	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-
					0906_QC106_20210423	Field_D	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-
					0906_QC206_20210423	Interlab_D	792771	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				20 Oct 2021	0906_MW243_20211020	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				02 May 2022	0906_MW243_20220502	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				07 Nov 2022	0906_MW243_20221107	Normal	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC103_20221107	Field_D	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC203_20221107	Interlab_D	940477	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.01	0.01	-	<0.05
				17 Apr 2023	0906_MW243_20230417	Normal	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				14 Oct 2023	0906_MW243_231014	Normal	EM2318641	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC100_231014	Field_D	EM2318641	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC200_20231014	Interlab_D	1036478	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.05

							Perfluorocarbons																	NA	
							Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
							µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L	µg/L	UG/L
MW244	Off-base	PO7	OMP-MW1	13 Mar 2020	0906_MW244_I_200313	Normal	ES2009442	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				01 Apr 2020	0906_MW244_20200401	Normal	ES2011562	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				01 Oct 2020	0906_MW244_20201001	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				20 Apr 2021	0906_MW244_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				19 Oct 2021	0906_MW244_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				03 May 2022	0906_MW244_20220503	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				09 Nov 2022	0906_MW244_20221109	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				14 Apr 2023	0906_MW244_20230414	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				16 Aug 2023	0906_MW244_230816	Normal	EM2314805	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				14 Oct 2023	0906_MW244_231014	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC102_231014	Field_D	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC202_20231014	Interlab_D	1036481	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.05
MW245	Off-base	PO7	OMP-MW1A	13 Mar 2020	0906_MW245_S_200313	Normal	ES2009442	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
				01 Apr 2020	0906_MW245_20200401	Normal	ES2011562	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
				01 Oct 2020	0906_MW245_20201001	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
				20 Apr 2021	0906_MW245_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
				19 Oct 2021	0906_MW245_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Apr 2022	0906_MW245_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				09 Nov 2022	0906_MW245_20221109	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				14 Apr 2023	0906_MW245_20230414	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				16 Aug 2023	0906_MW245_230816	Normal	EM2314805	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				14 Oct 2023	0906_MW245_231014	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW246	Off-base	PO7		22 Jun 2020	0906_MW246_I_200622	Normal	ES2021594	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Jul 2020	0906_MW246_I_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC202_200730	Normal	735782	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				20 Apr 2021	0906_MW246_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				20 Oct 2021	0906_MW246_20211020	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				01 May 2022	0906_MW246_20220501	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				07 Nov 2022	0906_MW246_20221107	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				15 Apr 2023	0906_MW246_20230415	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				16 Oct 2023	0906_MW246_231016	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW247	Off-base	PO7		30 Jul 2020	0906_MW247_I_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				27 Apr 2021	0906_MW247_20210427	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				21 Oct 2021	0906_MW247_20211021	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				02 May 2022	0906_MW247_20220502	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				09 Nov 2022	0906_MW247_20221109	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				15 Apr 2023	0906_MW247_20230415	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				16 Aug 2023	0906_MW247_230816	Normal	EM2314805	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				15 Oct 2023	0906_MW247_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW248	Off-base	PO7		30 Jul 2020	0906_MW248_S_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	-	-	-	0.26
				27 Apr 2021	0906_MW248_20210427	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-	-	-	0.14
				20 Oct 2021	0906_MW248_20211020	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.24	-	-	-	0.21
				02 May 2022	0906_MW248_20220502	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-	-	0.12
				09 Nov 2022	0906_MW248_20221109	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.20	-	-	-	0.18
				15 Apr 2023	0906_MW248_20230415	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-	-	0.21
				16 Aug 2023	0906_MW248_230816	Normal	EM2314805	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.29	-	-	-	0.29
				15 Oct 2023	0906_MW248_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.26	-	-	-	0.26
MW249	Off-base	PO7		30 Jul 2020	0906_MW249_I_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				28 Apr 2021	0906_MW249_20210428	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				21 Oct 2021	0906_MW249_20211021	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Apr 2022	0906_MW249_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				09 Nov 2022	0906_MW249_20221109	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				15 Apr 2023	0906_MW249_20230415	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				16 Aug 2023	0906_MW249_230816	Normal	EM2314805	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				15 Oct 2023	0906_MW249_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW250	Off-base	PO7		30 Jul 2020	0906_MW250_S_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-	-	0.08
				02 Sep 2020	0906_MW250_S_200902	Normal	ES2031377	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-	-	0.07
					0906_QC202_200902	Interlab_D	742937	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.14	0.06	0.1	-	0.14
				28 Apr 2021	0906_MW250_20210428	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-	-	0.08
					0906_QC107_20210428	Field_D	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-	-	0.08
					0906_QC207_20210428	Interlab_D	792804	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	0.02	-	0.06
				19 Oct 2021	0906_MW250_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
				09 Nov 2022	0906_MW250_20221109	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-	-	-	0.01
				15 Apr 2023	0906_MW250_20230415	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-	-	-	0.01
				16 Aug 2023	0906_MW250_230816	Normal	EM2314805	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				15 Oct 2023	0906_MW250_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03

							Perfluorocarbons																	NA	
							Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
							µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L	µg/L	UG/L
MW251	Off-base	PO7		30 Jul 2020	0906_MW251_S_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC201_200730	Normal	735782	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				22 Apr 2021	0906_MW251_20210422	Normal	ES2118542	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				21 Oct 2021	0906_MW251_20211021	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Apr 2022	0906_MW251_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				17 Apr 2023	0906_MW251_20230417	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				16 Aug 2023	0906_MW251_230816	Normal	EM2314805	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				14 Oct 2023	0906_QC205_20231015	Interlab_D	1036481	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.05
				15 Oct 2023	0906_MW251_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC105_231015	Field_D	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW252	Off-base	PO7		30 Jul 2020	0906_MW252_I_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				22 Apr 2021	0906_MW252_20210422	Normal	ES2118542	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				19 Oct 2021	0906_MW252_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Apr 2022	0906_MW252_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				17 Apr 2023	0906_MW252_20230417	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				16 Aug 2023	0906_MW252_230816	Normal	EM2314805	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				15 Oct 2023	0906_MW252_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.12	<0.05	<0.05	0.12	-	-	-	0.12
MW253	Off-base	PO7		30 Jul 2020	0906_MW253_I_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
				20 Apr 2021	0906_MW253_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
				19 Oct 2021	0906_MW253_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-	-	0.05
					0906_QC102_20211019	Field_D	ES2139231	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
					0906_QC202_20211019	Interlab_D	837704	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.02	0.06	-	0.06
				30 Apr 2022	0906_MW253_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
				07 Nov 2022	0906_MW253_20221107	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
				17 Apr 2023	0906_MW253_20230417	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
				16 Aug 2023	0906_MW253_230816	Normal	EM2314805	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-	-	0.12
				14 Oct 2023	0906_QC206_20231015	Interlab_D	1036481	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.11	0.05	0.11	<0.01	0.11
				15 Oct 2023	0906_MW253_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-	-	0.08
					0906_QC106_231015	Field_D	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-	-	0.12
MW254	Off-base	PO7		30 Jul 2020	0906_MW254_S_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-	-	-	0.48
				20 Apr 2021	0906_MW254_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.54	-	-	-	0.51
				19 Oct 2021	0906_MW254_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.43	-	-	-	0.41
					0906_QC101_20211019	Field_D	ES2139231	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-	-	-	0.41
					0906_QC201_20211019	Interlab_D	837704	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.44	0.13	0.27	-	0.42
				30 Apr 2022	0906_MW254_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.89	-	-	-	0.86
				07 Nov 2022	0906_MW254_20221107	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.33	-	-	-	0.31
				17 Apr 2023	0906_MW254_20230417	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.32	-	-	-	0.32
				16 Aug 2023	0906_MW254_230816	Normal	EM2314805	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72	-	-	-	0.72
				15 Oct 2023	0906_MW254_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.67	-	-	-	0.67
MW255	Off-base	PO7		30 Jul 2020	0906_MW255_I_200730	Normal	ES2026752	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-	-	0.06
				22 Apr 2021	0906_MW255_20210422	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.16	-	-	-	0.16
				02 Jul 2021	0906_MW255_02072021	Normal	ES2124834	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-	-	-	0.14
					0906_QC101_02072021	Field_D	ES2124834	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-	0.13
					0906_QC201_210702	Interlab_D	808916	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	0.04	0.13	-	-
				19 Oct 2021	0906_MW255_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-	-	0.05
				30 Apr 2022	0906_MW255_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
				08 Nov 2022	0906_MW255_20221108	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-	-	0.07
					0906_QC106_20221108	Field_D	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-	-	0.07
					0906_QC206_20221108	Interlab_D	940477	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.04	0.04	-	0.06
				15 Apr 2023	0906_MW255_20230415	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-	-	0.07
				16 Oct 2023	0906_MW255_231016	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-	-	0.05
MW256	Off-base	PO7		10 Sep 2020	0906_MW256_S_200910	Normal	ES2032277	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-	-	-	0.46
					0906_QC101_200910	Field_D	ES2032277	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-	0.48
					0906_QC201_200910	Interlab_D	744316	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	<0.01	0.21	-	-
				22 Apr 2021	0906_MW256_20210422	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.46	-	-	-	0.42
				19 Oct 2021	0906_MW256_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-	-	0.12
				02 May 2022	0906_MW256_20220502	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-	-	0.06
				08 Nov 2022	0906_MW256_20221108	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
				15 Apr 2023	0906_MW256_20230415	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
				16 Oct 2023	0906_MW256_231016	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-	-	0.05
MW257	Off-base	PO7		10 Sep 2020	0906_MW257_S_200910	Normal	ES2032277	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				02 May 2022	0906_MW257_20220502	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				09 Nov 2022	0906_MW257_20221109	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				15 Apr 2023	0906_MW257_20230415	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				16 Oct 2023	0906_MW257_231016	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01

								Perfluorocarbons																		NA	
								Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
								µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L	µg/L	UG/L
MW258	GW	PO4		24 Jul 2023	0906_MW258_230724	Normal	ES2325225	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
				11 Aug 2023	0906_MW258_230811	Normal	EM2314653	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
				16 Aug 2023	0906_MW258_230816	Normal	EM2314805	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				12 Oct 2023	0906_MW258_231012	Normal	EM2318611	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
				19 Dec 2023	0906_MW258_231219	Normal	EM2322880	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
MW259	GW	PO4		24 Jul 2023	0906_MW259_230724	Normal	ES2325225	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-	-	0.06
				11 Aug 2023	0906_MW259_230811	Normal	EM2314653	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-	-	-	0.14
				16 Aug 2023	0906_MW259_230816	Normal	EM2314805	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				12 Oct 2023	0906_MW259_231012	Normal	EM2318611	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-	-	0.12
MW260	Off-base	PO3	OS002	13 Oct 2023	0906_MW260_231013	Normal	EM2318610	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW300	On-base	Base		12 Jan 2018	0906_MW300_D_180112	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
				13 Apr 2018	0906_MW300_D_180413	Normal	EM1806331	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Mar 2020	0906_MW300_20200330	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
				29 Sep 2020	0906_MW300_20200929	Normal	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
				22 Apr 2021	0906_MW300_20210422	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	-
					0906_QC105_20210422	Field_D	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	-
					0906_QC205_20210422	Interlab_D	792803	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	0.02	-	<0.05
				20 Oct 2021	0906_MW300_20211020	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.18	-	-	-	0.18
					0906_QC106_20211020	Field_D	ES2139231	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-	-	0.12
					0906_QC206_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.17	<0.01	0.07	-	0.15
				01 May 2022	0906_MW300_20220501	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.22	-	-	-	0.19
					0906_QC102_20220501	Field_D	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-	-	0.20
					0906_QC202_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.34	<0.01	0.13	-	0.29
				07 Nov 2022	0906_MW300_20221107	Normal	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.35	-	-	-	0.31
				15 Apr 2023	0906_MW300_20230415	Normal	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-	-	-	0.37
					0906_QC103_20230415	Field_D	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43	-	-	-	0.38
					0906_QC203_20230415	Interlab_D	982807	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.59	0.02	0.2	<0.01	0.48
				24 Jul 2023	0906_MW300_230724	Normal	ES2325225	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.47	-	-	-	0.42
				14 Oct 2023	0906_MW300_231014	Normal	EM2318641	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.51	-	-	-	0.45
MW302	On-base	Base		12 Jan 2018	0906_MW302_D_180112	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-	-	-	0.01
				11 Apr 2018	0906_MW302_D_180411	Normal	EM1806331	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Mar 2020	0906_MW302_20200330	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				29 Sep 2020	0906_MW302_20200929	Normal	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC102_20200929	Field_D	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC202_20200929	Interlab_D	749220	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				21 Apr 2021	0906_MW302_20210421	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-
					0906_QC103_20210421	Field_D	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-
					0906_QC203_20210421	Interlab_D	792803	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				20 Oct 2021	0906_MW302_20211020	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC107_20211020	Field_D	ES2139231	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC207_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				01 May 2022	0906_MW302_20220501	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC105_20220501	Field_D	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC205_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				07 Nov 2022	0906_MW302_20221107	Normal	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC104_20221107	Field_D	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC204_20221107	Interlab_D	940477	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				15 Apr 2023	0906_MW302_20230415	Normal	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC104_20230415	Field_D	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC204_20230415	Interlab_D	982807	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.05
				14 Oct 2023	0906_MW302_231014	Normal	EM2318641	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC101_231014	Field_D	EM2318641	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC201_20231014	Interlab_D	1036478	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.05
MW304	On-base	Base		16 Jan 2018	0906_MW304_D_180116	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	0.15	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.24	-	-	-	0.09
				13 Apr 2018	0906_MW304_D_180413	Normal	EM1806331	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				31 Mar 2020	0906_MW304_20200331	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.06	-	-	-	0.06
				29 Sep 2020	0906_MW304_20200929	Normal	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				28 Apr 2021	0906_MW304_20210428	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-
				20 Oct 2021	0906_MW304_20211020	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				01 May 2022	0906_MW304_20220501	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC104_20220501	Field_D	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC204_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				07 Nov 2022	0906_MW304_20221107	Normal	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				15 Apr 2023	0906_MW304_20230415	Normal	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				14 Oct 2023	0906_MW304_231014	Normal	EM2318641	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01

								Perfluorocarbons																NA	
								Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
								µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L	µg/L	UG/L
MW306	On-base	Base		16 Jan 2018	0906_MW306_D_180116	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	<0.05	<0.05	0.08	-	-	-	0.08
				12 Apr 2018	0906_MW306_D_180412	Normal	EM1806331	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Mar 2020	0906_MW306_20200330	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				29 Sep 2020	0906_MW306_20200929	Normal	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				22 Apr 2021	0906_MW306_20210422	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-
				22 Oct 2021	0906_MW306_20211022	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				02 May 2022	0906_MW306_20220502	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				07 Nov 2022	0906_MW306_20221107	Normal	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				14 Apr 2023	0906_MW306_20230414	Normal	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC101_20230414	Field_D	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC201_20230414	Interlab_D	982807	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.05
				16 Oct 2023	0906_MW306_231016	Normal	EM2318641	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW308	On-base	Base		15 Jan 2018	0906_MW308_D_180115	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC103_180115	Field_D	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC203_180115	Interlab_D	581313	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-	-	-	<0.05
				11 Apr 2018	0906_MW308_D_180411	Normal	EM1806331	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Mar 2020	0906_MW308_20200330	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				29 Sep 2020	0906_MW308_20200929	Normal	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				21 Apr 2021	0906_MW308_20210421	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-
				22 Apr 2021	0906_MW308_20210422	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-
				21 Oct 2021	0906_MW308_20211021	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				01 May 2022	0906_MW308_20220501	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC103_20220501	Field_D	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC203_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				07 Nov 2022	0906_MW308_20221107	Normal	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC105_20221107	Field_D	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC205_20221107	Interlab_D	940477	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
				17 Apr 2023	0906_MW308_20230417	Normal	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC106_20230417	Field_D	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC206_20230417	Interlab_D	982807	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.05
				14 Oct 2023	0906_MW308_231014	Normal	EM2318641	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW309	On-base	Base		21 Apr 2021	0906_MW309_20210421	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.10	-	-	-	-
MW310	On-base	Base		16 Jan 2018	0906_MW310_D_180116	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				12 Apr 2018	0906_MW310_D_180412	Normal	EM1806331	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				31 Mar 2020	0906_MW310_20200331	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				30 Sep 2020	0906_MW310_20200930	Normal	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				22 Apr 2021	0906_MW310_20210422	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-
				22 Oct 2021	0906_MW310_20211022	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				02 May 2022	0906_MW310_20220502	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				08 Nov 2022	0906_MW310_20221108	Normal	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				13 Apr 2023	0906_MW310_20230413	Normal	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				17 Oct 2023	0906_MW310_231017	Normal	EM2318641	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
MW311	On-base	Base		15 Jan 2018	0906_MW311_I_180115	Normal	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
					0906_QC101_180115	Field_D	ES1802545	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
					0906_QC201_180115	Interlab_D	581313	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	-	-	-	<0.05
				31 Mar 2020	0906_MW311_20200331	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
				08 Nov 2022	0906_MW311_20221108	Normal	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.60	-	-	-	0.54
				13 Apr 2023	0906_MW311_20230413	Normal	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.53	-	-	-	0.47
				17 Oct 2023	0906_MW311_2310117	Normal	EM2318641	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.56	-	-	-	0.51
MW312	Off-base	PO9		16 Jan 2018	0906_MW312_D_180115	Normal	ES1802566	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.10	-	-	-	0.10
				13 Apr 2018	0906_MW312_D_180413	Normal	EM1806331	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-	-	0.08
				01 Apr 2020	0906_MW312_200401	Normal	ES2011454	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-	-	0.07
				01 Oct 2020	0906_MW312_20201001	Normal	ES2034888	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-	-	0.06
				21 Oct 2021	0906_MW312_20211021	Normal	ES2139399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
				03 May 2022	0906_MW312_20220503	Normal	EM2208339	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				08 Nov 2022	0906_MW312_20221108	Normal	EM2222499	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				17 Apr 2023	0906_MW312_20230417	Normal	EM2306923	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
				13 Oct 2023	0906_MW312_231013	Normal	EM2318618	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

					Perfluorocarbons																
					Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
					µg/L	µg/L	µg/L	UG/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	µg/L	µg/L	µg/L	µg/L
				LOR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water						**0.56**	**0.07**														
PFAS NEMP 2.0 Table 1 Health Recreational Water						*10*	*2*														
PFAS NEMP 2.0 Table 5 Freshwater 95%					0.13	220															
Location Code	**Location Type**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																
SW104	On-base	25 Mar 2020	0906_SW104_20200325	Normal	ES2011457	0.09	<0.01	**0.15**		<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		02 Sep 2020	0906_SW104_200904	Normal	ES2031377	2.83	0.13	***4.27***		0.17	0.16	1.44	0.09	<0.02	<0.1	0.15	0.44		0.07	<0.02	<0.02	<0.02
		04 Sep 2020	0906_QC201_200904	Interlab_D	742937	2.3	0.1	***3.29***	<0.01	0.13	0.13	0.99	0.06	<0.01	0.06	0.1	0.41	0.06	0.06	<0.01	<0.01	<0.01
		29 Sep 2020	0906_SW104_20200929	Normal	ES2034862-AB	2.8	0.17	***4.61***		0.21	0.23	1.81	0.12	<0.02	<0.1	0.17	0.59		0.08	<0.02	<0.02	<0.02
		21 Apr 2021	0906_QC102_20210421	Field_D	ES2116327	0.26	0.02	**0.46**		0.03	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.05		<0.02	<0.02	<0.02	<0.02
			0906_QC202_20210421	Interlab_D	792803	0.27	0.02	**0.41**	<0.01	0.02	0.02	0.14	<0.01	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW104_20210421	Normal	ES2116327	0.28	0.02	**0.48**		0.04	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.06		<0.02	<0.02	<0.02	<0.02
		20 Oct 2021	0906_QC105_20211020	Field_D	ES2139231	0.4	0.01	**0.65**		0.04	0.03	0.25	<0.02	<0.02	<0.1	<0.02	0.06		<0.02	<0.02	<0.02	<0.02
			0906_QC205_20211020	Interlab_D	837704	0.61	0.02	**0.91**	<0.01	0.04	0.03	0.3	0.02	<0.01	<0.05	0.02	0.07	0.02	0.01	<0.01	<0.01	<0.01
		21 Oct 2021	0906_SW104_20211020	Normal	ES2139228	0.41	0.01	**0.63**		0.05	0.04	0.22	<0.02	<0.02	<0.1	0.02	0.07		<0.02	<0.02	<0.02	<0.02
		01 May 2022	0906_QC101_20220501	Field_D	EM2208338	0.58	0.01	**0.78**		0.03	0.02	0.2	<0.02	<0.02	<0.1	<0.02	0.05		<0.02	<0.02	<0.02	<0.02
			0906_QC201_20220501	Interlab_D	889634	0.83	0.02	**1.09**	<0.01	0.03	0.02	0.26	0.02	<0.01	<0.05	0.03	0.07	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW104_20220501	Normal	EM2208338	0.63	0.01	**0.82**		0.03	<0.02	0.19	<0.02	<0.02	<0.1	<0.02	0.05		<0.02	<0.02	<0.02	<0.02
		05 Nov 2022	0906_QC102_20221105	Field_D	EM2222404	3.19	0.1	***4.63***		0.2	0.18	1.44	0.09	<0.04	<0.2	0.1	0.35		0.04	<0.04	<0.04	<0.04
			0906_QC202_20221105	Interlab_D	940477	3.1	0.04	***4.7***	<0.01	0.17	0.18	1.6	0.12	<0.01	0.1	0.13	0.41	0.06	0.06	<0.01	<0.01	<0.01
			0906_SW104_20221105	Normal	EM2222404	3.34	0.11	***4.88***		0.19	0.19	1.54	0.08	<0.04	<0.2	0.1	0.37		0.05	<0.04	<0.04	<0.04
		15 Apr 2023	0906_QC102_20230415	Field_D	EM2306945	1.98	0.06	***2.9***		0.1	0.1	0.92	0.07	<0.02	<0.1	0.07	0.27		0.04	<0.02	<0.02	<0.02
			0906_QC202_20230415	Interlab_D	982807	3	0.09	***4.2***		0.1	0.14	1.2	0.11	<0.01	0.07	0.08	0.35	0.03	0.05	<0.01	<0.01	<0.01
			0906_SW104_20230415	Normal	EM2306945	2.03	0.06	***2.94***		0.1	0.1	0.91	0.06	<0.02	<0.1	0.07	0.28		0.04	<0.02	<0.02	<0.02
		14 Oct 2023	0906_SW104_231014	Normal	EM2318641	0.3	<0.01	**0.67**		0.04	0.04	0.37	0.02	<0.02	<0.1	<0.02	0.07		<0.02	<0.02	<0.02	<0.02
SW206	Off-base	25 Mar 2020	0906_SW206_20200325	Normal	ES2011453	0.38	0.01	**0.54**		<0.02	<0.02	0.16	<0.02	<0.02	<0.1	<0.02	0.04		<0.02	<0.02	<0.02	<0.02
		01 Oct 2020	0906_SW206_20201001	Normal	ES2034866	1.21	0.06	**1.87**		0.07	0.08	0.66	0.04	<0.02	<0.1	0.08	0.21		0.03	<0.02	<0.02	<0.02
		20 Apr 2021	0906_SW206_20210420	Normal	ES2116333	0.13	0.01	**0.25**		0.03	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.02		<0.02	<0.02	<0.02	<0.02
		21 Oct 2021	0906_SW206_20211021	Normal	ES2139237	0.01	<0.01	0.03		<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		03 May 2022	0906_SW206_20220503	Normal	EM2208150	0.15	<0.01	**0.23**		0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		04 Nov 2022	0906_SW206_20221104	Normal	EM2222399	2.01	0.09	***3.07***		0.18	0.12	1.06	0.06	<0.02	<0.1	0.1	0.29		0.05	<0.02	<0.02	<0.02
		13 Apr 2023	0906_SW206_20230413	Normal	EM2306921	1.05	0.03	**1.51**		0.06	0.05	0.46	0.02	<0.02	<0.1	0.03	0.11		<0.02	<0.02	<0.02	<0.02
		16 Oct 2023	0906_SW206_231016	Normal	EM2318614	0.1	<0.01	**0.16**		<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
SW212	Off-base	15 Aug 2019	0906_SW212_190815	Normal	ES1926282	<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
		27 Mar 2020	0906_SW212_20200327	Normal	ES2011453	<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
		30 Sep 2020	0906_SW212_20200930	Normal	ES2034866	0.09	<0.01	**0.09**		<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
			0906_SW212_20200930 Dup	Normal	ES2034866	<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
		23 Apr 2021	0906_SW212_20210423	Normal	ES2116333	<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
		19 Oct 2021	0906_SW212_20211019	Normal	ES2139237	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		03 May 2022	0906_SW212_20220503	Normal	EM2208150	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	0906_SW212_20220413	Normal	EM2306921	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		15 Oct 2023	0906_SW212_231015	Normal	EM2318614	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
SW218	Off-base	25 Mar 2020	0906_SW218_20200325	Normal	ES2011453	0.03	<0.01	0.05		<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		01 Oct 2020	0906_QC104_20201001	Field_D	ES2034866	0.06	0.01	**0.36**		0.08	0.05	0.3	<0.02	<0.02	<0.1	0.05	0.13		0.03	<0.02	<0.02	<0.02
			0906_QC204_20201001	Interlab_D	749074	0.04	<0.01	**0.23**	<0.01	0.04	0.03	0.19	0.01	<0.01	<0.05	0.04	0.07	0.03	0.02	<0.01	<0.01	<0.01
			0906_SW218_20201001	Normal	ES2034866	0.1	0.02	**0.39**		0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12		0.03	<0.02	<0.02	<0.02
		20 Apr 2021	0906_SW218_20210420	Normal	ES2116333	0.01	<0.01	0.05		<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		21 Oct 2021	0906_SW218_20211021	Normal	ES2139237	0.27	0.01	**0.51**		0.04	0.04	0.24	<0.02	<0.02	<0.1	<0.02	0.06		<0.02	<0.02	<0.02	<0.02
		03 May 2022	0906_SW218_20220503	Normal	EM2208150	0.24	0.01	**0.36**		0.03	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.03		<0.02	<0.02	<0.02	<0.02
		04 Nov 2022	0906_SW218_20221104	Normal	EM2222399	0.63	0.04	**0.97**		0.04	0.04	0.34	<0.02	<0.02	<0.1	0.04	0.1		0.02	<0.02	<0.02	<0.02
		13 Apr 2023	0906_SW218_20230413	Normal	EM2306921	<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
					EM2307789	<0.02	<0.02	0.03		<0.02	<0.02	0.03	<0.02	<0.02	<0.10	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		16 Oct 2023	0906_SW218_231016	Normal	EM2318614	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
SW228	Off-base	04 Apr 2019	0906_QC101_190408	Field_D	ES1911335	0.81	0.06	**1.41**		0.1	0.09	0.6	0.04	<0.02	<0.1	0.11	0.43		0.04	<0.02	<0.02	<0.02
			0906_QC201_190408	Interlab_D	650878	0.6	0.05	**1.16**	<0.01	0.05	0.06	0.56	0.03	<0.01	<0.05	0.07	0.24	0.02	0.02	<0.01	<0.01	<0.01
			0906_SW228_190408	Normal	ES1911335	0.77	0.06	**1.39**		0.1	0.08	0.62	0.04	<0.02	<0.1	0.12	0.43		0.04	<0.02	<0.02	<0.02
		27 Mar 2020	0906_QC102_20200327	Field_D	ES2011453	0.77	0.05	**1.31**		0.04	0.06	0.54	0.03	<0.02	<0.1	0.08	0.26		0.02	<0.02	<0.02	<0.02
			0906_QC202_20200327	Interlab_D	712445	0.63	0.03	**1.04**	<0.01	0.04	0.05	0.41	0.02	<0.01	<0.05	0.05	0.16	0.02	0.02	<0.01	<0.01	<0.01
			0906_SW228_20200327	Normal	ES2011453	0.73	0.05	**1.25**		0.05	0.06	0.52	0.03	<0.02	<0.1	0.07	0.25		0.03	<0.02	<0.02	<0.02
		01 Oct 2020	0906_SW228_20201001	Normal	ES2034866	2.15	0.09	***3.32***		0.11	0.14	1.17	0.08	<0.02	<0.1	0.1	0.4		0.04	<0.02	<0.02	<0.02
		27 Apr 2021	0906_SW228_20210427	Normal	ES2116333	1.1	0.06	***2.19***		0.19	0.1	1.09	0.06	<0.02	<0.1	0.1	0.48		0.04	<0.02	<0.02	<0.02
		21 Oct 2021	0906_SW228_20211021	Normal	ES2139237	1.41	0.06	***2.13***		0.1	0.09	0.72	0.06	<0.02	<0.1	0.09	0.32		0.03	<0.02	<0.02	<0.02
		03 May 2022	0906_SW228_20220503	Normal	EM2208150	0.86	0.04	**1.41**		0.14	0.06	0.55	0.04	<0.02	<0.1	0.05	0.2		0.02	<0.02	<0.02	<0.02
		09 Nov 2022	0906_SW228_20221109	Normal	EM2222399	1.17	0.06	**1.93**		0.06	0.08	0.76	0.05	<0.02	<0.1	0.06	0.27		0.03	<0.02	<0.02	<0.02
		17 Apr 2023	0906_SW228_20230417	Normal	EM2306921	1.08	0.04	**1.6**		0.12	0.06	0.52	0.04	<0.02	<0.1	0.04	0.2		<0.02	<0.02	<0.02	<0.02
		16 Oct 2023	0906_SW228_231016	Normal	EM2318614	1.03	0.04	**1.57**		0.04	0.04	0.54	0.04	<0.02	<0.1	0.04	0.18		<0.02	<0.02	<0.02	<0.02

						Perfluorocarbons																
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
						µg/L	µg/L	µg/L	UG/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	µg/L	µg/L	µg/L	µg/L
					LOR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**														
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*														
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220															
SW234	Off-base	27 Mar 2020	0906_SW234_20200327	Normal	ES2011453	<0.01	0.02	<0.01		<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.03	0.04		<0.02	<0.02	<0.02	<0.02
		29 Sep 2020	0906_SW234_20200929	Normal	ES2034866	0.28	0.02	**0.39**		<0.02	<0.02	0.11	<0.02	<0.02	<0.1	0.02	0.06		<0.02	<0.02	<0.02	<0.02
		20 Apr 2021	0906_SW234_20210420	Normal	ES2116333	0.02	<0.01	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.02	0.04		<0.02	<0.02	<0.02	<0.02
		19 Oct 2021	0906_SW234_20211019	Normal	ES2139237	0.04	<0.01	0.04		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		02 May 2022	0906_QC107_20220502	Field_D	EM2208150	0.02	<0.01	0.02		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
			0906_SW234_20220502	Normal	EM2208150	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		03 May 2022	0906_QC207_20220502	Interlab_D	889634	0.02	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
		08 Nov 2022	0906_SW234_20221108	Normal	EM2222399	0.02	<0.01	0.02		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	0906_SW234_ 20230413	Normal	EM2306921	0.16	<0.01	**0.22**		0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
					EM2307789	0.15	<0.02	**0.21**		<0.02	<0.02	0.06	<0.02	<0.02	<0.10	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		15 Oct 2023	0906_SW234_231015	Normal	EM2318614	0.02	<0.01	0.02		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
SW236	Off-base	02 Oct 2020	0906_SW236_20201002	Normal	ES2034866	<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
		22 Apr 2021	0906_SW236_20210422	Normal	ES2116333	<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
		22 Oct 2021	0906_SW236_20211022	Normal	ES2139237	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		03 May 2022	0906_SW236_20220503	Normal	EM2208150	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		04 Nov 2022	0906_SW236_20221104	Normal	EM2222399	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		14 Apr 2023	0906_SW236_20230414	Normal	EM2306921	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		14 Oct 2023	0906_QC103_20231014	Field_D	EM2318614	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
			0906_QC203_20231014	Interlab_D	1036481	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW236_231014	Normal	EM2318614	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
SW240	Off-base	02 Oct 2020	0906_SW240_20201002	Normal	ES2034866	<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
		22 Apr 2021	0906_SW240_20210422	Normal	ES2116333	<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
		22 Oct 2021	0906_SW240_20211022	Normal	ES2139237	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		03 May 2022	0906_SW240_20220503	Normal	EM2208150	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		04 Nov 2022	0906_SW240_20221104	Normal	EM2222399	0.01	<0.01	0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		14 Apr 2023	0906_SW240_20230414	Normal	EM2306921	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		14 Oct 2023	0906_SW240_231014	Normal	EM2318614	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
SW261	Off-base	15 Aug 2019	0906_SW261_190815	Normal	ES1926282	<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
		27 Mar 2020	0906_SW261_20200327	Normal	ES2011453	<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
		28 Sep 2020	0906_SW261_20200928	Normal	ES2034866	<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
		20 Apr 2021	0906_SW261_20210420	Normal	ES2116333	<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
		19 Oct 2021	0906_QC103_20211019	Field_D	ES2139231	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
			0906_QC203_20211019	Interlab_D	837704	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW261_20211019	Normal	ES2139237	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	0906_SW261_20220428	Normal	EM2208150	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		17 Apr 2023	0906_QC105_20230417	Field_D	EM2306921	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
			0906_QC205_20230417	Interlab_D	982766	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW261_20230417	Normal	EM2306921	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		15 Oct 2023	0906_SW261_231015	Normal	EM2318614	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
SW262	Off-base	27 Mar 2020	0906_SW262_20200327	Normal	ES2011453	<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
		28 Sep 2020	0906_SW262_20200928	Normal	ES2034866	0.05	<0.01	0.05		<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		20 Apr 2021	0906_SW262_20210420	Normal	ES2116333	<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
		19 Oct 2021	0906_SW262_20211019	Normal	ES2139237	0.01	<0.01	0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	0906_SW262_20220428	Normal	EM2208150	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		08 Nov 2022	0906_SW262_20221108	Normal	EM2222399	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		17 Apr 2023	0906_SW262_20230417	Normal	EM2306921	0.05	<0.01	0.07		<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
					EM2307789	0.04	<0.02	0.04		<0.02	<0.02	<0.02	<0.02	<0.02	<0.10	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		15 Oct 2023	0906_SW262_231015	Normal	EM2318614	0.02	<0.01	0.02		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
SW286	Off-base	15 Aug 2019	0906_SW286_190815	Normal	ES1926282	<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
		27 Mar 2020	0906_SW286_20200327	Normal	ES2011453	<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
		02 Oct 2020	0906_SW286_20201002	Normal	ES2034866	<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
		22 Apr 2021	0906_SW286_20210422	Normal	ES2116333	<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
		22 Oct 2021	0906_SW286_20211022	Normal	ES2139237	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		03 May 2022	0906_SW286_20220503	Normal	EM2208150	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		08 Nov 2022	0906_SW286_20221108	Normal	EM2222399	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		17 Apr 2023	0906_SW286_20230417	Normal	EM2306921	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		14 Oct 2023	0906_QC104_231014	Field_D	EM2318614	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
			0906_QC204_20231014	Interlab_D	1036481	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW286_231014	Normal	EM2318614	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
SW288	Off-base	04 Apr 2019	0906_SW288_190408	Normal	ES1911335	<0.01	<0.01	<0.01		<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.04	<0.02		<0.02	<0.02	<0.02	<0.02
		27 Mar 2020	0906_SW288_20200327	Normal	ES2011453	<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
		01 Oct 2020	0906_SW288_20201001	Normal	ES2034866	<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
		27 Apr 2021	0906_SW288_20210427	Normal	ES2116333	<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
		21 Oct 2021	0906_SW288_20211021	Normal	ES2139237	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		03 May 2022	0906_SW288_20220503	Normal	EM2208150	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		09 Nov 2022	0906_SW288_20221109	Normal	EM2222399	0.02	<0.01	0.02		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		17 Apr 2023	0906_SW288_20230417	Normal	EM2306921	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		16 Oct 2023	0906_SW288_231016	Normal	EM2318614	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02

						Perfluorocarbons																
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
						µg/L	µg/L	µg/L	UG/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	µg/L	µg/L	µg/L	µg/L
					LOR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**														
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*														
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220															
SW289	Off-base	04 Apr 2019	0906_SW289_190408	Normal	ES1911335	0.42	0.03	**0.74**		0.05	0.04	0.32	0.02	<0.02	<0.1	0.06	0.18		0.02	<0.02	<0.02	<0.02
		27 Mar 2020	0906_SW289_20200327	Normal	ES2011453	0.79	0.03	**1.24**		0.03	0.04	0.45	0.02	<0.02	<0.1	<0.02	0.12		<0.02	<0.02	<0.02	<0.02
		01 Oct 2020	0906_SW289_20201001	Normal	ES2034866	0.05	0.01	**0.34**		0.07	0.04	0.29	<0.02	<0.02	<0.1	0.05	0.12		0.03	<0.02	<0.02	<0.02
		27 Apr 2021	0906_SW289_20210427	Normal	ES2116333	0.24	0.02	**0.58**		<0.02	<0.02	0.34	<0.02	<0.02	<0.1	<0.02	0.1		<0.02	<0.02	<0.02	<0.02
		21 Oct 2021	0906_SW289_20211021	Normal	ES2139237	1.15	0.04	**1.84**		0.11	0.07	0.69	0.06	<0.02	<0.1	0.06	0.22		0.02	<0.02	<0.02	<0.02
		03 May 2022	0906_SW289_20220503	Normal	EM2208150	0.65	0.02	**0.94**		0.04	0.03	0.29	0.02	<0.02	<0.1	<0.02	0.09		<0.02	<0.02	<0.02	<0.02
		09 Nov 2022	0906_SW289_20221109	Normal	EM2222399	1.54	0.08	***2.68***		0.17	0.11	1.14	0.08	<0.02	<0.1	0.08	0.35		0.04	<0.02	<0.02	<0.02
		17 Apr 2023	0906_SW289_20230417	Normal	EM2306921	1.03	0.03	**1.52**		0.1	0.05	0.49	0.03	<0.02	<0.1	0.02	0.13		<0.02	<0.02	<0.02	<0.02
		16 Oct 2023	0906_SW289_231016	Normal	EM2318614	0.98	0.03	**1.56**		0.04	0.04	0.58	0.03	<0.02	<0.1	0.03	0.13		<0.02	<0.02	<0.02	<0.02
SW294	Off-base	15 Aug 2019	0906_SW294_190815	Normal	ES1926282	<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
		27 Mar 2020	0906_SW294_20200327	Normal	ES2011453	<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
		28 Sep 2020	0906_SW294_20200928	Normal	ES2034866	0.02	<0.01	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		20 Apr 2021	0906_SW294_20210420	Normal	ES2116333	<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
		19 Oct 2021	0906_SW294_20211019	Normal	ES2139237	0.01	<0.01	0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	0906_SW294_20220428	Normal	EM2208150	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	0.02		<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	0906_SW294_20230413	Normal	EM2306921	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		15 Oct 2023	0906_SW294_231015	Normal	EM2318614	0.01	<0.01	0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
SW309	Off-base	15 Aug 2019	0906_SW309_190815	Normal	ES1926282	<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
		27 Mar 2020	0906_SW309_20200327	Normal	ES2011459	<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
		28 Sep 2020	0906_SW309_20200928	Normal	ES2034885	<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
		20 Apr 2021	0906_SW309_20210420	Normal	ES2116324	<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
		19 Oct 2021	0906_SW309_20211019	Normal	ES2139303	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		02 May 2022	0906_SW309_20220502	Normal	EM2208334	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		08 Nov 2022	0906_SW309_20221108	Normal	EM2222397	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		14 Apr 2023	0906_SW309_20230414	Normal	EM2306919	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	0906_SW309_231012	Normal	EM2318611	<0.01	<0.01	<0.01		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
SW310	Off-base	27 Mar 2020	0906_SW310_20200327	Normal	ES2011453	0.58	0.02	**0.82**		0.02	0.02	0.24	<0.02	<0.02	<0.1	<0.02	0.04		<0.02	<0.02	<0.02	<0.02
		29 Sep 2020	0906_SW310_20200929	Normal	ES2034866	1.6	0.05	***2.11***		0.07	0.05	0.51	0.03	<0.02	<0.1	0.06	0.16		0.03	<0.02	<0.02	<0.02
		21 Apr 2021	0906_QC104_20210421	Field_D	ES2116333	0.92	0.03	**1.35**		0.06	0.03	0.43	<0.02	<0.02	<0.1	0.02	0.08		<0.02	<0.02	<0.02	<0.02
			0906_QC204_20210421	Interlab_D	792774	1	0.03	**1.36**	<0.01	0.05	0.02	0.36	0.02	<0.01	<0.05	0.04	0.07	0.02	0.02	<0.01	<0.01	<0.01
			0906_SW310_20210421	Normal	ES2116333	0.85	0.02	**1.23**		0.1	0.03	0.38	<0.02	<0.02	<0.1	0.02	0.06		<0.02	<0.02	<0.02	<0.02
		19 Oct 2021	0906_SW310_20211019	Normal	ES2139237	1.21	0.02	**1.47**		0.04	0.02	0.26	0.02	<0.02	<0.1	0.03	0.07		<0.02	<0.02	<0.02	<0.02
		30 Apr 2022	0906_SW310_20220430	Normal	EM2208150	0.04	<0.01	0.04		<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02
		04 Nov 2022	0906_QC101_20221104	Field_D	EM2222404	0.48	0.01	**0.6**		<0.02	<0.02	0.12	<0.02	<0.02	<0.1	<0.02	0.03		<0.02	<0.02	<0.02	<0.02
			0906_QC201_20221104	Interlab_D	940477	0.71	<0.01	**0.83**	<0.01	0.01	<0.01	0.12	<0.01	<0.01	<0.05	0.02	0.04	<0.01	<0.01	<0.01	<0.01	<0.01
			0906_SW310_20221104	Normal	EM2222399	0.55	0.01	**0.68**		<0.02	<0.02	0.13	<0.02	<0.02	<0.1	<0.02	0.03		<0.02	<0.02	<0.02	<0.02
		14 Apr 2023	0906_SW310_20230414	Normal	EM2306921	1.48	0.03	***2.01***		0.12	0.05	0.53	0.02	<0.02	<0.1	0.02	0.1		<0.02	<0.02	<0.02	<0.02
					EM2307789	1.31	0.03	**1.83**		0.1	0.04	0.52	<0.02	<0.02	<0.10	0.02	0.08		<0.02	<0.02	<0.02	<0.02
		16 Oct 2023	0906_SW310_231016	Normal	EM2318614	0.63	0.02	**0.91**		<0.02	0.02	0.28	<0.02	<0.02	<0.1	0.02	0.06		<0.02	<0.02	<0.02	<0.02

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

						Perfluorocarbons																NA	
						Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
						µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	ug/L	µg/L	UG/L
					LOR	0.01	0.01	0.01	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																								
PFAS NEMP 2.0 Table 1 Health Recreational Water																								
PFAS NEMP 2.0 Table 5 Freshwater 95%																								
Location Code	**Location Type**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																			
SW104	On-base	25 Mar 2020	0906_SW104_20200325	Normal	ES2011457	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15				0.15
		02 Sep 2020	0906_SW104_200904	Normal	ES2031377	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.48				5.23
		04 Sep 2020	0906_QC201_200904	Interlab_D	742937	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	4.4	2.4	3.39		4.15
		29 Sep 2020	0906_SW104_20200929	Normal	ES2034862-AB	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	6.18				5.83
		21 Apr 2021	0906_QC102_20210421	Field_D	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	0.63				
			0906_QC202_20210421	Interlab_D	792803	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.51	0.29	0.43		0.49
			0906_SW104_20210421	Normal	ES2116327	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.68				
		20 Oct 2021	0906_QC105_20211020	Field_D	ES2139231	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.79				0.76
			0906_QC205_20211020	Interlab_D	837704	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.14	0.63	0.93		1.07
		21 Oct 2021	0906_SW104_20211020	Normal	ES2139228	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.82				0.78
		01 May 2022	0906_QC101_20220501	Field_D	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.89				0.87
			0906_QC201_20220501	Interlab_D	889634	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.28	0.85	1.11		1.24
			0906_SW104_20220501	Normal	EM2208338	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.91				0.91
		05 Nov 2022	0906_QC102_20221105	Field_D	EM2222404	<0.04	<0.04	<0.09	<0.04	<0.09	<0.09	<0.09	<0.09	<0.04	<0.04	<0.05	0.05	<0.05	<0.05	5.74				5.47
			0906_QC202_20221105	Interlab_D	940477	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	0.01	<0.01	5.98	3.14	4.74		5.62
			0906_SW104_20221105	Normal	EM2222404	<0.04	<0.04	<0.09	<0.04	<0.09	<0.09	<0.09	<0.09	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	5.97				5.7
		15 Apr 2023	0906_QC102_20230415	Field_D	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.61				3.44
			0906_QC202_20230415	Interlab_D	982807	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	5.23	3.09	4.29	0.01	4.94
			0906_SW104_20230415	Normal	EM2306945	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.65				3.49
		14 Oct 2023	0906_SW104_231014	Normal	EM2318641	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.84				0.78
SW206	Off-base	25 Mar 2020	0906_SW206_20200325	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.59				0.59
		01 Oct 2020	0906_SW206_20201001	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.44				2.32
		20 Apr 2021	0906_SW206_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.31				0.31
		21 Oct 2021	0906_SW206_20211021	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03				0.03
		03 May 2022	0906_SW206_20220503	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25				0.25
		04 Nov 2022	0906_SW206_20221104	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.96				3.78
		13 Apr 2023	0906_SW206_20230413	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.81				1.74
		16 Oct 2023	0906_SW206_231016	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.16				0.16
SW212	Off-base	15 Aug 2019	0906_SW212_190815	Normal	ES1926282	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		27 Mar 2020	0906_SW212_20200327	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		30 Sep 2020	0906_SW212_20200930	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09				0.09
			0906_SW212_20200930 Dup	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		23 Apr 2021	0906_SW212_20210423	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		19 Oct 2021	0906_SW212_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		03 May 2022	0906_SW212_20220503	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		13 Apr 2023	0906_SW212_20220413	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		15 Oct 2023	0906_SW212_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
SW218	Off-base	25 Mar 2020	0906_SW218_20200325	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05				0.05
		01 Oct 2020	0906_QC104_20201001	Field_D	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.71				0.66
			0906_QC204_20201001	Interlab_D	749074	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.47	0.04	0.23		0.4
			0906_SW218_20201001	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72				0.68
		20 Apr 2021	0906_SW218_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05				0.05
		21 Oct 2021	0906_SW218_20211021	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66				0.62
		03 May 2022	0906_SW218_20220503	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.43				0.43
		04 Nov 2022	0906_SW218_20221104	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.25				1.21
		13 Apr 2023	0906_SW218_20230413	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02				0.02
					EM2307789	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03				0.03
		16 Oct 2023	0906_SW218_231016	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
SW228	Off-base	04 Apr 2019	0906_QC101_190408	Field_D	ES1911335	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.28				2.15
			0906_QC201_190408	Interlab_D	650878	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.7	0.65	1.21		1.59
			0906_SW228_190408	Normal	ES1911335	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	2.31				2.19
		27 Mar 2020	0906_QC102_20200327	Field_D	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.85				1.76
			0906_QC202_20200327	Interlab_D	712445	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.43	0.66	1.07		1.34
			0906_SW228_20200327	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.79				1.7
		01 Oct 2020	0906_SW228_20201001	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	4.28				4.06
		27 Apr 2021	0906_SW228_20210427	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.22				3.06
		21 Oct 2021	0906_SW228_20211021	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.88				2.73
		03 May 2022	0906_SW228_20220503	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.96				1.86
		09 Nov 2022	0906_SW228_20221109	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.54				2.41
		17 Apr 2023	0906_SW228_20230417	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.1				2
		16 Oct 2023	0906_SW228_231016	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.95				1.87

						Perfluorocarbons																NA	
						Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
						µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	ug/L	µg/L	UG/L
					LOR	0.01	0.01	0.01	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																							
PFAS NEMP 2.0 Table 1 Health Recreational Water																							
PFAS NEMP 2.0 Table 5 Freshwater 95%																							
SW234	Off-base	27 Mar 2020	0906_SW234_20200327	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	<0.05	<0.05	0.25				0.25
		29 Sep 2020	0906_SW234_20200929	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.11	<0.05	<0.05	0.6				0.6
		20 Apr 2021	0906_SW234_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.34	<0.05	<0.05	0.42				0.42
		19 Oct 2021	0906_SW234_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04				0.04
		02 May 2022	0906_QC107_20220502	Field_D	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.23	<0.05	<0.05	0.25				0.25
			0906_SW234_20220502	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.22	<0.05	<0.05	0.22				0.22
		03 May 2022	0906_QC207_20220502	Interlab_D	889634	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	0.28	<0.01	<0.01	0.34	0.02	0.02		0.34
		08 Nov 2022	0906_SW234_20221108	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02				0.02
		13 Apr 2023	0906_SW234_ 20230413	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.24				0.24
					EM2307789	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.21				0.21
		15 Oct 2023	0906_SW234_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02				0.02
SW236	Off-base	02 Oct 2020	0906_SW236_20201002	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		22 Apr 2021	0906_SW236_20210422	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		22 Oct 2021	0906_SW236_20211022	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		03 May 2022	0906_SW236_20220503	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		04 Nov 2022	0906_SW236_20221104	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		14 Apr 2023	0906_SW236_20230414	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		14 Oct 2023	0906_QC103_20231014	Field_D	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
			0906_QC203_20231014	Interlab_D	1036481	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.05
			0906_SW236_231014	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
SW240	Off-base	02 Oct 2020	0906_SW240_20201002	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		22 Apr 2021	0906_SW240_20210422	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		22 Oct 2021	0906_SW240_20211022	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		03 May 2022	0906_SW240_20220503	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		04 Nov 2022	0906_SW240_20221104	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01				0.01
		14 Apr 2023	0906_SW240_20230414	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		14 Oct 2023	0906_SW240_231014	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
SW261	Off-base	15 Aug 2019	0906_SW261_190815	Normal	ES1926282	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		27 Mar 2020	0906_SW261_20200327	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		28 Sep 2020	0906_SW261_20200928	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		20 Apr 2021	0906_SW261_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		19 Oct 2021	0906_QC103_20211019	Field_D	ES2139231	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
			0906_QC203_20211019	Interlab_D	837704	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01		<0.05
			0906_SW261_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		28 Apr 2022	0906_SW261_20220428	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		17 Apr 2023	0906_QC105_20230417	Field_D	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
			0906_QC205_20230417	Interlab_D	982766	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.05
			0906_SW261_20230417	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		15 Oct 2023	0906_SW261_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
SW262	Off-base	27 Mar 2020	0906_SW262_20200327	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		28 Sep 2020	0906_SW262_20200928	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05				0.05
		20 Apr 2021	0906_SW262_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		19 Oct 2021	0906_SW262_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01				0.01
		28 Apr 2022	0906_SW262_20220428	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		08 Nov 2022	0906_SW262_20221108	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		17 Apr 2023	0906_SW262_20230417	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07				0.07
					EM2307789	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04				0.04
		15 Oct 2023	0906_SW262_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02				0.02
SW286	Off-base	15 Aug 2019	0906_SW286_190815	Normal	ES1926282	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		27 Mar 2020	0906_SW286_20200327	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		02 Oct 2020	0906_SW286_20201002	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		22 Apr 2021	0906_SW286_20210422	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		22 Oct 2021	0906_SW286_20211022	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		03 May 2022	0906_SW286_20220503	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		08 Nov 2022	0906_SW286_20221108	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		17 Apr 2023	0906_SW286_20230417	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		14 Oct 2023	0906_QC104_231014	Field_D	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
			0906_QC204_20231014	Interlab_D	1036481	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.05
			0906_SW286_231014	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
SW288	Off-base	04 Apr 2019	0906_SW288_190408	Normal	ES1911335	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04				0.04
		27 Mar 2020	0906_SW288_20200327	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		01 Oct 2020	0906_SW288_20201001	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		27 Apr 2021	0906_SW288_20210427	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		21 Oct 2021	0906_SW288_20211021	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		03 May 2022	0906_SW288_20220503	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		09 Nov 2022	0906_SW288_20221109	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02				0.02
		17 Apr 2023	0906_SW288_20230417	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		16 Oct 2023	0906_SW288_231016	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01

						Perfluorocarbons																NA	
						Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
						µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	ug/L	µg/L	UG/L
					LOR	0.01	0.01	0.01	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																								
PFAS NEMP 2.0 Table 1 Health Recreational Water																								
PFAS NEMP 2.0 Table 5 Freshwater 95%																								
SW289	Off-base	04 Apr 2019	0906_SW289_190408	Normal	ES1911335	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14				1.08
		27 Mar 2020	0906_SW289_20200327	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.48				1.42
		01 Oct 2020	0906_SW289_20201001	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66				0.62
		27 Apr 2021	0906_SW289_20210427	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.7				0.7
		21 Oct 2021	0906_SW289_20211021	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.42				2.29
		03 May 2022	0906_SW289_20220503	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14				1.09
		09 Nov 2022	0906_SW289_20221109	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	3.59				3.4
		17 Apr 2023	0906_SW289_20230417	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.88				1.8
		16 Oct 2023	0906_SW289_231016	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.86				1.79
SW294	Off-base	15 Aug 2019	0906_SW294_190815	Normal	ES1926282	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		27 Mar 2020	0906_SW294_20200327	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		28 Sep 2020	0906_SW294_20200928	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02				0.02
		20 Apr 2021	0906_SW294_20210420	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03				0.03
		19 Oct 2021	0906_SW294_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01				0.01
		28 Apr 2022	0906_SW294_20220428	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	<0.05	<0.05	0.18				0.18
		13 Apr 2023	0906_SW294_20230413	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		15 Oct 2023	0906_SW294_231015	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01				0.01
SW309	Off-base	15 Aug 2019	0906_SW309_190815	Normal	ES1926282	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		27 Mar 2020	0906_SW309_20200327	Normal	ES2011459	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		28 Sep 2020	0906_SW309_20200928	Normal	ES2034885	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		20 Apr 2021	0906_SW309_20210420	Normal	ES2116324	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		19 Oct 2021	0906_SW309_20211019	Normal	ES2139303	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		02 May 2022	0906_SW309_20220502	Normal	EM2208334	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		08 Nov 2022	0906_SW309_20221108	Normal	EM2222397	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		14 Apr 2023	0906_SW309_20230414	Normal	EM2306919	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
		12 Oct 2023	0906_SW309_231012	Normal	EM2318611	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01				<0.01
SW310	Off-base	27 Mar 2020	0906_SW310_20200327	Normal	ES2011453	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.92				0.9
		29 Sep 2020	0906_SW310_20200929	Normal	ES2034866	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.56				2.48
		21 Apr 2021	0906_QC104_20210421	Field_D	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.57				1.54
			0906_QC204_20210421	Interlab_D	792774	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.63	1.03	1.39		1.57
			0906_SW310_20210421	Normal	ES2116333	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.46				1.43
		19 Oct 2021	0906_SW310_20211019	Normal	ES2139237	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.67				1.63
		30 Apr 2022	0906_SW310_20220430	Normal	EM2208150	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04				0.04
		04 Nov 2022	0906_QC101_20221104	Field_D	EM2222404	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.64				0.64
			0906_QC201_20221104	Interlab_D	940477	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.9	0.71	0.83		0.9
			0906_SW310_20221104	Normal	EM2222399	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72				0.72
		14 Apr 2023	0906_SW310_20230414	Normal	EM2306921	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.35				2.28
					EM2307789	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.1				2.06
		16 Oct 2023	0906_SW310_231016	Normal	EM2318614	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.03				1.01

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

Table B3: Water RPD Results (Draft)

Field or Interlab Duplicates

	Lab Report Number		EM2318614			EM2318614	1036481		EM2318614		
	Field ID		0906_SW286_231014	0906_QC104_231014		0906_SW286_231014	0906_QC204_20231014		0906_MW244_231014	0906_QC102_231014	
	Matrix Type		Water	Water		Water	Water		Water	Water	
	Date		14 Oct 2023	14 Oct 2023	RPD	14 Oct 2023	14 Oct 2023	RPD	14 Oct 2023	14 Oct 2023	RPD
	Unit	LOR									
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.1	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoropropanesulfonic acid (PFPrS)	UG/L	0.01					<0.01				
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
Sum of PFAS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.1	0	<0.01	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Table B3: Water RPD Results (Draft)

Field or Interlab Duplicates

		EM2318614	1036481		EM2318641			EM2318641	1036478	
		0906_MW244_231014	0906_QC202_20231014		0906_MW302_231014	0906_QC101_231014		0906_MW302_231014	0906_QC201_20231014	
		Water	Water		Water	Water		Water	Water	
		14 Oct 2023	14 Oct 2023	RPD	14 Oct 2023	14 Oct 2023	RPD	14 Oct 2023	14 Oct 2023	RPD
	Unit									
Perfluorooctane sulfonic acid (PFOS)	µg/L	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctanoate (PFOA)	µg/L	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	<0.1	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0
Perfluoropentanoic acid (PFPeA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropropanesulfonic acid (PFPrS)	UG/L		<0.01						<0.01	
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Sum of PFAS	µg/L	<0.01	<0.1	0	<0.01	<0.01	0	<0.01	<0.1	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multi**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.**

Table B3: Water RPD Results (Draft)

Field or Interlab Duplicates

		EM2318641			EM2318641	1036478		EM2318614		
		0906_MW243_231014	0906_QC100_231014		0906_MW243_231014	0906_QC200_20231014		0906_SW236_231014	0906_QC103_20231014	
		Water	Water		Water	Water		Water	Water	
		14 Oct 2023	14 Oct 2023	RPD	14 Oct 2023	14 Oct 2023	RPD	14 Oct 2023	14 Oct 2023	RPD
	Unit									
Perfluorooctane sulfonic acid (PFOS)	µg/L	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctanoate (PFOA)	µg/L	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.1	0
Perfluoropentanoic acid (PFPeA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoropropanesulfonic acid (PFPrS)	UG/L					<0.01				
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorononanoic acid (PFNA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
Sum of PFAS	µg/L	<0.01	<0.01	0	<0.01	<0.1	0	<0.01	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multi**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.**

Table B3: Water RPD Results (Draft)

Field or Interlab Duplicates

		EM2318614	1036481		EM2318614			EM2318614	1036481	
		0906_SW236_231014	0906_QC203_20231014		0906_MW253_231015	0906_QC106_231015		0906_MW253_231015	0906_QC206_20231015	
		Water	Water		Water	Water		Water	Water	
		14 Oct 2023	14 Oct 2023	RPD	15 Oct 2023	15 Oct 2023	RPD	15 Oct 2023	14 Oct 2023	RPD
	Unit									
Perfluorooctane sulfonic acid (PFOS)	µg/L	<0.01	<0.01	0	0.03	0.06	**67**	0.03	0.04	29
Perfluorooctanoate (PFOA)	µg/L	<0.01	<0.01	0	<0.01	0.01	0	<0.01	0.01	0
Sum of PFHxS and PFOS	µg/L	<0.01	<0.01	0	0.08	0.11	**32**	0.08	0.1	22
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.01	<0.01	0	0.05	0.05	0	0.05	0.06	18
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	<0.1	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0
Perfluoropentanoic acid (PFPeA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropropanesulfonic acid (PFPrS)	UG/L		<0.01						<0.01	
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Sum of PFAS	µg/L	<0.01	<0.1	0	0.08	0.12	40	0.08	0.11	32

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multi**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.**

Table B3: Water RPD Results (Draft)

Field or Interlab Duplicates

		EM2318614			EM2318614	1036481	
		0906_MW251_231015	0906_QC105_231015		0906_MW251_231015	0906_QC205_20231015	
		Water	Water		Water	Water	
		15 Oct 2023	15 Oct 2023	RPD	15 Oct 2023	14 Oct 2023	RPD
	Unit						
Perfluorooctane sulfonic acid (PFOS)	µg/L	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctanoate (PFOA)	µg/L	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.01	<0.01	0	<0.01	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	<0.1	<0.1	0	<0.1	<0.05	0
Perfluoropentanoic acid (PFPeA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropropanesulfonic acid (PFPrS)	UG/L					<0.01	
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.02	<0.02	0	<0.02	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.02	<0.02	0	<0.02	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.02	<0.02	0	<0.02	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0
Sum of PFAS	µg/L	<0.01	<0.01	0	<0.01	<0.1	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multi**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.**

Table B4: Blank Results (Draft)

		Lab Report Number	EM2318641				
		Field ID	0906_QC300_231013	0906_QC302_231014	0906_QC304_231015	0906_QC306_231016	0906_QC308_231017
		Date	13 Oct 2023	14 Oct 2023	15 Oct 2023	16 Oct 2023	17 Oct 2023
		Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate
	Unit	EQL					
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoate (PFOA)	µg/L	0.01	<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	<0.01
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<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	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<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	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<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	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<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	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<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	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<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	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	0.05	<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	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<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	<0.05
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Statistics
* A Non Detect Multiplier of 0.5 has been applied.

		EM2318641					
		0906_QC500_231012	0906_QC501_231013	0906_QC502_231014	0906_QC503_231015	0906_QC504_231016	0906_QC505_231017
		12 Oct 2023	13 Oct 2023	14 Oct 2023	15 Oct 2023	16 Oct 2023	17 Oct 2023
		Trip_B	Trip_B	Trip_B	Trip_B	Trip_B	Trip_B
	Unit						
Perfluorooctane sulfonic acid (PFOS)	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoate (PFOA)	µg/L	<0.01	<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	<0.01
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.02	<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	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.02	<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	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	<0.02	<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	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.02	<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	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	<0.02	<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	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.02	<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	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	<0.05	<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	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.05	<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	<0.05
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum of PFAS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Statistics
* A Non Detect Multiplier of 0.5 has been applied.

APPENDIX C

LABORATORY CERTIFICATES

Cardno

now

Stantec

CHAIN OF CUSTODY

COC#: 58636 *ALS Laboratory:* EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	[redacted] DATE TIME: 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: RAAF Base Wagga

ORDER NO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free Ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

PROJECT MANAGER: [redacted] CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

PRIMARY SAMPLER: [redacted] QUOTE NO: SY/139/19 B EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Analysis NOT REQUIRED	GW (PFAS Full/Std Level) WATER	SW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0906_MW214_231016		16/10/2023 05:48 PM	WATER	ALS: 2 Non ALS: 0	No		X			
002	0906_MW243_231014		14/10/2023 07:08 PM	WATER	ALS: 2 Non ALS: 0	No		X			
003	0906_MW300_231014		14/10/2023 07:05 PM	WATER	ALS: 6 Non ALS: 0	No		X		Internal lab qc	
004	0906_MW302_231014		14/10/2023 07:06 PM	WATER	ALS: 2 Non ALS: 0	No		X			
005	0906_MW304_231014		14/10/2023 06:47 PM	WATER	ALS: 6 Non ALS: 0	No		X			
006	0906_MW306_231016		16/10/2023 05:49 PM	WATER	ALS: 2 Non ALS: 0	No		X			
007	0906_MW308_231014		14/10/2023 06:54 PM	WATER	ALS: 5 Non ALS: 0	No		X		Internal lab qc	

Environmental Division
Melbourne
Work Order Reference
EM2318641

Telephone : +61-3-8549 9600

CHAIN OF CUSTODY

ALS COC#: 58636 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 19/10/23 12:15	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: RAAF Base Wagga

ORDER NO:

TURNAROUND REQUIREMENTS: 5 Days [1]

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 B EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Analysis NOT REQUIRED	GW (PFAS Full/Std Level) WATER	SW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
015	0906_QC100_231014		14/10/2023 07:22 PM	WATER	ALS: 2 Non ALS: 0	No		X			
016	0906_QC302_231014		14/10/2023 07:31 PM	WATER	ALS: 2 Non ALS: 0	No			X		
017	0906_QC303_231014		14/10/2023 07:31 PM	WATER	ALS: 2 Non ALS: 0	No			X		
018	0906_QC304_231015		15/10/2023 06:18 PM	WATER	ALS: 2 Non ALS: 0	No			X		
019	0906_QC305_231015		15/10/2023 06:19 PM	WATER	ALS: 2 Non ALS: 0	No			X		
020	0906_QC306_231015		15/10/2023 06:19 PM	WATER	ALS: 2 Non ALS: 0	No			X		
021	0906_QC307_231015		15/10/2023 06:19 PM	WATER	ALS: 2 Non ALS: 0	No			X		

CHAIN OF CUSTODY

COC#: 58636 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	[redacted] DATE TIME: 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: RAAF Base Wagga

ORDER NO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 B EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Analysis NOT REQUIRED	GW (PFAS Full/Std Level) WATER	SW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
029	0906_QC504_231016		16/10/2023 02:04 PM	WATER	ALS: 2 Non ALS: 0	No			X		
030	0906_QC505_231017		17/10/2023 02:03 PM	WATER	ALS: 2 Non ALS: 0	No			X		

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2318641**		
Amendment	: 2		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Me bourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP_23	Page	: 1 of 3
Order number	: -	Quote number	: ES2022MWHAUS0002 (SY/139/19 B)
C-O-C number	: 58636	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: RAAF BASE WAGGA		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Oct-2023 12:15	Issue Date	: 08-Nov-2023
Client Requested Due Date	: 30-Oct-2023	Scheduled Reporting Date	: **30-Oct-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 4	Temperature	: 15°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 28 / 24

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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (28 analytes)
EM2318641-001	16-Oct-2023 17:48	0906_MW214_231016		✓
EM2318641-002	14-Oct-2023 19:08	0906_MW243_231014		✓
EM2318641-003	14-Oct-2023 19:05	0906_MW300_231014		✓
EM2318641-004	14-Oct-2023 19:06	0906_MW302_231014		✓
EM2318641-005	14-Oct-2023 18:47	0906_MW304_231014		✓
EM2318641-006	16-Oct-2023 17:49	0906_MW306_231016		✓
EM2318641-007	14-Oct-2023 18:54	0906_MW308_231014		✓
EM2318641-008	17-Oct-2023 13:36	0906_MW310_231017		✓
EM2318641-009	17-Oct-2023 13:36	0906_MW311_2310117		✓
EM2318641-010	14-Oct-2023 19:02	0906_SW104_231014		✓
EM2318641-011	13-Oct-2023 18:37	0906_QC300_231013		✓
EM2318641-012	14-Oct-2023 18:52	0906_QC101_231014		✓
EM2318641-015	14-Oct-2023 19:31	0906_QC303_231014	✓	
EM2318641-016	15-Oct-2023 18:18	0906_QC304_231015		✓
EM2318641-017	15-Oct-2023 18:19	0906_QC305_231015	✓	
EM2318641-018	16-Oct-2023 18:19	0906_QC306_231016		✓
EM2318641-019	16-Oct-2023 18:19	0906_QC307_231016	✓	
EM2318641-020	13-Oct-2023 19:15	0906_QC301_231013	✓	
EM2318641-021	17-Oct-2023 13:37	0906_QC308_231017		✓
EM2318641-022	17-Oct-2023 13:37	0906_WWDRUM_231017		✓
EM2318641-023	12-Oct-2023 14:04	0906_QC500_231012		✓
EM2318641-024	13-Oct-2023 14:04	0906_QC501_231013		✓
EM2318641-025	14-Oct-2023 14:03	0906_QC502_231014		✓
EM2318641-026	15-Oct-2023 14:03	0906_QC503_231015		✓
EM2318641-027	16-Oct-2023 14:04	0906_QC504_231016		✓
EM2318641-028	17-Oct-2023 14:03	0906_QC505_231017		✓
EM2318641-029	14-Oct-2023 19:22	0906_QC100_231014		✓
EM2318641-030	14-Oct-2023 19:31	0906_QC302_231014		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email [redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- A4 - AU Tax Invoice (INV) Email [redacted]

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email [redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email [redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318641**	Page	: 1 of 9
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Site	: RAAF BASE WAGGA	Issue Date	: 08-Nov-2023
Sampler	: [redacted]	No. of samples received	: 28
Order number	: -	No. of samples analysed	: 24

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231B: Perfluoroalkyl Carboxylic Acids	EM2318641--003	0906_MW300_231014	**Perfluorobutanoic acid (PFBA)**	375-22-4	64.5 %	73.0-129%	**Recovery less than lower data quality objective**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2318641--007	0906_MW308_231014	**Perfluorobutanoic acid (PFBA)**	375-22-4	60.6 %	73.0-129%	**Recovery less than lower data quality objective**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2318641--003	0906_MW300_231014	**Perfluorotetradecanoic acid (PFTeDA)**	376-06-7	65.8 %	71.0-132%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2318641--003	0906_MW300_231014	**N-Ethyl perfluorooctane sulfonamide (EtFOSA)**	4151-50-2	67.5 %	70.0-130%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2318641--003	0906_MW300_231014	**N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)**	24448-09-7	66.4 %	70.0-130%	**Recovery less than lower data quality objective**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2318641--003	0906_MW300_231014	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	60.3 %	70.0-130%	**Recovery less than lower data quality objective**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2318641--007	0906_MW308_231014	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	68.4 %	70.0-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **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)								
0906_QC500_231012		12-Oct-2023	24-Oct-2023	09-Apr-2024	✓	25-Oct-2023	09-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC300_231013,	0906_QC501_231013	13-Oct-2023	24-Oct-2023	10-Apr-2024	✓	25-Oct-2023	10-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW308_231014		14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	24-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW243_231014, 0906_MW302_231014, 0906_SW104_231014, 0906_QC502_231014	0906_MW300_231014, 0906_MW304_231014, 0906_QC101_231014,	14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	25-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC100_231014,	0906_QC302_231014	14-Oct-2023	27-Oct-2023	11-Apr-2024	✓	27-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_231015,	0906_QC503_231015	15-Oct-2023	24-Oct-2023	12-Apr-2024	✓	25-Oct-2023	12-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC504_231016		16-Oct-2023	24-Oct-2023	13-Apr-2024	✓	24-Oct-2023	13-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW214_231016, 0906_QC306_231016	0906_MW306_231016,	16-Oct-2023	24-Oct-2023	13-Apr-2024	✓	25-Oct-2023	13-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC505_231017		17-Oct-2023	24-Oct-2023	14-Apr-2024	✓	24-Oct-2023	14-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_231017, 0906_QC308_231017,	0906_MW311_2310117, 0906_WWDRUM_231017	17-Oct-2023	24-Oct-2023	14-Apr-2024	✓	25-Oct-2023	14-Apr-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_QC500_231012		12-Oct-2023	24-Oct-2023	09-Apr-2024	✓	25-Oct-2023	09-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC300_231013,	0906_QC501_231013	13-Oct-2023	24-Oct-2023	10-Apr-2024	✓	25-Oct-2023	10-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW308_231014		14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	24-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW243_231014, 0906_MW302_231014, 0906_SW104_231014, 0906_QC502_231014	0906_MW300_231014, 0906_MW304_231014, 0906_QC101_231014,	14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	25-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC100_231014,	0906_QC302_231014	14-Oct-2023	27-Oct-2023	11-Apr-2024	✓	27-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_231015,	0906_QC503_231015	15-Oct-2023	24-Oct-2023	12-Apr-2024	✓	25-Oct-2023	12-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC504_231016		16-Oct-2023	24-Oct-2023	13-Apr-2024	✓	24-Oct-2023	13-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW214_231016, 0906_QC306_231016	0906_MW306_231016,	16-Oct-2023	24-Oct-2023	13-Apr-2024	✓	25-Oct-2023	13-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC505_231017		17-Oct-2023	24-Oct-2023	14-Apr-2024	✓	24-Oct-2023	14-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_231017, 0906_QC308_231017,	0906_MW311_2310117, 0906_WWDRUM_231017	17-Oct-2023	24-Oct-2023	14-Apr-2024	✓	25-Oct-2023	14-Apr-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0906_QC500_231012		12-Oct-2023	24-Oct-2023	09-Apr-2024	✓	25-Oct-2023	09-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC300_231013,	0906_QC501_231013	13-Oct-2023	24-Oct-2023	10-Apr-2024	✓	25-Oct-2023	10-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW308_231014		14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	24-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW243_231014, 0906_MW302_231014, 0906_SW104_231014, 0906_QC502_231014	0906_MW300_231014, 0906_MW304_231014, 0906_QC101_231014,	14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	25-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC100_231014,	0906_QC302_231014	14-Oct-2023	27-Oct-2023	11-Apr-2024	✓	27-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_231015,	0906_QC503_231015	15-Oct-2023	24-Oct-2023	12-Apr-2024	✓	25-Oct-2023	12-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC504_231016		16-Oct-2023	24-Oct-2023	13-Apr-2024	✓	24-Oct-2023	13-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW214_231016, 0906_QC306_231016	0906_MW306_231016,	16-Oct-2023	24-Oct-2023	13-Apr-2024	✓	25-Oct-2023	13-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC505_231017		17-Oct-2023	24-Oct-2023	14-Apr-2024	✓	24-Oct-2023	14-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_231017, 0906_QC308_231017,	0906_MW311_2310117, 0906_WWDRUM_231017	17-Oct-2023	24-Oct-2023	14-Apr-2024	✓	25-Oct-2023	14-Apr-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0906_QC500_231012		12-Oct-2023	24-Oct-2023	09-Apr-2024	✓	25-Oct-2023	09-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC300_231013,	0906_QC501_231013	13-Oct-2023	24-Oct-2023	10-Apr-2024	✓	25-Oct-2023	10-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW308_231014		14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	24-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW243_231014, 0906_MW302_231014, 0906_SW104_231014, 0906_QC502_231014	0906_MW300_231014, 0906_MW304_231014, 0906_QC101_231014,	14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	25-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC100_231014,	0906_QC302_231014	14-Oct-2023	27-Oct-2023	11-Apr-2024	✓	27-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_231015,	0906_QC503_231015	15-Oct-2023	24-Oct-2023	12-Apr-2024	✓	25-Oct-2023	12-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC504_231016		16-Oct-2023	24-Oct-2023	13-Apr-2024	✓	24-Oct-2023	13-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW214_231016, 0906_QC306_231016	0906_MW306_231016,	16-Oct-2023	24-Oct-2023	13-Apr-2024	✓	25-Oct-2023	13-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC505_231017		17-Oct-2023	24-Oct-2023	14-Apr-2024	✓	24-Oct-2023	14-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_231017, 0906_QC308_231017,	0906_MW311_2310117, 0906_WWDRUM_231017	17-Oct-2023	24-Oct-2023	14-Apr-2024	✓	25-Oct-2023	14-Apr-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0906_QC500_231012		12-Oct-2023	24-Oct-2023	09-Apr-2024	✓	25-Oct-2023	09-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC300_231013,	0906_QC501_231013	13-Oct-2023	24-Oct-2023	10-Apr-2024	✓	25-Oct-2023	10-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW308_231014		14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	24-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW243_231014, 0906_MW302_231014, 0906_SW104_231014, 0906_QC502_231014	0906_MW300_231014, 0906_MW304_231014, 0906_QC101_231014,	14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	25-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC100_231014,	0906_QC302_231014	14-Oct-2023	27-Oct-2023	11-Apr-2024	✓	27-Oct-2023	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC304_231015,	0906_QC503_231015	15-Oct-2023	24-Oct-2023	12-Apr-2024	✓	25-Oct-2023	12-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC504_231016		16-Oct-2023	24-Oct-2023	13-Apr-2024	✓	24-Oct-2023	13-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW214_231016, 0906_QC306_231016	0906_MW306_231016,	16-Oct-2023	24-Oct-2023	13-Apr-2024	✓	25-Oct-2023	13-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_QC505_231017		17-Oct-2023	24-Oct-2023	14-Apr-2024	✓	24-Oct-2023	14-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW310_231017, 0906_QC308_231017,	0906_MW311_2310117, 0906_WWDRUM_231017	17-Oct-2023	24-Oct-2023	14-Apr-2024	✓	25-Oct-2023	14-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within he 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	3	25	**12.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	25	**12.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	25	**12.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	25	**8.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

QUALITY CONTROL REPORT

Work Order	: **EM2318641**	Page	: 1 of 11
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58636	Issue Date	: 08-Nov-2023
Sampler	: [redacted]		
Site	: RAAF BASE WAGGA		
Quote number	: SY/139/19 B		
No. of samples received	: 28		
No. of samples analysed	: 24		

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]	2IC Organic Chemist	[redacted]
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 5378499)									
EM2318641-005	0906_MW304_231014	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
EM2318641-003	0906_MW300_231014	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.16	0.18	9.9	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.14	0.14	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.07	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: 5378514)									
EM2318641-007	0906_MW308_231014	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: 5378499)									
EM2318641-005	0906_MW304_231014	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

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: 5378499) - continued									
EM2318641-005	0906_MW304_231014	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
EM2318641-003	0906_MW300_231014	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	0.10	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
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5378514)									
EM2318641-007	0906_MW308_231014	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: 5378499)									
EM2318641-005	0906_MW304_231014	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5378499) - continued									
EM2318641-005	0906_MW304_231014	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
EM2318641-003	0906_MW300_231014	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: 5378514)									
EM2318641-007	0906_MW308_231014	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 (MeFO A)	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: 5378499)									
EM2318641 005	0906 MW304 231014	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124 72 4	0 05	µg/L	0 05	0 05	0 0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory 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: 5378499) - continued									
EM2318641-003	0906_MW300_231014	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: 5378514)									
EM2318641-007	0906_MW308_231014	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: 5378499)									
EM2318641-005	0906_MW304_231014	EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EM2318641-003	0906_MW300_231014	EP231X: Sum of PFAS	---	0.01	µg/L	0.51	0.54	5.7	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.18	0.20	10.5	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	0.45	0.47	4.3	0% - 20%
EP231P: PFAS Sums (QC Lot: 5378514)									
EM2318641-007	0906_MW308_231014	EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **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: 5378499)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	85.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	81.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	82.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	95.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	82.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	86.5	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5378514)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	86.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	89.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	88.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	98.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	84.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5387340)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	85.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	87.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	89.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	91.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	95.1	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	104	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5378499)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	79.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	80.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	81.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	87.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	84.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	92.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.7	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	88.5	72.0	134

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: 5378499) - continued								
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.3	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	85.3	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5378514)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	85.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	92.0	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	96.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	87.2	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	92.0	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	84.5	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.6	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	83.3	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	85.4	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5387340)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	89.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	86.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.2	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	91.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	86.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	93.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.3	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	96.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5378499)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.9	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	107	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	84.7	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	88.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	83.6	70.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5378499) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	87.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5378514)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	89.3	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	96.5	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.0	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	88.8	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.0	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	85.6	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5387340)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	96.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	113	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	99.8	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.0	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	94.3	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	90.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	95.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5378499)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	93.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 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	0.24 µg/L	96.4	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	83.0	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5378514)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	91.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	99.1	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	98.6	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Laboratory Control Spike (LCS) Report: Spike Recovery (%): LCS	Laboratory Control Spike (LCS) Report: Acceptable Limits (%): Low	Laboratory Control Spike (LCS) Report: Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5378514) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	83.0	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5387340)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	99.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	90.1	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	99.0	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	116	70.0	130
EP231P: PFAS Sums (QCLot: 5378499)								
EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	---	---	---	---
EP231P: PFAS Sums (QCLot: 5378514)								
EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	---	---	---	---
EP231P: PFAS Sums (QCLot: 5387340)								
EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	---	---	---	---

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 5378499)							
EM2318641-003	0906_MW300_231014	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	88.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	109	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	111	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	106	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	77.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	64.6	53.0	142

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: 5378514)							
EM2318641-007	0906_MW308_231014	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	92.7	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	96.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	93.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	103	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	80.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	79.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5378499)							
EM2318641-003	0906_MW300_231014	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	# 64.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	84.3	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	86.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.3	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	90.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.9	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	72.3	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	77.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	73.2	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	68.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	# 65.8	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5378514)							
EM2318641-007	0906_MW308_231014	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	# 60.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	77.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	84.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	85.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	94.1	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	88.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	79.5	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	78.7	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	84.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	81.7	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	73.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5378499)							
EM2318641-003	0906_MW300_231014	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	78.3	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	76.8	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	# 67.5	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	# 66.4	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5378499) - continued							
EM2318641-003	0906_MW300_231014	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	79.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	82.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	69.2	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5378514)							
EM2318641-007	0906_MW308_231014	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	86.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	73.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	73.2	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	75.5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	87.9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	89.1	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	76.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5378499)							
EM2318641-003	0906_MW300_231014	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	96.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	94.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	82.8	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	# 60.3	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5378514)							
EM2318641-007	0906_MW308_231014	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	95.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	93.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	93.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	# 68.4	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2318641**	Page	: 1 of 17
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	[redacted]	[redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58636	Issue Date	: 08-Nov-2023 16:49
Sampler	: [redacted]		
Site	: RAAF BASE WAGGA		
Quote number	: SY/139/19 B		
No. of samples received	: 28		
No. of samples analysed	: 24		

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]	2IC Organic Chemist	[redacted]
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X: Poor matrix spike recovery for sample EM2318641-003 due to sample matrix interference.
- Amendment (26/10/2023): This report has been amended following the request to add PFAS (EP231X) to samples 029 and 030. All analysis results are as per the previous report.
- 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: Poor matrix spike recovery for sample EM2318641-007 due to sample matrix interference.
- Amendment (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID. 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 ini ial 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	0906_MW214_231016	0906_MW243_231014	0906_MW300_231014	0906_MW302_231014	0906_MW304_231014
				Sampling date / time	16-Oct-2023 17:48	14-Oct-2023 19:08	14-Oct-2023 19:05	14-Oct-2023 19:06	14-Oct-2023 18:47
Compound	CAS Number	LOR	Unit		EM2318641-001	EM2318641-002	EM2318641-003	EM2318641-004	EM2318641-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	**0.14**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	**0.06**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	**0.16**	<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	**0.02**	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	**0.03**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	**0.10**	<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	0906_MW214_231016	0906_MW243_231014	0906_MW300_231014	0906_MW302_231014	0906_MW304_231014
				Sampling date / time	16-Oct-2023 17:48	14-Oct-2023 19:08	14-Oct-2023 19:05	14-Oct-2023 19:06	14-Oct-2023 18:47
Compound	CAS Number	LOR	Unit		EM2318641-001	EM2318641-002	EM2318641-003	EM2318641-004	EM2318641-005
					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	<0.01	**0.51**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.18**	<0.01	<0.01
Sum of PFAS (WA DER List)	---	0.01	µg/L		<0.01	<0.01	**0.45**	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.02	%		**108**	**96.4**	**89.3**	**102**	**112**
13C8-PFOA	---	0.02	%		**99.2**	**95.1**	**95.2**	**98.3**	**100**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW306_231016	0906_MW308_231014	0906_MW310_231017	0906_MW311_2310117	0906_QC101_231014
				Sampling date / time	16-Oct-2023 17:49	14-Oct-2023 18:54	17-Oct-2023 13:36	17-Oct-2023 13:36	14-Oct-2023 18:52
Compound	CAS Number	LOR	Unit		EM2318641-006	EM2318641-007	EM2318641-008	EM2318641-009	EM2318641-012
					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	**0.03**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.05**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.01	**0.48**	<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	0906_MW306_231016	0906_MW308_231014	0906_MW310_231017	0906_MW311_2310117	0906_QC101_231014
				Sampling date / time	16-Oct-2023 17:49	14-Oct-2023 18:54	17-Oct-2023 13:36	17-Oct-2023 13:36	14-Oct-2023 18:52
Compound	CAS Number	LOR	Unit		EM2318641-006	EM2318641-007	EM2318641-008	EM2318641-009	EM2318641-012
					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	**0.56**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	**0.48**	<0.01
Sum of PFAS (WA DER List)	---	0.01	µg/L		<0.01	<0.01	<0.01	**0.51**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.02	%		**104**	**104**	**107**	**104**	**93.0**
13C8-PFOA	---	0.02	%		**99.7**	**95.3**	**97.0**	**97.9**	**96.4**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_QC100_231014	----	----	----	----
			Sampling date / time		14-Oct-2023 19:22	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318641-029	----------	----------	----------	----------
					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	0906_QC100_231014	----	----	----	----
				Sampling date / time	14-Oct-2023 19:22	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318641-029	----------	----------	----------	----------
					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	%		**98.1**	----	----	----	----
13C8-PFOA	----	0.02	%		**97.4**	----	----	----	----

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)			Sample ID	0906_QC300_231013	0906_QC304_231015	0906_QC306_231016	0906_QC308_231017	0906_QC500_231012
			Sampling date / time	13-Oct-2023 18:37	15-Oct-2023 18:18	16-Oct-2023 18:19	17-Oct-2023 13:37	12-Oct-2023 14:04
Compound	CAS Number	LOR	Unit	EM2318641-011	EM2318641-016	EM2318641-018	EM2318641-021	EM2318641-023
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<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: RINSATE (Matrix: WATER)				Sample ID	0906_QC300_231013	0906_QC304_231015	0906_QC306_231016	0906_QC308_231017	0906_QC500_231012
				Sampling date / time	13-Oct-2023 18:37	15-Oct-2023 18:18	16-Oct-2023 18:19	17-Oct-2023 13:37	12-Oct-2023 14:04
Compound	CAS Number	LOR	Unit		EM2318641-011	EM2318641-016	EM2318641-018	EM2318641-021	EM2318641-023
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<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	%		109	110	103	108	106
13C8-PFOA	---	0.02	%		101	101	101	97.1	95.9

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0906_QC501_231013	0906_QC502_231014	0906_QC503_231015	0906_QC504_231016	0906_QC505_231017
				Sampling date / time	13-Oct-2023 14:04	14-Oct-2023 14:03	15-Oct-2023 14:03	16-Oct-2023 14:04	17-Oct-2023 14:03
Compound	CAS Number	LOR	Unit		EM2318641-024	EM2318641-025	EM2318641-026	EM2318641-027	EM2318641-028
					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: RINSATE (Matrix: WATER)				Sample ID	0906_QC501_231013	0906_QC502_231014	0906_QC503_231015	0906_QC504_231016	0906_QC505_231017
				Sampling date / time	13-Oct-2023 14:04	14-Oct-2023 14:03	15-Oct-2023 14:03	16-Oct-2023 14:04	17-Oct-2023 14:03
Compound	CAS Number	LOR	Unit		EM2318641-024	EM2318641-025	EM2318641-026	EM2318641-027	EM2318641-028
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<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	%		**112**	**107**	**104**	**104**	**104**
13C8-PFOA	---	0.02	%		**101**	**97.5**	**99.1**	**97.5**	**96.2**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0906_SW104_231014	0906_QC302_231014	-----	-----	-----
				Sampling date / time	14-Oct-2023 19:02	14-Oct-2023 19:31	-----	-----	-----
Compound	CAS Number	LOR	Unit		EM2318641-010	EM2318641-030	---------	---------	---------
					Result	Result	-----	-----	-----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.04**	<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		**0.37**	<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		**0.30**	<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		**0.07**	<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: SURFACE WATER (Matrix: WATER)				Sample ID	0906_SW104_231014	0906_QC302_231014	-----	-----	-----
				Sampling date / time	14-Oct-2023 19:02	14-Oct-2023 19:31	-----	-----	-----
Compound	CAS Number	LOR	Unit		EM2318641-010	EM2318641-030	---------	---------	---------
					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		**0.84**	<0.01	-----	-----	-----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.67**	<0.01	-----	-----	-----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.78**	<0.01	-----	-----	-----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**107**	**98.6**	-----	-----	-----
13C8-PFOA	----	0.02	%		**98.3**	**98.8**	-----	-----	-----

Analytical Results

Sub-Matrix: WASTEWATER (Matrix: WATER)			Sample ID	0906_WWDRUM_231017	----	----	----	----
			Sampling date / time	17-Oct-2023 13:37	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2318641-022	-------	-------	-------	-------
				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	**0.29**	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355 46 4	0.01	µg/L	**2.92**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375 92 8	0.02	µg/L	**0.20**	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**3.93**	----	----	----	----
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	**0.16**	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.68**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.12**	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.21**	----	----	----	----
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	0906_WWDRUM_231017	----	----	----	----
				Sampling date / time	17-Oct-2023 13:37	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318641-022	----	----	----	----
					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		**8.51**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**6.85**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**8.02**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**107**	----	----	----	----
13C8-PFOA	----	0.02	%		**93.6**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	---	65	140
13C8-PFOA	---	71	133

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	---	65	140
13C8-PFOA	---	71	133

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	---	65	140
13C8-PFOA	---	71	133

Sub-Matrix: WASTEWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	---	65	140
13C8-PFOA	---	71	133

Cardno

Chain of Custody

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed): [redacted]
Project Number: NSW_0906_PFASOMP
Laboratory (name, phone,fax no & contact person) : Eurofins
Attn: Michael Morrison,michaelmorrison@eurofins.com, 03 8564 5933

Sample ID	Laboratory ID	Containers	Sampling Date	Sampling Time	Sample Matrix: Water	Sample Matrix: Soil	Sample preservation: Ice	Analysis: Per- and Polyfluoroalkyl Substances (PFASs)	Analysis: HOLD
0906_QC200_231014		2	14-10-23		X		X	X	
0906_QC201_231014		2	14-10-23		X		X	X	

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: (print and signature)

Relinquished by (Sampler): (print and signature)	Date	Time	Place	Received by: (print and signature)	Date	Time
			[redacted]		19/10/23	11:40
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)		Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)		Date	Time

[redacted]

Please supply results electronically in spreadsheet and ESDAT files.

[redacted]

Tyrone Gowans

From: [redacted]
Sent:
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Subject:
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Follow Up Flag: Follow up
Flag Status: Flagged

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[redacted]

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[redacted]

eurofins | Environment Testing

[redacted]

Sample Receipt Advice

Company name:	Stantec Australia Pty Ltd (VIC)
Contact name:	[redacted]
Project name:	Not provided
Project ID:	NSW_0906_PFASOMP
Turnaround time:	5 Day
Date/Time received	Oct 19, 2023 11:40 AM
Eurofins reference	1036478

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted].

Note: A copy of these results will also be delivered to the general Stantec Australia Pty Ltd (VIC) email address.

Global Leader - Results you can trust

eurofins [redacted]

Company Name:	Stantec Australia Pty Ltd (VIC)	**Order No.:**		**Received:**	Oct 19, 2023 11:40 AM
Address:	[redacted]	**Report #:**	1036478	**Due:**	Oct 26, 2023
		Phone:		**Priority:**	5 Day
		Fax:		**Contact Name:**	[redacted]
Project Name:					
Project ID:	NSW_0906_PFASOMP_23			[redacted] : [redacted]	

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC200_20231014	Oct 14, 2023		Water	M23-Oc0044498	X
2	0906_QC201_20231014	Oct 14, 2023		Water	M23-Oc0044499	X
Test Counts						2

Stantec Australia Pty Ltd

[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **1036478-W-V2**
Project name
Project ID NSW_0906_PFASOMP_23
Received Date Oct 19, 2023

Client Sample ID			**0906_QC200_20231014**	**0906_QC201_20231014**
Sample Matrix			**Water**	**Water**
Eurofins Sample No.			**M23-Oc0044498**	**M23-Oc0044499**
Date Sampled			**Oct 14, 2023**	**Oct 14, 2023**
Test/Reference	LOR	Unit		
Perfluoroalkyl carboxylic acids (PFCAs)				
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	92	69
13C5-PFPeA (surr.)	1	%	156	107
13C5-PFHxA (surr.)	1	%	127	108
13C4-PFHpA (surr.)	1	%	112	111
13C8-PFOA (surr.)	1	%	107	131
13C5-PFNA (surr.)	1	%	113	109
13C6-PFDA (surr.)	1	%	81	117
13C2-PFUnDA (surr.)	1	%	73	98
13C2-PFDoDA (surr.)	1	%	64	113
13C2-PFTeDA (surr.)	1	%	55	81
Perfluoroalkyl sulfonamido substances				
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	106	104
D3-N-MeFOSA (surr.)	1	%	48	48

Client Sample ID			0906_QC200_20231014	0906_QC201_20231014
Sample Matrix			Water	Water
Eurofins Sample No.			M23-Oc0044498	M23-Oc0044499
Date Sampled			Oct 14, 2023	Oct 14, 2023
Test/Reference	LOR	Unit		
Perfluoroalkyl sulfonamido substances				
D5-N-EtFOSA (surr.)	1	%	46	42
D7-N-MeFOSE (surr.)	1	%	57	92
D9-N-EtFOSE (surr.)	1	%	53	99
D5-N-EtFOSAA (surr.)	1	%	52	87
D3-N-MeFOSAA (surr.)	1	%	71	92
Perfluoroalkyl sulfonic acids (PFSAs)				
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	123	126
18O2-PFHxS (surr.)	1	%	119	120
13C8-PFOS (surr.)	1	%	103	123
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	86	64
13C2-6:2 FTSA (surr.)	1	%	64	62
13C2-8:2 FTSA (surr.)	1	%	100	137
13C2-10:2 FTSA (surr.)	1	%	55	106
PFASs Summations				
Sum (PFHxS + PFOS)*	0.01	ug/L	< 0.01	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	< 0.01	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	< 0.05	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1	< 0.1

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	Oct 19, 2023	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

[redacted]

Company Name:	Stantec Australia Pty Ltd (VIC)	**Order No.:**	**Received:** Oct 19, 2023 11:40 AM
Address:	[redacted]	**Report #:** 1036478	**Due:** Oct 26, 2023
		Phone:	**Priority:** 5 Day
		Fax:	**Contact Name:** [redacted]

Project Name:
Project ID: NSW_0906_PFASOMP

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC200_20231014	Oct 14, 2023		Water	M23-Oc0044498	X
2	0906_QC201_20231014	Oct 14, 2023		Water	M23-Oc0044499	X
Test Counts						2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry weight basis unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion unless otherwise stated.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with blue colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is 7 days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg milligrams per kilogram
mg/L milligrams per litre
µg/L micrograms per litre
ppm parts per million
ppb parts per billion
% Percentage
org/100 mL Organisms per 100 millilitres
NTU Nephelometric Turbidity Units
MPN/100 mL Most Probable Number of organisms per 100 millilitres
CFU Colony forming unit

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6 2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30%; however the following acceptance guidelines are equally

applicable: Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR: RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%

PFAS field samples that contain surrogate recoveries above the QC limit designated in QSM 5.4, where no positive PFAS results have been reported, have been reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term " NT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H,1H,2H,2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	94			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	75			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	92			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	86			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	84			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	83			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	98			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	95			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	85			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	81			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	78			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	88			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	89			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	87			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	82			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	81			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	93			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	88			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	73			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	77			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	80			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	70			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	81			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	80			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	77			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	79			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	79			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	87			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	85			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	79			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	M23-Oc0045729	NCP	%	82			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M23-Oc0045729	NCP	%	76			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M23-Oc0045729	NCP	%	90			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M23-Oc0045729	NCP	%	78			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M23-Oc0045729	NCP	%	100			50-150	Pass	
Perfluorononanoic acid (PFNA)	M23-Oc0045729	NCP	%	98			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M23-Oc0045729	NCP	%	89			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	M23-Oc0045729	NCP	%	92			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	M23-Oc0045729	NCP	%	93			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M23-Oc0045729	NCP	%	59			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M23-Oc0045729	NCP	%	79			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	M23-Oc0045729	NCP	%	85			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M23-Oc0045729	NCP	%	101			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M23-Oc0045729	NCP	%	91			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M23-Oc0045729	NCP	%	101			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M23-Oc0045729	NCP	%	106			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M23-Oc0045729	NCP	%	80			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M23-Oc0045729	NCP	%	83			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M23-Oc0045729	NCP	%	85			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	M23-Oc0045729	NCP	%	95			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M23-Oc0045729	NCP	%	84			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M23-Oc0045729	NCP	%	75			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M23-Oc0045729	NCP	%	90			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M23-Oc0045729	NCP	%	84			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M23-Oc0045729	NCP	%	84			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M23-Oc0045729	NCP	%	86			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M23-Oc0045729	NCP	%	79			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M23-Oc0045729	NCP	%	87			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M23-Oc0045729	NCP	%	90			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M23-Oc0045729	NCP	%	77			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	M23-Oc0048193	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M23-Oc0048193	NCP	ug/L	0.08	0.07	3.8	30%	Pass	
Perfluorononanoic acid (PFNA)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	M23-Oc0048193	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M23-Oc0048193	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M23-Oc0048193	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M23-Oc0048193	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M23-Oc0048193	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M23-Oc0048193	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M23-Oc0048193	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M23-Oc0048193	NCP	ug/L	0.02	0.02	1.1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M23-Oc0048193	NCP	ug/L	0.01	0.01	2.0	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M23-Oc0048193	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M23-Oc0048193	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

This report has been revised (V2) to correct project ID to NSW_0906_PFASOMP_23, per client request.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

[redacted]

[redacted]

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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CHAIN OF CUSTODY

(ALS) COC#: 58473 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: PO1

ORDER NO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 B EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	GW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0906_MW200_231013		13/10/2023 06:32 PM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0906_MW204_231013		13/10/2023 06:33 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Melbourne

Work Order Reference

EM2318608

Telephone : [redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2318608**		
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Me bourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP_23	Page	: 1 of 2
Order number	: -	Quote number	: ES2022MWHAUS0002 (SY/139/19 B)
C-O-C number	: 58473	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO1		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Oct-2023 12:15	Issue Date	: 08-Nov-2023
Client Requested Due Date	: 26-Oct-2023	Scheduled Reporting Date	: **26-Oct-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 4	Temperature	: 15°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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2318608-001	13-Oct-2023 18:32	0906_MW200_231013	✓
EM2318608-002	13-Oct-2023 18:33	0906_MW204_231013	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- A4 - AU Tax Invoice (INV) Email [redacted]

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318608**	Page	: 1 of 4
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Site	: PO1	Issue Date	: 08-Nov-2023
Sampler	: [redacted]	No. of samples received	: 2
Order number	: -	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

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2318605--003	Anonymous	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	48.7 %	70.0-130%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
	1				
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: **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)								
0906_MW200_231013,	0906_MW204_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW200_231013,	0906_MW204_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0906_MW200_231013,	0906_MW204_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW200_231013,	0906_MW204_231013	**13-Oct-2023**	**23-Oct-2023**	10 Apr 2024	✓	**24-Oct-2023**	10 Apr 2024	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0906_MW200_231013,	0906_MW204_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within he analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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
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.

QUALITY CONTROL REPORT

Work Order	: **EM2318608**	Page	: 1 of 6
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58473	Issue Date	: 08-Nov-2023
Sampler	: [redacted]		
Site	: PO1		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	0.07	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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375 95 1	0 02	µg/L	0 02	0 02	0 0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376 06 7	0 05	µg/L	0 05	0 05	0 0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit

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: 5376007) - continued									
EM2318605-003	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: Sum of PFAS	---	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	0.08	0.08	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	90.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	95.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	94.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	88.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.1	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	96.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.9	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	96.3	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	97.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	LCS Spike Recovery (%)	Acceptable Limits (%): Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	92.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	91.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	93.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	86.4	70.0	130
EP231P: PFAS Sums (QCLot: 5376007)								
EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	---	---	---	---

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%): Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	88.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	79.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	86.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	90.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	71.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	88.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90.9	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.6	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	90.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	106	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	102	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	90.5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)							

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: 5376007) - continued							
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	99.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	92.5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	97.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	93.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	93.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	103	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	# 48.7	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2318608**	Page	: 1 of 5
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: —	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58473	Issue Date	: 08-Nov-2023 16:52
Sampler	: [redacted]		
Site	: PO1		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X: Poor matrix spike recovery for sample EM2318605-003 due to sample matrix interference.
- Amendment (26/10/2023): This report has been amended following the request to add PFAS (EP231X) to sample 043. All analysis results are as per the previous report.
- 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 (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID. 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 ini ial 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	0906_MW200_231013	0906_MW204_231013	-----	-----	-----
			Sampling date / time	13-Oct-2023 18:32	13-Oct-2023 18:33	-----	-----	-----
Compound	CAS Number	LOR	Unit	EM2318608-001	EM2318608-002	----------	----------	----------
				Result	Result	-----	-----	-----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.08**	<0.02	-----	-----	-----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.09**	<0.02	-----	-----	-----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.60**	<0.01	-----	-----	-----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**0.03**	<0.02	-----	-----	-----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.30**	<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	**0.14**	<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	**0.02**	<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	0906_MW200_231013	0906_MW204_231013	-----	-----	-----
				Sampling date / time	13-Oct-2023 18:32	13-Oct-2023 18:33	-----	-----	-----
Compound	CAS Number	LOR	Unit		EM2318608-001	EM2318608-002	---------	---------	---------
					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		**1.29**	<0.01	-----	-----	-----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.90**	<0.01	-----	-----	-----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.17**	<0.01	-----	-----	-----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**118**	**100**	-----	-----	-----
13C8-PFOA	----	0.02	%		**100**	**96.0**	-----	-----	-----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

CHAIN OF CUSTODY

COC#: 58565 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: PO2

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted]

QUOTE NO: SY/139/19 B

SAMPLER MOBILE: [redacted] / EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	GW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0906_MW209_231016		16/10/2023 05:52 PM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0906_MW231_231016		16/10/2023 05:52 PM	WATER	ALS: 2 Non ALS: 0	No	X		
003	0906_MW238_231015		15/10/2023 07:20 PM	WATER	ALS: 2 Non ALS: 0	No	X		
004	0906_MW239_231015		15/10/2023 07:21 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Melbourne

Work Order Reference

EM2318609

Telephone : [redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2318609**		
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Me bourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP_23	Page	: 1 of 2
Order number	: -	Quote number	: ES2022MWHAUS0002 (SY/139/19 B)
C-O-C number	: 58565	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO2		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Oct-2023 12:15	Issue Date	: 08-Nov-2023
Client Requested Due Date	: 26-Oct-2023	Scheduled Reporting Date	: **26-Oct-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 4	Temperature	: 15°C - 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
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2318609-001	16-Oct-2023 17:52	0906_MW209_231016	✓
EM2318609-002	16-Oct-2023 17:52	0906_MW231_231016	✓
EM2318609-003	15-Oct-2023 19:20	0906_MW238_231015	✓
EM2318609-004	15-Oct-2023 19:21	0906_MW239_231015	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- A4 - AU Tax Invoice (INV) Email [redacted]

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318609**	Page	: 1 of 5
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Site	: PO2	Issue Date	: 08-Nov-2023
Sampler	: [redacted]	No. of samples received	: 4
Order number	: -	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2318605--003	Anonymous	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	48.7 %	70.0-130%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
	1				
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: **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)								
0906_MW238_231015,	0906_MW239_231015	**15-Oct-2023**	**23-Oct-2023**	12-Apr-2024	✓	**24-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW209_231016,	0906_MW231_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW238_231015,	0906_MW239_231015	**15-Oct-2023**	**23-Oct-2023**	12-Apr-2024	✓	**24-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW209_231016,	0906_MW231_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0906_MW238_231015,	0906_MW239_231015	**15-Oct-2023**	**23-Oct-2023**	12-Apr-2024	✓	**24-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW209_231016,	0906_MW231_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW238_231015,	0906_MW239_231015	**15-Oct-2023**	**23-Oct-2023**	12-Apr-2024	✓	**24-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW209_231016,	0906_MW231_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0906_MW238_231015,	0906_MW239_231015	**15-Oct-2023**	**23-Oct-2023**	12-Apr-2024	✓	**24-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW209_231016,	0906_MW231_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within he analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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
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.

QUALITY CONTROL REPORT

Work Order	: **EM2318609**	Page	: 1 of 6
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58565	Issue Date	: 08-Nov-2023
Sampler	: [redacted]		
Site	: PO2		
Quote number	: SY/139/19 B		
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]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	0.07	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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375 95 1	0 02	µg/L	0 02	0 02	0 0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376 06 7	0 05	µg/L	0 05	0 05	0 0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit

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: 5376007) - continued									
EM2318605-003	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: Sum of PFAS	---	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	0.08	0.08	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	90.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	95.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	94.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	88.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.1	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	96.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.9	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	96.3	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	97.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	LCS Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	92.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	91.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	93.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	86.4	70.0	130
EP231P: PFAS Sums (QCLot: 5376007)								
EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	---	---	---	---

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	88.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	79.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	86.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	90.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	71.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	88.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90.9	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.6	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	90.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	106	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	102	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	90.5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)							

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: 5376007) - continued							
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	99.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	92.5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	97.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	93.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	93.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	103	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	# 48.7	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2318609**	Page	: 1 of 5
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58565	Issue Date	: 08-Nov-2023 17:00
Sampler	: [redacted]		
Site	: PO2		
Quote number	: SY/139/19 B		
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]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X: Poor matrix spike recovery for sample EM2318605-003 due to sample matrix interference.
- Amendment (26/10/2023): This report has been amended following minor LIMS report formatting corrections. All analysis results are as per the previous report.
- 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 (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID. 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 ini ial 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	0906_MW209_231016	0906_MW231_231016	0906_MW238_231015	0906_MW239_231015	-----
			Sampling date / time	16-Oct-2023 17:52	16-Oct-2023 17:52	15-Oct-2023 19:20	15-Oct-2023 19:21	-----
Compound	CAS Number	LOR	Unit	EM2318609-001	EM2318609-002	EM2318609-003	EM2318609-004	---------
				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: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW209_231016	0906_MW231_231016	0906_MW238_231015	0906_MW239_231015	----
				Sampling date / time	16-Oct-2023 17:52	16-Oct-2023 17:52	15-Oct-2023 19:20	15-Oct-2023 19:21	----
Compound	CAS Number	LOR	Unit		EM2318609-001	EM2318609-002	EM2318609-003	EM2318609-004	---------
					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	%		**94.8**	**93.1**	**97.5**	**96.1**	----
13C8-PFOA	----	0.02	%		**102**	**99.9**	**94.0**	**96.8**	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

CHAIN OF CUSTODY

ALS COC#: 58566 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: PO3

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 B / EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	GW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0906_MW210_231013		13/10/2023 05:31 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division
Melbourne
Work Order Reference
EM2318610

Telephone : +61-3-8549 9600

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2318610**		
Amendment	: **3**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	:
Facsimile	: ----	Facsimile	:
Project	: NSW_0906_PFASOMP_23	Page	: 1 of 2
Order number	: -	Quote number	: ES2022MWHAUS0002 (SY/139/19 B)
C-O-C number	: 58566	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO3		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Oct-2023 12:15	Issue Date	: 30-Jan-2024
Client Requested Due Date	: 26-Oct-2023	Scheduled Reporting Date	: **26-Oct-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 4	Temperature	: 15°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2318610-001	13-Oct-2023 18:31	0906_MW260_231013	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

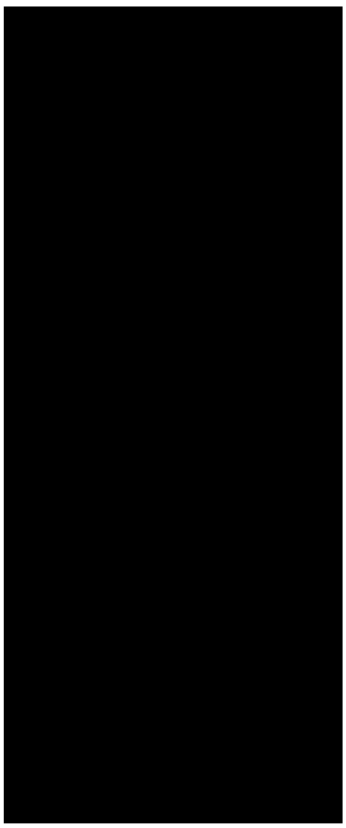
Requested Deliverables

Bobby Wang
- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

CLAIRE ARMSTRONG
- A4 - AU Tax Invoice (INV) — Email

DERP LAB REPORTS
- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

MATTHEW BARHAM
- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email



CERTIFICATE OF ANALYSIS

Work Order	: **EM2318610**	Page	: 1 of 5
Amendment	: **3**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: +6138549 9609
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58566	Issue Date	: 30-Jan-2024 11:33
Sampler	: [redacted]		
Site	: PO3		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X: Poor matrix spike recovery for sample EM2318605-003 due to sample matrix interference.
- Amendment (26/10/2023): This report has been amended following the request to add PFAS (EP231X) to sample 043. All analysis results are as per the previous report.
- 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 (30/1/2024): This report has been amended as a result of a request to change sample identification numbers (IDs) received from Matthew Barham on Tue 30/01/2024 11:17 AM, for sample 1. All analysis results are as per the previous report.
- Amendment (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID. 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)				Sample ID	0906_MW260_231013	----	----	----	----
				Sampling date / time	13-Oct-2023 18:31	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318610-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW260_231013	----	----	----	----
				Sampling date / time	13-Oct-2023 18:31	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318610-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**96.8**	----	----	----	----
13C8-PFOA	----	0.02	%		**98.6**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EM2318610**	Page	: 1 of 6
Amendment	: **3**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: +6138549 9609
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58566	Issue Date	: 30-Jan-2024
Sampler	: [redacted]		
Site	: PO3		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	Melbourne Organics, Springvale, VIC

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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	0.07	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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory 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: 5376007) - continued									
EM2318605-003	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.08	0.08	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	90.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	95.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	94.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	88.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.1	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	96.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.9	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	96.3	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	97.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)								

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: 5376007) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	92.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	91.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	93.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	86.4	70.0	130
EP231P: PFAS Sums (QCLot: 5376007)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	88.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	79.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	86.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	90.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	71.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	88.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90.9	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.6	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	90.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	106	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	102	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	90.5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)							

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: 5376007) - continued							
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	99.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	92.5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	97.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	93.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	93.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	103	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	# 48.7	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318610**	Page	: 1 of 4
Amendment	: **3**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: +6138549 9609
Project	:	Date Samples Received	: 19-Oct-2023
Site	:	Issue Date	: 30-Jan-2024
Sampler	:	No. of samples received	: 1
Order number	: -	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2318605--003	Anonymous	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	48.7 %	70.0-130%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard

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)							
0906_MW260_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW260_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0906_MW260_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0906_MW260_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW260_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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
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.

CHAIN OF CUSTODY

ALS COC#: 58567 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: PO4

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 B EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	GW (PFAS Full/Std Level) WATER	SW (PFAS Full/Std Level) WATER		ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0906_MW211_231012		12/10/2023 09:56 PM	WATER	ALS: 2 Non ALS: 0	No	X				
002	0906_MW212_231012		12/10/2023 09:56 PM	WATER	ALS: 2 Non ALS: 0	No	X				
003	0906_MW213_231012		12/10/2023 09:57 PM	WATER	ALS: 2 Non ALS: 0	No	X				
004	0906_SW309_231012		12/10/2023 09:58 PM	WATER	ALS: 2 Non ALS: 0	No		X			
005	0906_MW258_231012		12/10/2023 09:55 PM	WATER	ALS: 2 Non ALS: 0	No	X				
006	0906_MW259_231012		12/10/2023 09:56 PM	WATER	ALS: 2 Non ALS: 0	No	X				

Environmental Division Melbourne

Work Order Reference

EM2318611

Telephone : [redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2318611**		
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Me bourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP_23	Page	: 1 of 2
Order number	: -	Quote number	: ES2022MWHAUS0002 (SY/139/19 B)
C-O-C number	: 58567	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO4		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Oct-2023 12:15	Issue Date	: 08-Nov-2023
Client Requested Due Date	: 26-Oct-2023	Scheduled Reporting Date	: **26-Oct-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 4	Temperature	: 15°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 6 / 6

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2318611-001	12-Oct-2023 21:56	0906_MW211_231012	✓
EM2318611-002	12-Oct-2023 21:56	0906_MW212_231012	✓
EM2318611-003	12-Oct-2023 21:57	0906_MW213_231012	✓
EM2318611-004	12-Oct-2023 21:58	0906_SW309_231012	✓
EM2318611-005	12-Oct-2023 21:55	0906_MW258_231012	✓
EM2318611-006	12-Oct-2023 21:56	0906_MW259_231012	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- A4 - AU Tax Invoice (INV) Email [redacted]

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318611**	Page	: 1 of 5
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Site	: PO4	Issue Date	: 08-Nov-2023
Sampler	: [redacted]	No. of samples received	: 6
Order number	: -	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: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2318605--003	Anonymous	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	48.7 %	70.0-130%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
	1				
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; o hers 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)								
0906_MW211_231012,	0906_MW212_231012,	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
0906_MW213_231012,	0906_SW309_231012,							
0906_MW258_231012,	0906_MW259_231012							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW211_231012,	0906_MW212_231012,	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
0906_MW213_231012,	0906_SW309_231012,							
0906_MW258_231012,	0906_MW259_231012							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0906_MW211_231012,	0906_MW212_231012,	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
0906_MW213_231012,	0906_SW309_231012,							
0906_MW258_231012,	0906_MW259_231012							

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)							
0906_MW211_231012, 0906_MW212_231012, 0906_MW213_231012, 0906_SW309_231012, 0906_MW258_231012, 0906_MW259_231012	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0906_MW211_231012, 0906_MW212_231012, 0906_MW213_231012, 0906_SW309_231012, 0906_MW258_231012, 0906_MW259_231012	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within he analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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
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.

QUALITY CONTROL REPORT

Work Order	: **EM2318611**	Page	: 1 of 6
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58567	Issue Date	: 08-Nov-2023
Sampler	: [redacted]		
Site	: PO4		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	0.07	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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375 95 1	0 02	µg/L	0 02	0 02	0 0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376 06 7	0 05	µg/L	0 05	0 05	0 0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit

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: 5376007) - continued									
EM2318605-003	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: Sum of PFAS	---	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	0.08	0.08	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	90.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	95.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	94.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	88.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.1	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	96.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.9	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	96.3	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	97.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)								

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: 5376007) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	92.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	91.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	93.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	86.4	70.0	130
EP231P: PFAS Sums (QCLot: 5376007)								
EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	---	---	---	---

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	88.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	79.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	86.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	90.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	71.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	88.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90.9	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.6	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	90.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	106	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	102	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	90.5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)							

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: 5376007) - continued							
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	99.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	92.5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	97.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	93.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	93.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	103	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	# 48.7	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2318611**	Page	: 1 of 7
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58567	Issue Date	: 08-Nov-2023 17:03
Sampler	: [redacted]		
Site	: PO4		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Amendment (26/10/2023): This report has been amended following minor LIMS report formatting corrections. All analysis results are as per the previous report.
- EP231X: Poor matrix spike recovery for sample EM2318605-003 due to sample matrix interference.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID. 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 ini ial 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	0906_MW211_231012	0906_MW212_231012	0906_MW213_231012	0906_MW258_231012	0906_MW259_231012
				Sampling date / time	12-Oct-2023 21:56	12-Oct-2023 21:56	12-Oct-2023 21:57	12-Oct-2023 21:55	12-Oct-2023 21:56
Compound	CAS Number	LOR	Unit		EM2318611-001	EM2318611-002	EM2318611-003	EM2318611-005	EM2318611-006
					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	**0.02**	**0.04**
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	**0.02**
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)				Sample ID	0906_MW211_231012	0906_MW212_231012	0906_MW213_231012	0906_MW258_231012	0906_MW259_231012
				Sampling date / time	12-Oct-2023 21:56	12-Oct-2023 21:56	12-Oct-2023 21:57	12-Oct-2023 21:55	12-Oct-2023 21:56
Compound	CAS Number	LOR	Unit		EM2318611-001	EM2318611-002	EM2318611-003	EM2318611-005	EM2318611-006
					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	**0.03**	**0.12**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	**0.03**	**0.06**
Sum of PFAS (WA DER List)	---	0.01	µg/L		<0.01	<0.01	<0.01	**0.03**	**0.12**
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.02	%		**94.0**	**106**	**84.1**	**95.6**	**104**
13C8-PFOA	---	0.02	%		**99.0**	**98.5**	**99.6**	**80.6**	**91.8**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0906_SW309_231012	-----	-----	-----	-----
				Sampling date / time	12-Oct-2023 21:58	-----	-----	-----	-----
Compound	CAS Number	LOR	Unit	EM2318611-004	----------	----------	----------	----------	
				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	0906_SW309_231012	----	----	----	----
			Sampling date / time		12-Oct-2023 21:58	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318611-004	----------	----------	----------	----------
					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	%		**95.4**	----	----	----	----
13C8-PFOA	----	0.02	%		**103**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4 PFOS		65	140
13C8-PFOA	----	71	133

CHAIN OF CUSTODY

(ALS) COC#: 58568 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: PO5

ORDER NO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard Info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 B / EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	GW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0906_MW233_231016		16/10/2023 05:51 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division
Melbourne
Work Order Reference
EM2318613

Telephone : [redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2318613**		
Amendment	: **3**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Me bourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP_23	Page	: 1 of 2
Order number	: -	Quote number	: ES2022MWHAUS0002 (SY/139/19 B)
C-O-C number	: 58568	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO5		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Oct-2023 12:15	Issue Date	: 08-Nov-2023
Client Requested Due Date	: 26-Oct-2023	Scheduled Reporting Date	: **26-Oct-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 4	Temperature	: 15°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2318613-001	16-Oct-2023 17:51	0906_MW233_231016	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]
- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

[redacted]
- A4 - AU Tax Invoice (INV) — Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318613**	Page	: 1 of 4
Amendment	: **3**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Site	: PO5	Issue Date	: 08-Nov-2023
Sampler	: [redacted]	No. of samples received	: 1
Order number	: -	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2318605--003	Anonymous	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	48.7 %	70.0-130%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
	1				
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: **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) 0906_MW233_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW233_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW233_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW233_231016	**16-Oct-2023**	**23-Oct-2023**	13 Apr 2024	✓	**24-Oct-2023**	13 Apr 2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW233_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within he analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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
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.

QUALITY CONTROL REPORT

Work Order	: **EM2318613**	Page	: 1 of 6
Amendment	: **3**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 20-Oct-2023
C-O-C number	: 58568	Issue Date	: 08-Nov-2023
Sampler	: [redacted]		
Site	: PO5		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	0.07	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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375 95 1	0 02	µg/L	0 02	0 02	0 0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376 06 7	0 05	µg/L	0 05	0 05	0 0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit

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: 5376007) - continued									
EM2318605-003	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: Sum of PFAS	---	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	0.08	0.08	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	90.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	95.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	94.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	88.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.1	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	96.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.9	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	96.3	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	97.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)								

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: 5376007) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	92.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	91.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	93.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	86.4	70.0	130
EP231P: PFAS Sums (QCLot: 5376007)								
EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	---	---	---	---

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	88.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	79.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	86.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	90.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	71.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	88.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90.9	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.6	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	90.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	106	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	102	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	90.5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)							

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: 5376007) - continued							
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	99.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	92.5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	97.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	93.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	93.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	103	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	# 48.7	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2318613**	Page	: 1 of 5
Amendment	: **3**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 20-Oct-2023
C-O-C number	: 58568	Issue Date	: 08-Nov-2023 17:06
Sampler	: [redacted]		
Site	: PO5		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X: Poor matrix spike recovery for sample EM2318605-003 due to sample matrix interference.
- Amendment (26/10/2023): This report has been amended following minor LIMS report formatting corrections. All analysis results are as per the previous report.
- 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 (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID. 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 ini ial 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	0906_MW233_231016	----	----	----	----
			Sampling date / time		16-Oct-2023 17:51	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318613-001	----------	----------	----------	----------
					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		**0.18**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.18**	----	----	----	----
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		**0.04**	----	----	----	----
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	0906_MW233_231016	----	----	----	----
			Sampling date / time		16-Oct-2023 17:51	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318613-001	----------	----------	----------	----------
					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		**0.42**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.36**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.40**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**106**	----	----	----	----
13C8-PFOA	----	0.02	%		**102**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

CHAIN OF CUSTODY

COC#: 58571 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	[redacted] DATE TIME: 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: PO7

ORDER NO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

PROJECT MANAGER: [redacted] CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

PRIMARY SAMPLER: [redacted] QUOTE NO: SY/139/19 B EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	GW (PFAS Full/Std Level) WATER	SW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0906_MW240_231016		16/10/2023 05:46 PM	WATER	ALS: 2 Non ALS: 0	No	X			
002	0906_MW244_231014		14/10/2023 07:03 PM	WATER	ALS: 2 Non ALS: 0	No	X			
003	0906_MW245_231014		14/10/2023 06:56 PM	WATER	ALS: 6 Non ALS: 0	No	X		Internal lab qc	
004	0906_MW246_231016		16/10/2023 05:46 PM	WATER	ALS: 2 Non ALS: 0	No	X			
005	0906_MW247_231015		15/10/2023 07:16 PM	WATER	ALS: 2 Non ALS: 0	No	X			
006	0906_MW248_231015		15/10/2023 07:24 PM	WATER	ALS: 2 Non ALS: 0	No	X			
007	0906_MW249_231015		15/10/2023 07:15 PM	WATER	ALS: 6 Non ALS: 0	No	X		Internal lab qc	

Environmental Division Melbourne

Work Order Reference

EM2318614

Telephone : [redacted]

CHAIN OF CUSTODY

ALS COC#: 58571 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	[redacted] 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: PO7

ORDER NO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

PROJECT MANAGER: [redacted] CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

PRIMARY SAMPLER: [redacted] QUOTE NO: SY/139/19 B EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	GW (PFAS Full/Std Level) WATER	SW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
015	0906_MW257_231016		16/10/2023 05:44 PM	WATER	ALS: 2 Non ALS: 0	No	X			
016	0906_SW206_231016		16/10/2023 05:48 PM	WATER	ALS: 2 Non ALS: 0	No		X		
017	0906_SW212_231015		15/10/2023 07:18 PM	WATER	ALS: 2 Non ALS: 0	No		X		
018	0906_SW218_231016		16/10/2023 05:40 PM	WATER	ALS: 2 Non ALS: 0	No		X		
019	0906_SW228_231016		16/10/2023 05:47 PM	WATER	ALS: 2 Non ALS: 0	No		X		
020	0906_SW234_231015		15/10/2023 07:16 PM	WATER	ALS: 6 Non ALS: 0	No		X		
021	0906_SW236_231014		14/10/2023 07:09 PM	WATER	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

COC#: 58571 ALS Laboratory:. EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	[redacted] 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: PO7

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 B EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	GW (PFAS Full/Std Level) WATER	SW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
029	0906_SW310_231016		16/10/2023 05:45 PM	WATER	ALS: 2 Non ALS: 0	No		X		
030	0906_QC102_231014		14/10/2023 07:25 PM	WATER	ALS: 2 Non ALS: 0	No	X			
031	0906_QC103_20231014		14/10/2023 07:27 PM	WATER	ALS: 2 Non ALS: 0	No		X		
032	0906_QC104_231014		14/10/2023 07:29 PM	WATER	ALS: 2 Non ALS: 0	No		X		
033	0906_QC105_231015		15/10/2023 07:27 PM	WATER	ALS: 2 Non ALS: 0	No	X			
034	0906_QC106_231015		15/10/2023 07:29 PM	WATER	ALS: 2 Non ALS: 0	No	X			

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2318614**		
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Me bourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP_23	Page	: 1 of 3
Order number	: -	Quote number	: ES2022MWHAUS0002 (SY/139/19 B)
C-O-C number	: 58571	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO7		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Oct-2023 12:15	Issue Date	: 08-Nov-2023
Client Requested Due Date	: 26-Oct-2023	Scheduled Reporting Date	: **26-Oct-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 4	Temperature	: 15°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 34 / 34

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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2318614-001	16-Oct-2023 17:46	0906_MW240_231016	✓
EM2318614-002	14-Oct-2023 19:03	0906_MW244_231014	✓
EM2318614-003	14-Oct-2023 18:56	0906_MW245_231014	✓
EM2318614-004	16-Oct-2023 17:46	0906_MW246_231016	✓
EM2318614-005	15-Oct-2023 19:16	0906_MW247_231015	✓
EM2318614-006	15-Oct-2023 19:24	0906_MW248_231015	✓
EM2318614-007	15-Oct-2023 19:15	0906_MW249_231015	✓
EM2318614-008	15-Oct-2023 19:14	0906_MW250_231015	✓
EM2318614-009	15-Oct-2023 19:20	0906_MW251_231015	✓
EM2318614-010	15-Oct-2023 19:23	0906_MW252_231015	✓
EM2318614-011	15-Oct-2023 19:19	0906_MW253_231015	✓
EM2318614-012	15-Oct-2023 19:25	0906_MW254_231015	✓
EM2318614-013	16-Oct-2023 17:44	0906_MW255_231016	✓
EM2318614-014	16-Oct-2023 17:42	0906_MW256_231016	✓
EM2318614-015	16-Oct-2023 17:44	0906_MW257_231016	✓
EM2318614-016	16-Oct-2023 17:48	0906_SW206_231016	✓
EM2318614-017	15-Oct-2023 19:18	0906_SW212_231015	✓
EM2318614-018	16-Oct-2023 17:40	0906_SW218_231016	✓
EM2318614-019	16-Oct-2023 17:47	0906_SW228_231016	✓
EM2318614-020	15-Oct-2023 19:16	0906_SW234_231015	✓
EM2318614-021	14-Oct-2023 19:09	0906_SW236_231014	✓
EM2318614-022	14-Oct-2023 18:59	0906_SW240_231014	✓
EM2318614-023	15-Oct-2023 19:17	0906_SW261_231015	✓
EM2318614-024	15-Oct-2023 19:18	0906_SW262_231015	✓
EM2318614-025	14-Oct-2023 19:00	0906_SW286_231014	✓
EM2318614-026	16-Oct-2023 17:41	0906_SW288_231016	✓
EM2318614-027	16-Oct-2023 17:43	0906_SW289_231016	✓
EM2318614-028	15-Oct-2023 19:22	0906_SW294_231015	✓
EM2318614-029	16-Oct-2023 17:45	0906_SW310_231016	✓
EM2318614-030	14-Oct-2023 19:25	0906_QC102_231014	✓
EM2318614-031	14-Oct-2023 19:27	0906_QC103_20231014	✓
EM2318614-032	14-Oct-2023 19:29	0906_QC104_231014	✓
EM2318614-033	15-Oct-2023 19:27	0906_QC105_231015	✓
EM2318614-034	15-Oct-2023 19:29	0906_QC106_231015	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- A4 - AU Tax Invoice (INV) Email [redacted]

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318614**	Page	: 1 of 8
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Site	: PO7	Issue Date	: 08-Nov-2023
Sampler	: [redacted]	No. of samples received	: 34
Order number	: -	No. of samples analysed	: 34

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) 0906_MW244_231014, 0906_MW245_231014, 0906_SW236_231014	**14-Oct-2023**	**21-Oct-2023**	11-Apr-2024	✓	**23-Oct-2023**	11-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_SW240_231014, 0906_SW286_231014, 0906_QC102_231014, 0906_QC103_20231014, 0906_QC104_231014	**14-Oct-2023**	**23-Oct-2023**	11-Apr-2024	✓	**24-Oct-2023**	11-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_MW247_231015, 0906_MW248_231015, 0906_MW249_231015, 0906_MW251_231015, 0906_MW252_231015, 0906_MW253_231015, 0906_MW254_231015, 0906_SW212_231015	**15-Oct-2023**	**21-Oct-2023**	12-Apr-2024	✓	**23-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_MW250_231015, 0906_SW234_231015, 0906_SW261_231015, 0906_SW262_231015, 0906_SW294_231015, 0906_QC105_231015, 0906_QC106_231015	**15-Oct-2023**	**23-Oct-2023**	12-Apr-2024	✓	**24-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_MW240_231016, 0906_MW246_231016, 0906_MW255_231016, 0906_MW256_231016, 0906_MW257_231016, 0906_SW206_231016, 0906_SW218_231016, 0906_SW228_231016	**16-Oct-2023**	**21-Oct-2023**	13-Apr-2024	✓	**23-Oct-2023**	13-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_SW288_231016, 0906_SW289_231016, 0906_SW310_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW244_231014,	0906_MW245_231014,	**14-Oct-2023**	**21-Oct-2023**	11-Apr-2024	✓	**23-Oct-2023**	11-Apr-2024	✓
0906_SW236_231014								
HDPE (no PTFE) (EP231X)								
0906_SW240_231014,	0906_SW286_231014,	**14-Oct-2023**	**23-Oct-2023**	11-Apr-2024	✓	**24-Oct-2023**	11-Apr-2024	✓
0906_QC102_231014,	0906_QC103_20231014,							
0906_QC104_231014								
HDPE (no PTFE) (EP231X)								
0906_MW247_231015,	0906_MW248_231015,	**15-Oct-2023**	**21-Oct-2023**	12-Apr-2024	✓	**23-Oct-2023**	12-Apr-2024	✓
0906_MW249_231015,	0906_MW251_231015,							
0906_MW252_231015,	0906_MW253_231015,							
0906_MW254_231015,	0906_SW212_231015							
HDPE (no PTFE) (EP231X)								
0906_MW250_231015,	0906_SW234_231015,	**15-Oct-2023**	**23-Oct-2023**	12-Apr-2024	✓	**24-Oct-2023**	12-Apr-2024	✓
0906_SW261_231015,	0906_SW262_231015,							
0906_SW294_231015,	0906_QC105_231015,							
0906_QC106_231015								
HDPE (no PTFE) (EP231X)								
0906_MW240_231016,	0906_MW246_231016,	**16-Oct-2023**	**21-Oct-2023**	13-Apr-2024	✓	**23-Oct-2023**	13-Apr-2024	✓
0906_MW255_231016,	0906_MW256_231016,							
0906_MW257_231016,	0906_SW206_231016,							
0906_SW218_231016,	0906_SW228_231016							
HDPE (no PTFE) (EP231X)								
0906_SW288_231016,	0906_SW289_231016,	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓
0906_SW310_231016								

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) 0906_MW244_231014, 0906_MW245_231014, 0906_SW236_231014	**14-Oct-2023**	**21-Oct-2023**	11-Apr-2024	✓	**23-Oct-2023**	11-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_SW240_231014, 0906_SW286_231014, 0906_QC102_231014, 0906_QC103_20231014, 0906_QC104_231014	**14-Oct-2023**	**23-Oct-2023**	11-Apr-2024	✓	**24-Oct-2023**	11-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_MW247_231015, 0906_MW248_231015, 0906_MW249_231015, 0906_MW251_231015, 0906_MW252_231015, 0906_MW253_231015, 0906_MW254_231015, 0906_SW212_231015	**15-Oct-2023**	**21-Oct-2023**	12-Apr-2024	✓	**23-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_MW250_231015, 0906_SW234_231015, 0906_SW261_231015, 0906_SW262_231015, 0906_SW294_231015, 0906_QC105_231015, 0906_QC106_231015	**15-Oct-2023**	**23-Oct-2023**	12-Apr-2024	✓	**24-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_MW240_231016, 0906_MW246_231016, 0906_MW255_231016, 0906_MW256_231016, 0906_MW257_231016, 0906_SW206_231016, 0906_SW218_231016, 0906_SW228_231016	**16-Oct-2023**	**21-Oct-2023**	13-Apr-2024	✓	**23-Oct-2023**	13-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_SW288_231016, 0906_SW289_231016, 0906_SW310_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW244_231014, 0906_SW236_231014	0906_MW245_231014,	**14-Oct-2023**	**21-Oct-2023**	11-Apr-2024	✓	**23-Oct-2023**	11-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_SW240_231014, 0906_QC102_231014, 0906_QC104_231014	0906_SW286_231014, 0906_QC103_20231014,	**14-Oct-2023**	**23-Oct-2023**	11-Apr-2024	✓	**24-Oct-2023**	11-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_MW247_231015, 0906_MW249_231015, 0906_MW252_231015, 0906_MW254_231015,	0906_MW248_231015, 0906_MW251_231015, 0906_MW253_231015, 0906_SW212_231015	**15-Oct-2023**	**21-Oct-2023**	12-Apr-2024	✓	**23-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_MW250_231015, 0906_SW261_231015, 0906_SW294_231015, 0906_QC106_231015	0906_SW234_231015, 0906_SW262_231015, 0906_QC105_231015,	**15-Oct-2023**	**23-Oct-2023**	12-Apr-2024	✓	**24-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_MW240_231016, 0906_MW255_231016, 0906_MW257_231016, 0906_SW218_231016,	0906_MW246_231016, 0906_MW256_231016, 0906_SW206_231016, 0906_SW228_231016	**16-Oct-2023**	**21-Oct-2023**	13-Apr-2024	✓	**23-Oct-2023**	13-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0906_SW288_231016, 0906_SW310_231016	0906_SW289_231016,	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0906_MW244_231014, 0906_SW236_231014	0906_MW245_231014,	**14-Oct-2023**	**21-Oct-2023**	11-Apr-2024	✓	**23-Oct-2023**	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_SW240_231014, 0906_QC102_231014, 0906_QC104_231014	0906_SW286_231014, 0906_QC103_20231014,	**14-Oct-2023**	**23-Oct-2023**	11-Apr-2024	✓	**24-Oct-2023**	11-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW247_231015, 0906_MW249_231015, 0906_MW252_231015, 0906_MW254_231015,	0906_MW248_231015, 0906_MW251_231015, 0906_MW253_231015, 0906_SW212_231015	**15-Oct-2023**	**21-Oct-2023**	12-Apr-2024	✓	**23-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW250_231015, 0906_SW261_231015, 0906_SW294_231015, 0906_QC106_231015	0906_SW234_231015, 0906_SW262_231015, 0906_QC105_231015,	**15-Oct-2023**	**23-Oct-2023**	12-Apr-2024	✓	**24-Oct-2023**	12-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_MW240_231016, 0906_MW255_231016, 0906_MW257_231016, 0906_SW218_231016,	0906_MW246_231016, 0906_MW256_231016, 0906_SW206_231016, 0906_SW228_231016	**16-Oct-2023**	**21-Oct-2023**	13-Apr-2024	✓	**23-Oct-2023**	13-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0906_SW288_231016, 0906_SW310_231016	0906_SW289_231016,	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within he 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	4	38	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by 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.

QUALITY CONTROL REPORT

Work Order	: **EM2318614**	Page	: 1 of 11
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 21-Oct-2023
C-O-C number	: 58571	Issue Date	: 08-Nov-2023
Sampler	: [redacted]		
Site	: PO7		
Quote number	: SY/139/19 B		
No. of samples received	: 34		
No. of samples analysed	: 34		

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]	2IC Organic Chemist	[redacted]
[redacted]	Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 5375320)									
EM2318614-003	0906_MW245_231014	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
EM2318614-007	0906_MW249_231015	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5376110)									
EM2318614-008	0906_MW250_231015	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
EM2318614-022	0906_SW240_231014	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

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: 5376110) - continued									
EM2318614-022	0906_SW240_231014	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: 5375320)									
EM2318614-003	0906_MW245_231014	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
EM2318614-007	0906_MW249_231015	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: 5376110)									
EM2318614-008	0906_MW250_231015	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
EM2318614-022	0906_SW240_231014	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

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: 5376110) - continued									
EM2318614-022	0906_SW240_231014	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: 5375320)									
EM2318614-003	0906_MW245_231014	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
EM2318614-007	0906_MW249_231015	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: 5376110)									
EM2318614-008	0906_MW250_231015	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5376110) - continued									
EM2318614-008	0906_MW250_231015	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
EM2318614-022	0906_SW240_231014	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: 5375320)									
EM2318614-003	0906_MW245_231014	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
EM2318614-007	0906_MW249_231015	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: 5376110)									
EM2318614-008	0906_MW250_231015	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: 5376110) - continued									
EM2318614-008	0906_MW250_231015	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
EM2318614-022	0906_SW240_231014	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: 5375320)									
EM2318614-003	0906_MW245_231014	EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EM2318614-007	0906_MW249_231015	EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 5376110)									
EM2318614-008	0906_MW250_231015	EP231X: Sum of PFAS	---	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	0.03	0.03	0.0	No Limit
EM2318614-022	0906_SW240_231014	EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **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: 5375320)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	92.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	94.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	98.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	110	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	98.1	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	102	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376110)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	88.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	85.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	85.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	97.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	90.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	92.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5375320)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	90.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.5	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	97.9	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	92.7	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.7	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.9	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	93.9	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376110)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	81.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	82.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	90.7	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.9	72.0	130

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: 5376110) - continued								
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	88.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.6	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.7	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	83.8	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5375320)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	101	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	139	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	125	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	85.4	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	108	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	106	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	86.1	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376110)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	117	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	103	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	88.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	89.1	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	98.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	91.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5375320)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	97.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	104	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	73.4	70.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376110)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	98.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	98.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	70.8	70.0	130
EP231P: PFAS Sums (QCLot: 5375320)								
EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	---	---	---	---
EP231P: PFAS Sums (QCLot: 5376110)								
EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	---	---	---	---

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 5375320)							
EM2318614-003	0906_MW245_231014	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	93.7	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	93.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	93.9	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	100	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	87.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	93.3	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376110)							
EM2318614-020	0906_SW234_231015	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	98.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	91.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	93.2	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	98.3	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	91.1	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	82.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5375320)							

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: 5375320) - continued							
EM2318614-003	0906_MW245_231014	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	74.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	79.8	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	87.7	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	91.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.7	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	87.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	87.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	88.7	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	86.4	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376110)							
EM2318614-020	0906_SW234_231015	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	95.3	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	95.1	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	94.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	95.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	97.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	97.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	93.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	99.3	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	81.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5375320)							
EM2318614-003	0906_MW245_231014	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	90.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	80.9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	81.7	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	86.3	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	88.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	85.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376110)							
EM2318614-020	0906_SW234_231015	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	85.4	67.0	137

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: 5376110) - continued							
EM2318614-020	0906_SW234_231015	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	109	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	86.1	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	82.2	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	86.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5375320)							
EM2318614-003	0906_MW245_231014	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	90.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	92.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	100	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	72.5	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376110)							
EM2318614-020	0906_SW234_231015	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	97.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	98.7	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	94.6	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	90.0	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: EM2318614	Page	: 1 of 19
Amendment	: 2		
Client	: STANTEC AUSTRALIA PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ---	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 21-Oct-2023
C-O-C number	: 58571	Issue Date	: 08-Nov-2023 17:08
Sampler	: [redacted]		
Site	: PO7		
Quote number	: SY/139/19 B		
No. of samples received	: 34		
No. of samples analysed	: 34		

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]	2IC Organic Chemist Senior Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Amendment (26/10/2023): This report has been amended following the request to add PFAS (EP231X) to sample 043. All analysis results are as per the previous report.
- 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: Poor matrix spike recovery for sample EM2318614-020 due to sample matrix interference.
- Amendment (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID. 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 ini ial 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	0906_MW240_231016	0906_MW244_231014	0906_MW245_231014	0906_MW246_231016	0906_MW247_231015
				Sampling date / time	16-Oct-2023 17:46	14-Oct-2023 19:03	14-Oct-2023 18:56	16-Oct-2023 17:46	15-Oct-2023 19:16
Compound	CAS Number	LOR	Unit		EM2318614-001	EM2318614-002	EM2318614-003	EM2318614-004	EM2318614-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.14**	<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		**0.06**	<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		**0.03**	<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	0906_MW240_231016	0906_MW244_231014	0906_MW245_231014	0906_MW246_231016	0906_MW247_231015
				Sampling date / time	16-Oct-2023 17:46	14-Oct-2023 19:03	14-Oct-2023 18:56	16-Oct-2023 17:46	15-Oct-2023 19:16
Compound	CAS Number	LOR	Unit		EM2318614-001	EM2318614-002	EM2318614-003	EM2318614-004	EM2318614-005
					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		**0.23**	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.20**	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	---	0.01	µg/L		**0.23**	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.02	%		**106**	**108**	**108**	**106**	**112**
13C8-PFOA	---	0.02	%		**96.5**	**98.8**	**95.8**	**101**	**95.7**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW248_231015	0906_MW249_231015	0906_MW250_231015	0906_MW251_231015	0906_MW252_231015
				Sampling date / time	15-Oct-2023 19:24	15-Oct-2023 19:15	15-Oct-2023 19:14	15-Oct-2023 19:20	15-Oct-2023 19:23
Compound	CAS Number	LOR	Unit		EM2318614-006	EM2318614-007	EM2318614-008	EM2318614-009	EM2318614-010
					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		**0.07**	<0.01	**0.01**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.08**	<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		**0.04**	<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	<0.02
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	0906_MW248_231015	0906_MW249_231015	0906_MW250_231015	0906_MW251_231015	0906_MW252_231015
				Sampling date / time	15-Oct-2023 19:24	15-Oct-2023 19:15	15-Oct-2023 19:14	15-Oct-2023 19:20	15-Oct-2023 19:23
Compound	CAS Number	LOR	Unit		EM2318614-006	EM2318614-007	EM2318614-008	EM2318614-009	EM2318614-010
					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	<0.05	<0.05	<0.05	**0.12**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	---	0.01	µg/L		**0.26**	<0.01	**0.03**	<0.01	**0.12**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.15**	<0.01	**0.01**	<0.01	<0.01
Sum of PFAS (WA DER List)	---	0.01	µg/L		**0.26**	<0.01	**0.03**	<0.01	**0.12**
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.02	%		**107**	**109**	**98.0**	**113**	**121**
13C8-PFOA	---	0.02	%		**96.0**	**96.4**	**103**	**98.7**	**97.0**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW253_231015	0906_MW254_231015	0906_MW255_231016	0906_MW256_231016	0906_MW257_231016
				Sampling date / time	15-Oct-2023 19:19	15-Oct-2023 19:25	16-Oct-2023 17:44	16-Oct-2023 17:42	16-Oct-2023 17:44
Compound	CAS Number	LOR	Unit		EM2318614-011	EM2318614-012	EM2318614-013	EM2318614-014	EM2318614-015
					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		**0.05**	**0.13**	**0.04**	**0.05**	<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		**0.03**	**0.27**	**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	**0.04**	<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	**0.04**	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.14**	<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	0906_MW253_231015	0906_MW254_231015	0906_MW255_231016	0906_MW256_231016	0906_MW257_231016
				Sampling date / time	15-Oct-2023 19:19	15-Oct-2023 19:25	16-Oct-2023 17:44	16-Oct-2023 17:42	16-Oct-2023 17:44
Compound	CAS Number	LOR	Unit		EM2318614-011	EM2318614-012	EM2318614-013	EM2318614-014	EM2318614-015
					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		**0.08**	**0.67**	**0.05**	**0.05**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.08**	**0.40**	**0.05**	**0.05**	<0.01
Sum of PFAS (WA DER List)	---	0.01	µg/L		**0.08**	**0.67**	**0.05**	**0.05**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.02	%		**107**	**105**	**110**	**105**	**117**
13C8-PFOA	---	0.02	%		**96.8**	**100**	**96.9**	**97.0**	**96.7**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0906_QC102_231014	0906_QC105_231015	0906_QC106_231015	-----	-----
			Sampling date / time	14-Oct-2023 19:25	15-Oct-2023 19:27	15-Oct-2023 19:29	-----	-----
Compound	CAS Number	LOR	Unit	EM2318614-030	EM2318614-033	EM2318614-034	---------	---------
				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	**0.05**	-----	-----
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	**0.06**	-----	-----
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: GROUNDWATER (Matrix: WATER)				Sample ID	0906_QC102_231014	0906_QC105_231015	0906_QC106_231015	-----	-----
				Sampling date / time	14-Oct-2023 19:25	15-Oct-2023 19:27	15-Oct-2023 19:29	-----	-----
Compound	CAS Number	LOR	Unit		EM2318614-030	EM2318614-033	EM2318614-034	---------	---------
					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	**0.12**	-----	-----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	**0.11**	-----	-----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	**0.12**	-----	-----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**118**	**105**	**99.9**	-----	-----
13C8-PFOA	----	0.02	%		**96.8**	**95.5**	**101**	-----	-----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)			Sample ID	0906_SW206_231016	0906_SW212_231015	0906_SW218_231016	0906_SW228_231016	0906_SW234_231015
			Sampling date / time	16-Oct-2023 17:48	15-Oct-2023 19:18	16-Oct-2023 17:40	16-Oct-2023 17:47	15-Oct-2023 19:16
Compound	CAS Number	LOR	Unit	EM2318614-016	EM2318614-017	EM2318614-018	EM2318614-019	EM2318614-020
				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	**0.04**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	**0.04**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.06**	<0.01	<0.01	**0.54**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	**0.04**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.10**	<0.01	<0.01	**1.03**	**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	**0.04**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	**0.18**	<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	**0.04**	<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	0906_SW206_231016	0906_SW212_231015	0906_SW218_231016	0906_SW228_231016	0906_SW234_231015
				Sampling date / time	16-Oct-2023 17:48	15-Oct-2023 19:18	16-Oct-2023 17:40	16-Oct-2023 17:47	15-Oct-2023 19:16
Compound	CAS Number	LOR	Unit		EM2318614-016	EM2318614-017	EM2318614-018	EM2318614-019	EM2318614-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	---	0.01	µg/L		**0.16**	<0.01	<0.01	**1.95**	**0.02**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.16**	<0.01	<0.01	**1.57**	**0.02**
Sum of PFAS (WA DER List)	---	0.01	µg/L		**0.16**	<0.01	<0.01	**1.87**	**0.02**
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.02	%		**112**	**114**	**111**	**118**	**103**
13C8-PFOA	---	0.02	%		**97.3**	**98.1**	**98.9**	**95.1**	**102**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)			Sample ID	0906_SW236_231014	0906_SW240_231014	0906_SW261_231015	0906_SW262_231015	0906_SW286_231014
			Sampling date / time	14-Oct-2023 19:09	14-Oct-2023 18:59	15-Oct-2023 19:17	15-Oct-2023 19:18	14-Oct-2023 19:00
Compound	CAS Number	LOR	Unit	EM2318614-021	EM2318614-022	EM2318614-023	EM2318614-024	EM2318614-025
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	**0.02**	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0906_SW236_231014	0906_SW240_231014	0906_SW261_231015	0906_SW262_231015	0906_SW286_231014
				Sampling date / time	14-Oct-2023 19:09	14-Oct-2023 18:59	15-Oct-2023 19:17	15-Oct-2023 19:18	14-Oct-2023 19:00
Compound	CAS Number	LOR	Unit		EM2318614-021	EM2318614-022	EM2318614-023	EM2318614-024	EM2318614-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	---	0.01	µg/L		<0.01	<0.01	<0.01	**0.02**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	**0.02**	<0.01
Sum of PFAS (WA DER List)	---	0.01	µg/L		<0.01	<0.01	<0.01	**0.02**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.02	%		**108**	**106**	**92.6**	**103**	**121**
13C8-PFOA	---	0.02	%		**97.6**	**98.7**	**95.2**	**106**	**93.9**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0906_SW288_231016	0906_SW289_231016	0906_SW294_231015	0906_SW310_231016	0906_QC103_20231014
				Sampling date / time	16-Oct-2023 17:41	16-Oct-2023 17:43	15-Oct-2023 19:22	16-Oct-2023 17:45	14-Oct-2023 19:27
Compound	CAS Number	LOR	Unit		EM2318614-026	EM2318614-027	EM2318614-028	EM2318614-029	EM2318614-031
					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	**0.04**	<0.02	**0.02**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355 46 4	0.01	µg/L		<0.01	**0.58**	<0.01	**0.28**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375 92 8	0.02	µg/L		<0.02	**0.03**	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	**0.98**	**0.01**	**0.63**	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	**0.03**	<0.02	**0.02**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.13**	<0.02	**0.06**	<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	**0.02**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0906_SW288_231016	0906_SW289_231016	0906_SW294_231015	0906_SW310_231016	0906_QC103_20231014
				Sampling date / time	16-Oct-2023 17:41	16-Oct-2023 17:43	15-Oct-2023 19:22	16-Oct-2023 17:45	14-Oct-2023 19:27
Compound	CAS Number	LOR	Unit		EM2318614-026	EM2318614-027	EM2318614-028	EM2318614-029	EM2318614-031
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	**1.86**	**0.01**	**1.03**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**1.56**	**0.01**	**0.91**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**1.79**	**0.01**	**1.01**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**101**	**101**	**92.1**	**96.2**	**107**
13C8-PFOA	----	0.02	%		**94.2**	**95.0**	**101**	**95.3**	**96.6**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0906_QC104_231014	----	----	----	----
				Sampling date / time	14-Oct-2023 19:29	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318614-032	----------	----------	----------	----------
					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	0906_QC104_231014	----	----	----	----
				Sampling date / time	14-Oct-2023 19:29	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318614-032	----------	----------	----------	----------
					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	%		**105**	----	----	----	----
13C8-PFOA	----	0.02	%		**95.3**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4 PFOS		65	140
13C8-PFOA	----	71	133

Cardno

Chain of Custody

PM Name: [redacted]
Phone: [redacted]
Address: [redacted]
PM Email: [redacted]
Results Email (please email results to all listed): [redacted]
Project Number: NSW_0906_PFASOMP
Laboratory name, phone no & contact person: Eurofins [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Water	Sample preservation: Ice	Analysis: Per- and Polyfluoroalkyl Substances (PFASs)	Analysis: HOLD
0906_QC102_231014		2	14-10-23		X	X	X	
0906_QC203_231014		2	14-10-23		X	X	X	
0906_QC204_231014		2	14-10-23		X	X	X	
0906_QC205_231015		2	15-10-23		X	X	X	
0906_QC206_231015		2	15-10-23		X	X	X	

Sampler: I attest that the proper field sampling procedures were used during the collection of these samples. Sampler name (print and signature): Date:

Relinquished by (Sampler): (print and signature)	Date	Time	Received by: [redacted]	Date: 19/10/23	Time: 11:40
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

[redacted]

Please supply results electronically in spreadsheet and ESDAT files.
Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

[redacted]

Tyrone Gowans

From: [redacted]
Sent:
To:
Cc:
Subject:
Attachments:

Follow Up Flag: Follow up
Flag Status: Flagged

CAUTION: EXTERNAL EMAIL - Sent from an email domain that is not formally trusted by Eurofins. Do not click on links or open attachments unless you recognise the sender and are certain that the content is safe.

[redacted]

Tyrone Gowans

From: Barham, Matthew <matthew.barham@stantec.com>
Sent: Tuesday, 7 November 2023 5:32 PM
To: #AU_CAU001_EnviroSampleVic; Michael Morrison
Cc: Wang, Bobby
Subject: RE: sample received not matching COC 1037525
Attachments: DEF19008_0315_KAP_E5_EurofinsCOC_V2.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

CAUTION: EXTERNAL EMAIL - Sent from an email domain that is not formally trusted by Eurofins. Do not click on links or open attachments unless you recognise the sender and are certain that the content is safe.

[redacted]

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[redacted]

eurofins | Environment Testing

Eurofins Environment Testing Australia Pty Ltd [redacted]

Eurofins ARL Pty Ltd [redacted]

Eurofins Environment Testing NZ Ltd [redacted]

Sample Receipt Advice

Company name:	Stantec Australia Pty Ltd (VIC)
Contact name:	[redacted]
Project name:	Not provided
Project ID:	NSW_0906_PFASOMP
Turnaround time:	5 Day
Date/Time received	Oct 19, 2023 11:40 AM
Eurofins reference	1036481

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

[redacted]

Results will be delivered electronically via email to [redacted]

Note: A copy of these results will also be delivered to the general Stantec Australia Pty Ltd (VIC) email address.

[redacted]

Company Name:	Stantec Australia Pty Ltd (VIC)	**Order No.:**		**Received:**	Oct 19, 2023 11:40 AM
Address:	[redacted]	**Report #:**	1036481	**Due:**	Oct 26, 2023
		Phone:		**Priority:**	5 Day
		Fax:		**Contact Name:**	[redacted]

Project Name:
Project ID: NSW_0906_PFASOMP_23

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC202_20231014	Oct 14, 2023		Water	M23-Oc0044539	X
2	0906_QC203_20231014	Oct 14, 2023		Water	M23-Oc0044540	X
3	0906_QC204_20231014	Oct 14, 2023		Water	M23-Oc0044541	X
4	0906_QC205_20231015	Oct 15, 2023		Water	M23-Oc0044542	X
5	0906_QC206_20231015	Oct 15, 2023		Water	M23-Oc0044543	X
Test Counts						5

Stantec Australia Pty Ltd
[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **1036481-W-V2**
Project name
Project ID NSW_0906_PFASOMP_23
Received Date Oct 19, 2023

Client Sample ID			0906_QC202_20231014	0906_QC203_20231014	0906_QC204_20231014	0906_QC205_20231015
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M23-Oc0044539	M23-Oc0044540	M23-Oc0044541	M23-Oc0044542
Date Sampled			Oct 14, 2023	Oct 14, 2023	Oct 14, 2023	Oct 15, 2023
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	87	60	62	92
13C5-PFPeA (surr.)	1	%	111	100	117	102
13C5-PFHxA (surr.)	1	%	129	124	129	119
13C4-PFHpA (surr.)	1	%	129	134	134	124
13C8-PFOA (surr.)	1	%	94	106	122	124
13C5-PFNA (surr.)	1	%	126	141	114	117
13C6-PFDA (surr.)	1	%	115	139	111	116
13C2-PFUnDA (surr.)	1	%	76	111	75	98
13C2-PFDoDA (surr.)	1	%	64	129	68	112
13C2-PFTeDA (surr.)	1	%	46	127	40	63
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	99	99	60	81
D3-N-MeFOSA (surr.)	1	%	36	19	15	27

Client Sample ID			0906_QC202_20231014	0906_QC203_20231014	0906_QC204_20231014	0906_QC205_20231015
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M23-Oc0044539	M23-Oc0044540	M23-Oc0044541	M23-Oc0044542
Date Sampled			Oct 14, 2023	Oct 14, 2023	Oct 14, 2023	Oct 15, 2023
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D5-N-EtFOSA (surr.)	1	%	27	15	17	36
D7-N-MeFOSE (surr.)	1	%	45	70	21	70
D9-N-EtFOSE (surr.)	1	%	45	76	24	75
D5-N-EtFOSAA (surr.)	1	%	64	90	67	81
D3-N-MeFOSAA (surr.)	1	%	75	104	77	83
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	143	138	151	131
18O2-PFHxS (surr.)	1	%	118	118	130	117
13C8-PFOS (surr.)	1	%	128	116	119	132
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	102	122	103	99
13C2-6:2 FTSA (surr.)	1	%	80	128	81	77
13C2-8:2 FTSA (surr.)	1	%	94	69	133	114
13C2-10:2 FTSA (surr.)	1	%	67	168	62	109
PFASs Summations						
Sum (PFHxS + PFOS)*	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			0906_QC206_20231015
Sample Matrix			Water
Eurofins Sample No.			M23-Oc0044543
Date Sampled			Oct 15, 2023
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	[N09]0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01
13C4-PFBA (surr.)	1	%	92
13C5-PFPeA (surr.)	1	%	109
13C5-PFHxA (surr.)	1	%	120
13C4-PFHpA (surr.)	1	%	119
13C8-PFOA (surr.)	1	%	134
13C5-PFNA (surr.)	1	%	116
13C6-PFDA (surr.)	1	%	108
13C2-PFUnDA (surr.)	1	%	97
13C2-PFDoDA (surr.)	1	%	109
13C2-PFTeDA (surr.)	1	%	85
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05
13C8-FOSA (surr.)	1	%	108
D3-N-MeFOSA (surr.)	1	%	42
D5-N-EtFOSA (surr.)	1	%	37
D7-N-MeFOSE (surr.)	1	%	90
D9-N-EtFOSE (surr.)	1	%	91
D5-N-EtFOSAA (surr.)	1	%	84
D3-N-MeFOSAA (surr.)	1	%	89
Perfluoroalkyl sulfonic acids (PFSAs)			
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	[N09]0.06
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	[N09]0.04
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01

Client Sample ID			0906_QC206_20231015
Sample Matrix			Water
Eurofins Sample No.			M23-Oc0044543
Date Sampled			Oct 15, 2023
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonic acids (PFSAs)			
13C3-PFBS (surr.)	1	%	133
18O2-PFHxS (surr.)	1	%	117
13C8-PFOS (surr.)	1	%	120
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01
13C2-4:2 FTSA (surr.)	1	%	77
13C2-6:2 FTSA (surr.)	1	%	67
13C2-8:2 FTSA (surr.)	1	%	128
13C2-10:2 FTSA (surr.)	1	%	100
PFASs Summations			
Sum (PFHxS + PFOS)*	0.01	ug/L	0.1
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	0.05
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	0.11
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	0.11
Sum of PFASs (n=30)*	0.1	ug/L	0.11

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	Oct 19, 2023	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

Company Name: Stantec Australia Pty Ltd (VIC)
Address: [redacted]

Order No.:
Report #: 1036481
Phone:
Fax:

Received: Oct 19, 2023 11:40 AM
Due: Oct 26, 2023
Priority: 5 Day
Contact Name: [redacted]

Project Name:
Project ID: NSW_0906_PFASOMP

[redacted]

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0906_QC202_20231014	Oct 14, 2023		Water	M23-Oc0044539	X
2	0906_QC203_20231014	Oct 14, 2023		Water	M23-Oc0044540	X
3	0906_QC204_20231014	Oct 14, 2023		Water	M23-Oc0044541	X
4	0906_QC205_20231015	Oct 14, 2023		Water	M23-Oc0044542	X
5	0906_QC206_20231015	Oct 14, 2023		Water	M23-Oc0044543	X
Test Counts						5

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry weight basis unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion unless otherwise stated.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with blue colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is 7 days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg milligrams per kilogram
mg/L milligrams per litre
µg/L micrograms per litre
ppm parts per million
ppb parts per billion
% Percentage
org/100 mL Organisms per 100 millilitres
NTU Nephelometric Turbidity Units
MPN/100 mL Most Probable Number of organisms per 100 millilitres
CFU Colony forming unit

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6 2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30%; however the following acceptance guidelines are equally applicable: Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR: RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%

PFAS field samples that contain surrogate recoveries above the QC limit designated in QSM 5.4, where no positive PFAS results have been reported, have been reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term " NT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	84			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	83			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	88			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	82			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	102			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	89			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	88			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	94			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	91			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	73			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	79			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	81			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	87			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	85			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	105			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	101			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	82			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	81			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	85			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	96			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	83			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	78			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	92			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	75			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	80			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	89			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	84			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	89			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	83			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	74			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	M23-Oc0045729	NCP	%	82			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M23-Oc0045729	NCP	%	76			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M23-Oc0045729	NCP	%	90			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M23-Oc0045729	NCP	%	78			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M23-Oc0045729	NCP	%	100			50-150	Pass	
Perfluorononanoic acid (PFNA)	M23-Oc0045729	NCP	%	98			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M23-Oc0045729	NCP	%	89			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	M23-Oc0045729	NCP	%	92			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	M23-Oc0045729	NCP	%	93			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M23-Oc0045729	NCP	%	59			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M23-Oc0045729	NCP	%	79			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	M23-Oc0045729	NCP	%	85			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M23-Oc0045729	NCP	%	101			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M23-Oc0045729	NCP	%	91			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M23-Oc0045729	NCP	%	101			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M23-Oc0045729	NCP	%	106			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M23-Oc0045729	NCP	%	80			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M23-Oc0045729	NCP	%	83			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M23-Oc0045729	NCP	%	85			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	M23-Oc0045729	NCP	%	95			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M23-Oc0045729	NCP	%	84			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M23-Oc0045729	NCP	%	75			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M23-Oc0045729	NCP	%	90			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M23-Oc0045729	NCP	%	84			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M23-Oc0045729	NCP	%	84			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M23-Oc0045729	NCP	%	86			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M23-Oc0045729	NCP	%	79			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M23-Oc0045729	NCP	%	87			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M23-Oc0045729	NCP	%	90			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M23-Oc0045729	NCP	%	77			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	L23-Oc0041068	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	L23-Oc0041068	NCP	ug/L	0.05	0.05	6.2	30%	Pass	
Perfluorohexanoic acid (PFHxA)	L23-Oc0041068	NCP	ug/L	0.10	0.10	1.1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	L23-Oc0041068	NCP	ug/L	0.07	0.06	3.0	30%	Pass	
Perfluorooctanoic acid (PFOA)	L23-Oc0041068	NCP	ug/L	0.64	0.62	3.1	30%	Pass	
Perfluorononanoic acid (PFNA)	L23-Oc0041068	NCP	ug/L	0.05	0.05	3.4	30%	Pass	
Perfluorodecanoic acid (PFDA)	L23-Oc0041068	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	L23-Oc0041068	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	L23-Oc0041068	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	L23-Oc0041068	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	L23-Oc0041068	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	L23-Oc0041068	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	L23-Oc0041068	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	L23-Oc0041068	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	L23-Oc0041068	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	L23-Oc0041068	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	L23-Oc0041068	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	L23-Oc0041068	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	L23-Oc0041068	NCP	ug/L	0.05	0.05	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	L23-Oc0041068	NCP	ug/L	0.02	0.01	11	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	L23-Oc0041068	NCP	ug/L	0.01	0.01	4.4	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	L23-Oc0041068	NCP	ug/L	0.06	0.05	12	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	L23-Oc0041068	NCP	ug/L	0.87	0.82	5.7	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	L23-Oc0041068	NCP	ug/L	0.08	0.08	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	L23-Oc0041068	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	L23-Oc0041068	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	L23-Oc0041068	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	L23-Oc0041068	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	L23-Oc0041068	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

This report has been revised (V2) to correct sample name NSW_0906_PFASOMP_23 per client request.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

[redacted]

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

CHAIN OF CUSTODY

COC#: 58633 ALS Laboratory: EM Melbourne Environmental

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: PO8

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 B EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	[redacted] DATE TIME: 19/10/23, 1215	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	GW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0906_MW241_231013		13/10/2023 06:33 PM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0906_MW242_231013		13/10/2023 06:34 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division
Melbourne
Work Order Reference
EM2318617

Telephone : [redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2318617**		
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Me bourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP_23	Page	: 1 of 2
Order number	: -	Quote number	: ES2022MWHAUS0002 (SY/139/19 B)
C-O-C number	: 58633	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO8		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Oct-2023 12:15	Issue Date	: 08-Nov-2023
Client Requested Due Date	: 26-Oct-2023	Scheduled Reporting Date	: **26-Oct-2023**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 4	Temperature	: 15°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 direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2318617-001	13-Oct-2023 18:33	0906_MW241_231013	✓
EM2318617-002	13-Oct-2023 18:34	0906_MW242_231013	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]
- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

[redacted]
- A4 - AU Tax Invoice (INV) — Email [redacted]

[redacted]
- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) — Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email
- Chain of Custody (CoC) (COC) — Email
- EDI Format - ESDAT (ESDAT) — Email
- EDI Format - XTab (XTAB) — Email

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318617**	Page	: 1 of 4
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Site	: PO8	Issue Date	: 08-Nov-2023
Sampler	: [redacted]	No. of samples received	: 2
Order number	: -	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

- **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)								
0906_MW241_231013,	0906_MW242_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW241_231013,	0906_MW242_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0906_MW241_231013,	0906_MW242_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0906_MW241_231013,	0906_MW242_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0906_MW241_231013,	0906_MW242_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within he analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, 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.

QUALITY CONTROL REPORT

Work Order	: **EM2318617**	Page	: 1 of 7
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58633	Issue Date	: 08-Nov-2023
Sampler	: [redacted]		
Site	: PO8		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 5376110)									
EM2318614-008	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2318614-022	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5376110)									
EM2318614-008	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

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: 5376110) - continued									
EM2318614-022	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: 5376110)									
EM2318614-008	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
EM2318614-022	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: 5376110)									
EM2318614-008	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: 5376110) - continued									
EM2318614-008	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
EM2318614-022	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: 5376110)									
EM2318614-008	Anonymous	EP231X: Sum of PFAS	---	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	0.03	0.03	0.0	No Limit
EM2318614-022	Anonymous	EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **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: 5376110)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	88.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	85.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	85.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	97.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	90.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	92.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376110)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	81.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	82.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	90.7	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.9	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	88.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.6	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.7	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	83.8	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376110)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	117	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	103	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	88.9	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	89.1	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	98.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	91.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376110)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	LCS Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376110) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	98.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	98.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	70.8	70.0	130
EP231P: PFAS Sums (QCLot: 5376110)								
EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	---	---	---	---

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 5376110)							
EM2318614-020	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	98.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	91.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	93.2	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	98.3	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	91.1	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	82.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376110)							
EM2318614-020	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	95.3	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	95.1	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	94.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	95.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	97.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	97.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	93.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	99.3	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	81.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376110)							

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: 5376110) - continued							
EM2318614-020	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	85.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	109	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	86.1	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	82.2	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	86.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376110)							
EM2318614-020	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	97.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	98.7	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	94.6	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	90.0	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2318617**	Page	: 1 of 5
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58633	Issue Date	: 08-Nov-2023 17:22
Sampler	: [redacted]		
Site	: PO8		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Amendment (26/10/2023): This report has been amended following minor LIMS report formatting corrections. All analysis results are as per the previous report.
- 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 (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID. 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 ini ial 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	0906_MW241_231013	0906_MW242_231013	-----	-----	-----
			Sampling date / time	13-Oct-2023 18:33	13-Oct-2023 18:34	-----	-----	-----
Compound	CAS Number	LOR	Unit	EM2318617-001	EM2318617-002	----------	----------	----------
				Result	Result	-----	-----	-----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	-----	-----	-----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	-----	-----	-----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	-----	-----	-----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	-----	-----	-----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	-----	-----	-----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	-----	-----	-----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	-----	-----	-----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	-----	-----	-----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	-----	-----	-----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	-----	-----	-----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	-----	-----	-----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	-----	-----	-----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	-----	-----	-----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	-----	-----	-----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	-----	-----	-----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	-----	-----	-----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	-----	-----	-----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	-----	-----	-----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	-----	-----	-----
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	0906_MW241_231013	0906_MW242_231013	-----	-----	-----
				Sampling date / time	13-Oct-2023 18:33	13-Oct-2023 18:34	-----	-----	-----
Compound	CAS Number	LOR	Unit		EM2318617-001	EM2318617-002	---------	---------	---------
					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		<0.01	<0.01	-----	-----	-----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	-----	-----	-----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	-----	-----	-----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**107**	**107**	-----	-----	-----
13C8-PFOA	----	0.02	%		**96.0**	**93.2**	-----	-----	-----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

CHAIN OF CUSTODY

ALS COC#: 58634 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0906_PFASOMP

SITE: PO9

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 B EM2022MWHAUS0004

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	GW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0906_MW312_231013		13/10/2023 06:35 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division
Melbourne
Work Order Reference
EM2318618

Telephone : [redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2318618**		
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Me bourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0906_PFASOMP_23	Page	: 1 of 2
Order number	: -	Quote number	: ES2022MWHAUS0002 (SY/139/19 B)
C-O-C number	: 58634	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PO9		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Oct-2023 12:15	Issue Date	: 08-Nov-2023
Client Requested Due Date	: 26-Oct-2023	Scheduled Reporting Date	: **26-Oct-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 4	Temperature	: 15°C
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **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 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)
EM2318618-001	13-Oct-2023 18:35	0906_MW312_231013	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- A4 - AU Tax Invoice (INV) Email [redacted]

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318618**	Page	: 1 of 4
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Site	: PO9	Issue Date	: 08-Nov-2023
Sampler	: [redacted]	No. of samples received	: 1
Order number	: -	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2318605--003	Anonymous	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	48.7 %	70.0-130%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
	1				
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: **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) 0906_MW312_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0906_MW312_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0906_MW312_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0906_MW312_231013	**13-Oct-2023**	**23-Oct-2023**	10 Apr 2024	✓	**24-Oct-2023**	10 Apr 2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0906_MW312_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within he analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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
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.

QUALITY CONTROL REPORT

Work Order	: **EM2318618**	Page	: 1 of 6
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58634	Issue Date	: 08-Nov-2023
Sampler	: [redacted]		
Site	: PO9		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	0.07	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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375 95 1	0 02	µg/L	0 02	0 02	0 0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376 06 7	0 05	µg/L	0 05	0 05	0 0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit

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: 5376007) - continued									
EM2318605-003	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 5376007)									
EM2318605-003	Anonymous	EP231X: Sum of PFAS	---	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	0.08	0.08	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	90.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	95.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	94.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	88.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.1	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	96.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.9	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	96.3	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	97.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)								

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: 5376007) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	92.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	91.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	93.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	86.4	70.0	130
EP231P: PFAS Sums (QCLot: 5376007)								
EP231X: Sum of PFAS	---	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	---	---	---	---
EP231X: Sum of PFAS (WA DER List)	---	0.01	µg/L	<0.01	---	---	---	---

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **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: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	88.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	79.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	86.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	90.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	71.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	88.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90.9	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.6	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	90.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	106	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	102	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	90.5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)							

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: 5376007) - continued							
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	99.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	92.5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	97.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	93.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	93.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	103	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	# 48.7	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: EM2318618	Page	: 1 of 5
Amendment	: 2		
Client	: STANTEC AUSTRALIA PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ---	Telephone	: [redacted]
Project	: NSW_0906_PFASOMP_23	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58634	Issue Date	: 08-Nov-2023 17:16
Sampler	: [redacted]		
Site	: PO9		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Amendment (26/10/2023): This report has been amended following minor LIMS report formatting corrections. All analysis results are as per the previous report.
- 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 (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID. 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 ini ial 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	0906_MW312_231013	----	----	----	----
			Sampling date / time		13-Oct-2023 18:35	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318618-001	----------	----------	----------	----------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0906_MW312_231013	----	----	----	----
			Sampling date / time		13-Oct-2023 18:35	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318618-001	----------	----------	----------	----------
					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		<0.01	----	----	----	----
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	%		**88.2**	----	----	----	----
13C8-PFOA	----	0.02	%		**96.5**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

APPENDIX

D

FIELD RECORDS & CALIBRATION CERTIFICATES

Cardno

now

Stantec

Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	SWL (mbTOC)	SWL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Hydrasleeve Deployment Depth (mBTOC)[1]	Duplicate Samples
MW200	Off-site	540489.09	6111231.75	12-10-23	NA	183.137	NA	-	Clear	No	No well present, sample taken from aqua pond fill point. Purge for 5 mins then sample. High flow output. No odour.	N/A	-
MW204	Off-site	540107.16	6110883.61	12-10-23	16.65	183.024	14.196	168.828	Very cloudy, grey	High	High volume of black suspended solids, possible manganese formation? Some orange suspended solids.	36.9	-
MW209	Off-site	542521.77	6114403.23	15-10-23	Unknown	-	20.91	-	Clear	No	Bore inside pump house gauged, pump purged for 5 minutes.	N/A	-
MW211	On-site	535735.79	6113725.27	12-10-23	-	-	-	-	Clear	No	Purged for 5 minutes prior to sampling.	N/A	-
MW212	On-site	535681.87	6113475.53	12-10-23	-	-	-	-	Clear	No	Purged for 5 minutes, no odour.	N/A	-
MW213	On-site	536651.55	6114239.35	12-10-23	-	180.533	-	-	Clear	No	Purged for 5 minutes prior to sampling.	N/A	-
MW214	On-site	542678.11	6111434.75	16-10-23	-	186.043	-	-	Initially brown, turned clear	No	Purged for 5 minutes prior to sampling.	N/A	-
MW215	On-site	542678.11	6111434.75	-	49.74	-	14.12	-	-	-	Not sampled - data logger only.	NA	-
MW231	On-site	540910.71	6113541.05	16-10-23	NA	-	NA	-	Clear	Low	Ran for 5 minutes. Water initially orange and then clear.	N/A	-
MW233	Off-site	539802.59	6112448.66	16-10-23	NA	-	NA	-	Clear	No	Purged for 5 minutes prior to sampling.	N/A	-
MW235	Off-site	[redacted]		-	-	-	-	-	-	-	Not in operation. Unable to be sampled.	N/A	-
MW238	Off-site	540682.06	6112227.81	15-10-23	71.3	182.88	13.54	169.34	Slightly cloudy	No	-	66.1	-
MW239	Off-site	540678.34	6112216.01	15-10-23	21.28	182.8	13.305	169.495	Clear	No	-	19.1	-
MW240	Off-site	538090.54	6112266.06	15-10-23	16.45	182.54	12.585	169.955	Clear	No	-	25.9	-
MW241	Off-site	544118.31	6109524.74	12-10-23	75.4	200.07	12.846	187.224	Clear	No	-	69.3	-
MW242	Off-site	544118.75	6109538.52	12-10-23	62.6	199.89	12.912	186.978	Generally clear	Medium	-	58.3	-
MW243	On-site	542979.06	6110074.36	13-10-23	53.75	211.48	39.244	172.236	Clear	No	Combination padlock replaced. Suctioning still occurring.	52.4	0906_QC100_231014 & 0906_QC200_231014
MW244	Off-site	536997.10	6113055.36	14-10-23	60	180.37	10.88	169.49	cloudy	Medium	Sampled 14.10, concrete base repaired. Logger data downloaded	57.5	0906_QC102_231014 & 0906_QC202_231014
MW245	Off-site	537011.85	6113066.50	14-10-23	20.57	180.37	10.864	169.506	Cloudy/light brown	Low	Sampled 14.10, data logger downloaded and redeployed.	19.5	-
MW246	Off-site	541737.871	6110580.212	16-10-23	70	189.563	18.892	170.671	Clear	Low	Minimal sediment at bottom of the sleeve.	30.2	-
MW247	Off-site	536050.951	6112506.299	14-10-23	35.03	181.343	11.06	170.283	Brown	High	-	30.0	-
MW248	Off-site	536049.397	6112509.06	14-10-23	20.68	181.361	10.967	170.394	Light brown	Medium	-	20.0	-
MW249	Off-site	536082.812	6113454.968	14-10-23	60.9	180.008	13.91	166.098	Clear	No	-	47.7	Internal Lab QC
MW250	Off-site	536087.341	6113452.451	14-10-23	26	179.936	12.28	167.656		No	-	22.6	Internal Lab QC
MW251	Off-site	536569.189	6113765.545	14-10-23	24	178.394	10.8	167.594	Clear	No	Added extra weight on hydrasleeve.	19.2	0906_QC105_231015 & 0906_QC205_231015
MW252	Off-site	536569.976	6113769.891	14-10-23	60	178.607	11.25	167.357	Clear	No	Acid sulfate soil odour.	47.5	-
MW253	Off-site	537469.028	6112456.611	14-10-23	48.87	180.991	11.47	169.521	Clear		-	45.5	0906_QC106_231015 & 0906_QC206_231015
MW254	Off-site	537469.851	6112462.06	14-10-23	25.85	181.122	11.743	169.379	Clear	No	-	18.6	-
MW255	Off-site	539219.759	6112296.567	16-10-23	57	182.094	12.306	169.788	Clear	No	-	49.0	-
MW256	Off-site	539217.619	6112291.105	16-10-23	22.5	182.128	12.32	169.808	Clear	No	-	18.4	-
MW257	Off-site	538761.456	6111519.667	15-10-23	16.6	182.37	12.75	169.62	Clear	No	-	15.0	-
MW258	Off-site	535907.627	6112894.103	45211.19826	26.9	181.38	10.149	171.231	Clear	Low	-		-
MW259	Off-site	535902.153	6112900.437	12-10-23	17.85	181.48	10.136	171.344	Clear	No	Sampled for first time as part of OMP.	13.3	-
MW260	Off-site	540664.20	6114397.70	13-10-23	NA	-	NA	-	Clear	No	Alternative sampling location for MW210.	N/A	-
MW300	On-site	542277.11	6110129.15	13-10-23	57	200.538	29.73	170.808	Clear	No	Minimal sediment at bottom of sleeve.	50.2	Internal Lab QC
MW301	On-site	542281.27	6110125.89	12-10-23	19.1	200.705	Dry	-	-	-	Dry.	N/A	-
MW302	On-site	542356.16	6109473.31	13-10-23	63.74	209.607	38.51	171.097	Clear		Minimal sediment in bottom of sleeve.	61.5	0906_QC101_231014 & 0906_QC201_231014
MW303	On-site	542358.37	6109470.43	12-10-23	21.57	209.568	Dry	-	-	-	Dry.	N/A	-
MW304	On-site	541367.48	6108802.00	14-10-23	68.85	211.767	39.05	172.717	Generally clear		MTB samp-led 14/10. Both data loggers downloaded and redeployed	48.5	Internal Lab QC
MW305	On-site	541363.15	6108795.52	14-10-23	25.8	211.774	Dry	-	-	-	Dry	N/A	-
MW306	On-site	542799.42	6107013.89	13-10-23	62.4	233.058	30.518	202.54	Clear		-	54.0	-
MW307	On-site	542791.05	6107014.44	13-10-23	31.41	232.904	Dry	-	-	-	Dry	N/A	-
MW308	On-site	543139.39	6109381.63	14-10-23	66	213.901	42.07	171.831	Cloudy	No	-	51.7	Internal Lab QC
MW309	On-site	543133.57	6109377.71	12-10-23	25.4	213.826	Dry	-	-	-	Dry	N/A	-
MW310	On-site	543564.83	6108980.78	16-10-23	46.1	210.274	-	-			-	52.2	-
MW311	On-site	543566.06	6108977.08	16-10-23	22.15	210.651	-	-	Brown	Low	-	20.6	-
MW312	Off-site	[redacted]		13-10-23	30.45	182.97	12.913	170.057	Cloudy	Low	-	53.0	-
MW313	Off-site			13-10-23	12.06	182.99	Dry	-	-	-	Dry	N/A	-

1. As measured from the top of the Hydrasleeve.

Bore ID	Property	Easting	Northing	Monitoring Date	Temp (C^0)	DO (mg/L)	EC (Non-Specific) (us/Cm)	TDS (mg/L)	pH	Eh (mV)	Aquifer
MW200	Off-site	540489.09	6111231.75	12-10-23	16.5	2.22	1045	669	6.74	16.6	Lachlan
MW204	Off-site	540107.16	6110883.61	12-10-23	13.1	0.08	362	232	7.51	-146.0	Lachlan
MW209	Off-site	542521.77	6114403.23	15-10-23	17.5	1.8	268	172	6.41	-23.7	Lachlan
MW211	On-site	535735.79	6113725.27	12-10-23	17.4	3.33	287.2	183.808	6.44	128.6	Lachlan
MW212	On-site	535681.87	6113475.53	12-10-23	18.50	2.48	224.80	143.87	6.58	111.90	Lachlan
MW213	On-site	536651.55	6114239.35	12-10-23	17	2.91	212.4	135.936	6.45	109.4	Lachlan
MW214	On-site	542678.11	6111434.75	16-10-23	15.7	2.87	411	263	6.64	-9.1	Lachlan
MW215	On-site	542678.11	6111434.75	-	-	-	-	-	-	-	Lachlan
MW231	On-site	540910.71	6113541.05	16-10-23	17	1.48	211	135	6.61	-0.8	Lachlan
MW233	Off-site	539802.59	6112448.66	16-10-23	17.5	3.06	1406	900	6.64	70.1	Cowra
MW235	Off-site	[redacted]	[redacted]	-	-	-	-	-	-	-	Lachlan
MW238	Off-site	540682.06	6112227.81	15-10-23	18.8	1.23	505	323	6.53	110.8	Lachlan
MW239	Off-site	540678.34	6112216.01	15-10-23	18.5	4.65	1510	966	6.6	145.7	Cowra
MW240	Off-site	538090.54	6112266.06	15-10-23	17.1	3	395	253	6.35	114.9	Cowra
MW241	Off-site	544118.31	6109524.74	12-10-23	15.1	5.34	1088	696	11.84	-87	Granite
MW242	Off-site	544118.75	6109538.52	12-10-23	16.1	0.38	406	260	7.34	-45.6	Lachlan
MW243	On-site	542979.06	6110074.36	13-10-23	16.9	1.58	1199	767	6.22	131.5	Lachlan
MW244	Off-site	536997.10	6113055.36	14-10-23	18	1.42	406	260	6.26	147.8	Lachlan
MW245	Off-site	537011.85	6113066.50	14-10-23	17.9	0.13	1064	681	5.77	123.6	Cowra
MW246	Off-site	541737.871	6110580.212	16-10-23	17.6	1.01	3810	2438	6.71	13	Lachlan
MW247	Off-site	536050.951	6112506.299	14-10-23	19.1	0.74	745	477	11.28	-523.5	Lachlan
MW248	Off-site	536049.397	6112509.06	14-10-23	19.4	2.28	1423	911	6.47	95.7	Cowra
MW249	Off-site	536082.812	6113454.968	14-10-23	16	0.91	679	435	5.96	-262.2	Lachlan
MW250	Off-site	536087.341	6113452.451	14-10-23	16.5	3.00	509	326	6.50	-195	Cowra
MW251	Off-site	536569.189	6113765.545	14-10-23	15.1	1.03	400	256	5.30	33	Cowra
MW252	Off-site	536569.976	6113769.891	14-10-23	15.9	0.87	391	250	5.75	-14.7	Lachlan
MW253	Off-site	537469.028	6112456.611	14-10-23	18.1	2.41	312	200	6.18	38.5	Lachlan
MW254	Off-site	537469.851	6112462.06	14-10-23	18.5	3.97	289	185	5.88	92.1	Cowra
MW255	Off-site	539219.759	6112296.567	16-10-23	16.9	0.93	625	400	6.42	11.3	Lachlan
MW256	Off-site	539217.619	6112291.105	16-10-23	16.9	2.64	1162	744	6.34	106	Cowra
MW257	Off-site	538761.456	6111519.667	15-10-23	15.4	5.81	3002	1921	5.99	135.4	Cowra
MW258	Off-site	535907.627	6112894.103	45211.19826	16.5	1.53	1425	912	11.72	55.7	Lachlan
MW259	Off-site	535902.153	6112900.437	12-10-23	16.4	4.64	645	413	6.68	130.6	Cowra
MW260	Off-site	540664.20	6114397.70	13-10-23	18	6.19	189	121	6.7	34.6	Lachlan
MW300	On-site	542277.11	6110129.15	13-10-23	17.4	3.26	1270	813	6.07	137.5	Lachlan
MW301	On-site	542281.27	6110125.89	12-10-23	-	-	-	-	-	-	Cowra
MW302	On-site	542356.16	6109473.31	13-10-23	18.6	1.83	663	424	6.31	129.4	Lachlan
MW303	On-site	542358.37	6109470.43	12-10-23	-	-	-	-	-	-	Cowra
MW304	On-site	541367.48	6108802.00	14-10-23	18.2	0.07	1369	876	7.01	159.4	Lachlan
MW305	On-site	541363.15	6108795.52	14-10-23	-	-	-	-	-	-	Cowra
MW306	On-site	542799.42	6107013.89	13-10-23	14.2	3.56	1767	1131	6.89	-2.6	Lachlan
MW307	On-site	542791.05	6107014.44	13-10-23	-	-	-	-	-	-	Cowra
MW308	On-site	543139.39	6109381.63	14-10-23	18.4	3.02	660	422	6.08	145	Lachlan
MW309	On-site	543133.57	6109377.71	12-10-23	-	-	-	-	-	-	Cowra
MW310	On-site	543564.83	6108980.78	16-10-23	17.5	2.15	863	552	6.73	97.1	Lachlan
MW311	On-site	543566.06	6108977.08	16-10-23	17.3	3.49	3729	2387	6.50	133.1	Cowra
MW312	Off-site	[redacted]	[redacted]	13-10-23	18.2	0.64	860	550	6.68	65.3	Lachlan
MW313	Off-site			13-10-23	-	-	-	-	-	-	Cowra

1. As measured from the top of the Hydrasleeve.

Sample ID	Property	Easting	Northing	Monitoring Date	Sample Depth (m)	Water Body Depth (m)	Flow Rate (Quantitative) (m/s)	Flow Rate	Water Colour	Turbidity	Channel Width (m)	Water Body Condition	Other Observations	Duplicate Samples	Temp (C^0)	DO (mg/L)	EC (Non-Specific) (US/Cm)	TDS (mg/L)	pH	Eh (mV)
SW104	On-site	542263.80	6110131.68	14-10-23	0.05	0.1	5	Low	Clear	No	-	Underground sewage channel	No foaming, no microorganisms, no algae, no sheen, slight organic odour	-	15.6	6.30	613	392	7.62	122
SW206	Off-site	541675.39	6110527.28	15-10-23	0.3	0.5	5 - 10	High	Clear	Low	-	Stormwater discharge pipe	Foaming, no microorganisms, no algae, no sheen, no odour, some minor vegetation (grasses etc)	-	14.6	7.47	39	25	7.25	51.5
SW212	Off-site	539563.37	6114381.22	15-10-23	0.3	Unknown	3	High	Slightly cloudy	No	10	River	No foaming, no microorganisms, no algae, no sheen, no odour	-	15.6	7.98	91	58	7.98	87.1
SW218	Off-site	541679.77	6110529.39	15-10-23	0.2	0.5	2 - 5	Medium	Clear	Low	-	Stormwater culvert	Foaming, no microorganisms, no algae, no sheen, no odour, some minor vegetation (grasses etc)	-	14.6	7.43	28	18	7.20	70.3
SW228	Off-site	543262.03	6112272.39	16-10-23	0.05	Unknown	Stagnant	No	Yellow	Low	-	Sewage inflow pit	No foaming, no microorganisms, no algae, no sheen, strong sewage odour	-	16.8	0.97	578	370	7.50	2.0
SW234	Off-site	536166.15	6112334.13	15-10-23	0.3	0.5	0.1	Low	Brown	Medium	20	Creek	No foaming, no microorganisms, no algae, no sheen, no odour	Internal Lab QC	19	6.32	536	343	8.09	48.00
SW236	Off-site	543767.40	6112318.00	14-10-23	0.1	1	5	Low	Slightly cloudy	Low	10	Creek	No foaming, no microorganisms, no algae, no sheen, odour of organics and manure	0906_QC103_231014 & 0906_QC203_231014	18.5	7.84	1167	747	7.71	63.4
SW240	Off-site	545028.00	6110672.00	14-10-23	0.1	0.4	0.3	Low	Slightly cloudy, light brown	Low	3	Creek	No foaming, microorganisms, no algae, no sheen, slight manure odour	Internal Lab QC	16.2	6.86	938	600	7.48	105.5
SW261	Off-site	534761.81	6114107.59	15-10-23	0.3	Unknown	0.5	High	Slightly cloudy	Low	80	River	No foaming, no microorganisms, no algae, no sheen, no odour	-	15.7	7.48	92	59	8.01	60.8
SW262	Off-site	534970.84	6113903.83	15-10-23	0.3	Approx 1m	Wind blowing surface in opposite direction. Appears low (0.05m/s)	Low	Cloudy	Low	80	River	No foaming, no microorganisms, no algae, no sheen, no odour	-	19.7	5.38	302	193	8.02	72.4
SW286	Off-site	543605.67	6114255.45	14-10-23	0.3	Unknown	2	High	Brown	Low	80	River	No foaming, no microorganisms, no algae, no sheen, no odour	0906_QC104_231014 & 0906_Q204_231014	16.7	7.78	98	63	7.77	60.6
SW288	Off-site	542930.77	6112004.76	16-10-23	NA	NA	High - unable to determine qualitative value (sewage pit)	High	Yellow	No	-	Sewage pit	No foaming, no microorganisms, no algae, no sheen, strong sewage odour	-	19.2	1.44	706	452	7.54	-118.8
SW289	Off-site	543054.42	6112176.56	16-10-23	0.1	1	High - unable to determine qualitative value (sewage pit)	High	Yellowish brown	Low	-	Sewage pit	No foaming, no microorganisms, no algae, no sheen, strong sewage odour	-	18.9	1.90	617	395	7.52	-14.7
SW294	Off-site	535307.66	6113375.69	15-10-23	NA	NA	2 - 5	Medium	Cloudy	No	2	Culvert	Foaming, no microorganisms, no algae, no sheen, no odour	-	15.3	7.33	298	191	8.44	59.8
SW309	Off-site	535436.96	6113744.17	12-10-23	0.3	1	0.5	High	Clear	Low	120	River	No foaming, no microorganisms, no algae, no sheen, no odour, sampled 5m east of boat ramp	-	16.4	7.60	126	81	7.65	46.5
SW310	Off-site	538809.34	6111596.73	15-10-23	0.01	0.05	None	No	Grey brown	High	1	Road culvert	No foaming, no microorganisms, no algae, no sheen, no odour	-	13.4	6.54	266	170	7.12	30.7

DEF19008
0315 / 09106

F3.01 Equipment Calibration Report
YSI ProPlus Water Quality Meter

This YSI ProPlus Water Quality Meter has been performance checked as per the manufacturer's guidelines[1].

Unit Type: YSI ProPlus
Serial Number: 22B104337

The unit has been checked for and comprises of the following items:

Item	Present	Damaged or Absent?
Carry case	☑	☐
Attached sensors (x4)	☑	☐
Spare Batteries	☑	☐
Connector Cable	☑	☐
Instruction Manual	☑	☐

The following tests and operational checks have been conducted on the unit:

Item	Test Completed	Test Passed
WQM unit electrodes cleaned and checked	☑	☑
Operations check (screen functions)	☑	☑
Temperature check	☑	☑

Calibration:

Sensor	Cal. Solution	Value	Reading
pH	pH: Buffer Solution 4.00	4.00	4.08
pH	pH: Buffer Solution 7.00	7.00	7.08
pH	pH: Buffer Solution 10.00	10.00	10.11
Redox	Standard ORP solution	251 mV @ 15 °c	255 mV @ 13 °c
O_2	Ambient Air for 100% Dissolved Oxygen	100%	100 %
O_2	Sodium Sulphite for 0% Dissolved Oxygen	0%	0%
Conductivity	Standard Conductivity Solution	2.76 ~~uS/cm~~ mS/cm @ 25 °c	2.76 ~~mV~~ mS/cm @ 25 °c

Checked/ Calibrated by: [redacted]

Signed: [redacted]

Date: 12 / 10 / 23

[1] YSI Professional Plus – Calibration Tips; Rev A, December 2010.

F3.01 Equipment Calibration Report
YSI ProPlus Water Quality Meter

This YSI ProPlus Water Quality Meter has been performance checked as per the manufacturer's guidelines[1].

Unit Type: YSI ProPlus
Serial Number: 19H102165

The unit has been checked for and comprises of the following items:

Item	Present	Damaged or Absent?
Carry case	☑	☐
Attached sensors (x4)	✓	☐
Spare Batteries	✓	☐
Connector Cable	✓	☐
Instruction Manual	✓	☐

The following tests and operational checks have been conducted on the unit:

Item	Test Completed	Test Passed
WQM unit electrodes cleaned and checked	☑	☑
Operations check (screen functions)	✓	✓
Temperature check	✓	✓

Calibration:

Sensor	Cal. Solution	Value	Reading
pH	pH: Buffer Solution 4.00	4.00	4.02
pH	pH: Buffer Solution 7.00	7.00	7.00
pH	pH: Buffer Solution 10.00	10.00	10.05 ✓
Redox	Standard ORP solution	251 mV @ 15 °c	251 mV @ 15 °c
O_2	Ambient Air for 100% Dissolved Oxygen	100%	100%
O_2	Sodium Sulphite for 0% Dissolved Oxygen	0%	0%
Conductivity	Standard Conductivity Solution	2.76 µS/cm @ 25 °c	2.76 mS/cm @ 25 °c

Checked/ Calibrated by: [redacted]

Signed: [redacted]

Date: 12/10/23

[1] YSI Professional Plus – Calibration Tips; Rev A, December 2010.

Unit Type: YSI ProPlus
Serial Number: 22J106337

Job Number: DEF19008 – WAGGA / KAPOOKA

Date of Bump Test	Ambient Air Oxygen Calibration	Zero % Oxygen Solution Calibration	Standard Concentrations	Bump Test Reading	Bump Test Readings Accepted?	Test by (Name)	(Signature)
13/10/23	100% Saturation? (Y)N	0% Calibration? (Y)N	pH 4.00 (Y)/ N pH 7.00 (Y)/ N pH 10.00 (Y)/ N EC: 28 µS/cm @ 12 °C (Y)/ N Redox: 268 mV @ 15 °c (Y)/ N	pH 4.00: 3.94 pH 7.00: 6.95 pH 10.00: 10.18 EC: 2.81 Redox: 258	(Y)/ N (Y)/ N (Y)/ N (Y)/ N (Y)/ N	[redacted]	[redacted]
14/10/23	100% Saturation? (Y)N	0% Calibration? (Y)N	pH 4.00 (Y)/ N pH 7.00 (Y)/ N pH 10.00 (Y)/ N EC: 276 µS/cm @ 11 °C (Y)/ N Redox: 255 mV @ 12 °c (Y)/ N	pH 4.00: 3.87 pH 7.00: 6.89 pH 10.00: 10.07 EC: 2.73 Redox: 243	(Y)/ N (Y)/ N (Y)/ N (Y)/ N Y / (N)	[redacted] ORP solution recreated.	[redacted]
15/10/23	100% Saturation? (Y)N	0% Calibration? (Y)N	pH 4.00 (Y)/ N pH 7.00 (Y)/ N pH 10.00 (Y)/ N EC: 276 µS/cm @ 11 °C (Y)/ N Redox: 255 mV @ 12 °c (Y)/ N	pH 4.00: 3.92 pH 7.00: 6.92 pH 10.00: 10.11 EC: 2.50175 Redox: 2.80	(Y)/ N (Y)/ N (Y)/ N (Y)/ N (Y) N	[redacted]	[redacted]
	100% Saturation? Y N	0% Calibration? Y N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC:__µS/cm @ __°C Y / N Redox: ___ mV @ __°c Y / N	pH 4.00: pH 7.00: pH 10.00: EC: Redox:	Y / N Y / N Y / N Y / N Y / N		
	100% Saturation? Y N	0% Calibration? Y N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC:__µS/cm @ __°C Y / N Redox: ___ mV @ __°c Y / N	pH 4.00: pH 7.00: pH 10.00: EC: Redox:	Y / N Y / N Y / N Y / N Y / N		
	100% Saturation? Y N	0% Calibration? Y N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC:__µS/cm @ __°C Y / N Redox: ___ mV @ __°c Y / N	pH 4.00: pH 7.00: pH 10.00: EC: Redox:	Y / N Y / N Y / N Y / N Y / N		
	100% Saturation? Y N	0% Calibration? Y N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC:__µS/cm @ __°C Y / N Redox: ___ mV @ __°c Y / N	pH 4.00: pH 7.00: pH 10.00: EC: Redox:	Y / N Y / N Y / N Y / N Y / N		
	100% Saturation? Y N	0% Calibration? Y N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC:__µS/cm @ __°C Y / N Redox: ___ mV @ __°c Y / N	pH 4.00: pH 7.00: pH 10.00: EC: Redox:	Y / N Y / N Y / N Y / N Y / N		

Unit Type: YSI ProPlus
Serial Number: 19H102165
Job Number: DEP19008 · Wagga / Kapooka

Date of Bump Test	Ambient Air Oxygen Calibration	Zero % Oxygen Solution Calibration	Standard Concentrations	Bump Test Reading	Bump Test Readings Accepted?	Test by (Name)	(Signature)
12/10/23	100% Saturation? (Y) N	0% Calibration? (Y) N	pH 4.00 (Y)/N pH 7.00 (Y)/N pH 10.00 (Y)/N EC: 1413 µS/cm @ 25 °C (Y)/N Redox: 240 mV @ 15 °C (Y)/N	pH 4.00: 4.02 pH 7.00: 7.06 pH 10.00: 10.10 EC: 2.76 mS/cm Redox: 262.3	(Y)/N (Y)/N (Y)/N (Y)/N (Y)/N	[redacted]	[redacted]
13/10/23	100% Saturation? (Y) N	0% Calibration? (Y) N	pH 4.00 (Y)/N pH 7.00 (Y)/N pH 10.00 (Y)/N EC: 1413 µS/cm @ 25 °C (Y)/N Redox: 268 mV @ 12 °C (Y)/N	pH 4.00: 4.00 pH 7.00: 7.00 pH 10.00: 10.12 EC: 2.77 mS/cm Redox: 265.1	(Y)/N (Y)/N (Y)/N (Y)/N (Y)/N		
14/10/23	100% Saturation? (Y) N	0% Calibration? (Y) N	pH 4.00 (Y)/N pH 7.00 (Y)/N pH 10.00 (Y)/N EC: 1413 µS/cm @ 25 °C (Y)/N Redox: 255 mV @ 12 °C (Y)/N	pH 4.00: 4.05 pH 7.00: 7.02 pH 10.00: 10.15 EC: 2.75 mS/cm Redox: 255.6 mV	(Y)/N (Y)/N (Y)/N (Y)/N (Y)/N		
~~2165~~ 15/10/23	100% Saturation? (Y) N	0% Calibration? (Y) N	pH 4.00 (Y)/N pH 7.00 (Y)/N pH 10.00 (Y)/N EC: 1413 µS/cm @ 25 °C (Y)/N Redox: 266 mV @ 12 °C (Y)/N	pH 4.00: 3.70 pH 7.00: 7.03 pH 10.00: 10.08 EC: 2.75 mS/cm Redox: 253 mV	Y/(N) Recal (Y)/N (Y)/N (Y)/N (Y)/N		
~~337~~ 16/10/23	100% Saturation? (Y) N	0% Calibration? (Y) N	pH 4.00 (Y)/N pH 7.00 (Y)/N pH 10.00 (Y)/N EC: 1413 µS/cm @ 25 °C (Y)/N Redox: 255 mV @ 12 °C (Y)/N	pH 4.00: 4.04 pH 7.00: 7.04 pH 10.00: 10.11 EC: 2.78 mS/cm Redox: 256.8 mV	(Y)/N (Y)/N (Y)/N (Y)/N (Y)/N		
	100% Saturation? Y N	0% Calibration? Y N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC: 1413 µS/cm @ 25 °C Y / N Redox: ___ mV @ __ °C Y / N	pH 4.00: 3.99 pH 7.00: 6.98 pH 10.00: 10.06 EC: Redox:	Y / N Y / N Y / N Y / N Y / N		
	100% Saturation? Y N	0% Calibration? Y N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC: __µS/cm @ __ °C Y / N Redox: ___ mV @ __ °C Y / N	pH 4.00: pH 7.00: pH 10.00: EC: Redox:	Y / N Y / N Y / N Y / N Y / N		
	100% Saturation? Y N	0% Calibration? Y N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC: __µS/cm @ __ °C Y / N Redox: ___ mV @ __ °C Y / N	pH 4.00: pH 7.00: pH 10.00: EC: Redox:	Y / N Y / N Y / N Y / N Y / N		

Instrument Quality Report
Interface Meter

Enqip #: 20615
Company: Stantec Australia Pty Ltd
Consultant: [redacted]
PO #: DEF19008
Certificate #: 30459

INSTRUMENT IDENTIFICATION

Instrument Type: Geotech Interface Meter
Model Number: Interface Probe (30-100m)
Serial Number: 0013

INSPECTION RECORD

Battery:	PASS	**Water Tone:**	PASS
Tape Condition:	PASS	**Hydrocarbon Tone:**	PASS

Instrument Quality Report
Interface Meter

Enqip #: 20615
Company: Stantec Australia Pty Ltd
Consultant: [redacted]
PO #: DEF19008
Certificate #: 30460

INSTRUMENT IDENTIFICATION

Instrument Type: Solinst Interface Meter
Model Number: 122
Serial Number: 313058

INSPECTION RECORD

Battery:	PASS	**Water Tone:**	PASS
Tape Condition:	PASS	**Hydrocarbon Tone:**	PASS

APPENDIX

E

DATA QUALITY REVIEW

Cardno

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Stantec

Data Quality Review
RAAF Base Wagga, NSW, 2650

This Appendix reviews the Quality Assurance (QA) and Quality Control (QC) documentation. Quality assurance encompasses the actions, procedures, checks and decisions undertaken to ensure sample integrity and representativeness, and the reliability and accuracy of analysis results. The QA documentation should also include an indication of the Data Quality Objectives sought in relation to each significant action, test or process involved in the Assessment.

QC activities measure the effectiveness of the QA procedures by undertaking testing, and then comparing results to previously established objectives. QC work will include the internal laboratory testing as well as results of QC samples submitted such as trip blanks and duplicates. The quality of the information and/or data is deemed satisfactory when the QC results demonstrate that agreed objectives have been met.

Cardno undertook a review of its QA/QC as part of the data validation exercise. The findings are summarised below.

QA/QC Aspects	Evidence and Evaluation
	QA Documentation
Sampling and Analysis Quality Plan and Data Quality Objectives	Cardno was engaged by Department of Defence (the client) to carry out the PFAS Ongoing Monitoring Plan (OMP) of RAAF Base Wagga, NSW, 2650 (the site). The monitoring event commenced on 12 October 2023 until 17 October 2023 and is in general accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP) of 20 October 2023 (Our Ref: 20191021_OMP002_Wagga_SAQP_Rev9 The assessment was carried out in general compliance with the following: ▪ Australian Standard AS 4482-2005 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds. ▪ Department of Defence (2019a), Contamination Management Manual (DCMM), August 2019. ▪ Department of Defence, Department of Energy (2018), Quality System Manual Schedule B15, USEPA DQO Process. ▪ Department of Defence (2021c), Contamination Management Manual (DCMM), Annex L – Data Management, August 2019, Amended June 2021. ▪ EPA Victoria (2009), Industrial Waste Resources Guidelines, Sampling and Analysis of Waters, Wastewaters, Soils and Wastes, Publication 701. ▪ Heads of Environmental Protection Authority's Australia and New Zealand (HEPA) (2020), PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020. ▪ National Environment Protection Council (NEPC), 1999, National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM). ▪ National Health and Medical Research Council (NHMRC) (2019), Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water, August 2019. ▪ USEPA (2000), Guidance for the Data Quality Objectives Process (EPA QA/G-4). A quality control program was implemented during the investigation and the quality assurance procedures used have been reiterated in the report.

QA/QC Aspects	Evidence and Evaluation
	The investigation was carried out in accordance with the Safe Work method Statements (SWMS) and Occupational Health and Safety (OHS) plan for the site. Detailed work plans were also provided for each phase of investigation and are outlined in the SAQP. The Data Quality Objectives were expressed in terms of the purpose of the assessment and the relevant assessment criteria.
Data Validation Report	This review constitutes a data validation review. This was supported by an ESdat generated "QAQC Checker" excel report, summarised in Tables B3 and B4, Appendix B.
Data Representativeness	
Holding Times	Groundwater and surface water sample analysis holding times were in conformance with EPA Publication IWRG701 2009 *'Sampling and Analysis of Waters, Wastewaters, Soils and Wastes*.
Background Samples	No background samples were collected as part of this assessment.
Equipment Decontamination	The decontamination methodology conducted during this investigation is documented in the body of the report, and was in general conformance with the SAQP and work plans. ▪ All re-usable sampling equipment was thoroughly washed using "PFAS-free" & phosphate-free detergent, then double rinsed with de-ionised water before the sample collection.
Lab Reports Considered for this Assessment	Please refer to Appendix C
Data Precision and Accuracy	
QC Testing – Blind Replicates (Primary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 40 ▪ Blind Replicate Samples Analysed: 5 ▪ Blind Replicate Analyte Pairs: 145 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 2 ▪ Percentage of Analyte Pairs Exceeding Criteria: 1.4% The RPD exceedance observed for PFAS is considered to be minor and due to low reported concentrations of analytes close to the LOR where small discrepancies can lead to disproportionately large RPDs. Further, at low concentrations larger RPDs are acceptable by the laboratories (e.g. for ALS, the permitted ranges for the RPD of laboratory duplicates are dependent on the magnitude of results in comparison to the LOR and results <10 times LOR have no limit to RPDs). It is not considered to impact the results of the investigation. RPD results are presented in Table B3, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 16 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 58 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances reported for PFAS compounds. RPD results are presented in Table B3, Appendix B.
QC Testing – Field Splits (Secondary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 40

QA/QC Aspects	Evidence and Evaluation
	▪ Blind Replicate Samples Analysed: 5 ▪ Blind Replicate Analyte Pairs: 145 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances reported for PFAS of the investigation. RPD results are presented in Table B3, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 16 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 58 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances reported for PFAS compounds. RPD results are presented in Table B3, Appendix B.
Trip Blanks	Six (6) trip blanks were collected and laboratory tested for PFAS. All analytes were reported below the limit of reporting (LOR). Trip blank results are presented in Table B4, Appendix B.
Laboratory Internal QC	Evidence of the laboratories internal QC testing is present and complete. Both ALS (the primary laboratory) and Eurofins-mgt performed internal QC with mostly adequate testing and satisfactory results for matrix spikes, method blanks and laboratory duplicates.
Laboratory Method Detection Limit	Laboratory reports indicate the method detection limits were lower than the respective assessment criteria.
NATA endorsement of laboratory reports	Laboratory reports were stamped with the NATA endorsement stamp and signature. Laboratory reports are included in Appendix C of this report.
Calibration of Field Equipment	All field equipment used was calibrated by the equipment supplier. Additionally, daily bump tests were performed of the water quality meter throughout the monitoring event. Certificates are included in Appendix D of this report.
Decontamination and Equipment Blanks	All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with de-ionised water before the sample collection. Five (5) rinsate blanks were collected and laboratory tested for PFAS. No PFAS compounds reported above LOR in any rinsate blank sample, indicating that decontamination was adequate. Rinsate blank samples were tested for PFAS which all reported a concentration below the laboratory LOR. Results are shown in Table B4, Appendix B.
Data Comparability	
Full Review of Data	Once all results have been received, Cardno undertook a full review of the data for any anomalies in consideration of historical data at each location (where available), such as first-time detections or exceedances being reported at locations which have not had detections or exceedances previously. Where potentially anomalous data is identified or suspected, further confirmatory measures were undertaken such as re-extraction and reanalysis of the sample by the laboratory and/or additional data quality review. MW254 was re-extracted and reanalysed, with the original result confirmed.
Standard Procedures	Fieldwork procedures are detailed in the report and followed the work methods outlined in the SAQP.
Qualified Personnel	Staff involved in managing and reviewing the project and those involved in fieldwork are qualified personnel.

QA/QC Aspects	Evidence and Evaluation
Volatile Losses	Volatile losses are not applicable to PFAS.
Sample Integrity	Field Chain of Custody forms are included in Appendix C of this report and demonstrate sample integrity.
Data Completeness	
Completeness of Test Program	The scope of work undertaken was generally consistent with that set out in the Sampling and Analysis Quality Plan (SAQP). Variations to the SAQP are detailed in the Factual Report.
Validity of Data Set	The data quality review indicates no significant systematic errors in the data collection process for surface water and groundwater and therefore, the data set used as the basis for the assessment is considered valid and complete.

APPENDIX

F

INFORMATION ABOUT ENVIRONMENTAL REPORTS

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About Site Environmental Assessment Reports

1. Introduction

This document explains the Environmental Site Assessment (ESA) process and the context that applies to the use of Environmental Reports issued by Cardno.

2. What is an ESA?

Environmental Site Assessments (ESA) are undertaken for a range of purposes, specific to the brief issued by the client in each case. The scope may include one or a combination of any of the following:

- A factual report of the condition of a portion of the site or one aspect of an entire site.
- Assessment of the contamination levels in soil to be removed from a site – a waste classification assessment.
- Validation of the success of remediation of a site or a portion of a site.
- Provision of a professional opinion about the suitability of a site for one or more uses, in terms of its contamination status.

The scope of any ESA needs to be defined at the outset.

An ESA is not an Environmental Audit. Such audits are undertaken in accordance with the provisions of regulations enacted in various states of Australia, and are referred to as Site Audits in some jurisdictions. Statutory audits provide certification by EPA accredited auditors that a site is suitable for one or more uses. An ESA may provide similar advice but cannot be used in place of an audit if the latter is required by regulation in any instance. However in some circumstances and jurisdictions an ESA is sufficient to provide "environmental sign-off" of a site.

An ESA may be undertaken for due diligence purposes, to establish whether the site has been impacted to the extent that some beneficial uses of the site may be precluded. Due diligence audits in many cases may be completed as non-statutory Audits, although in some jurisdictions they can also be statutory audits, if defined as such at the outset.

3. The ESA Process

The Client generally initiates the ESA process by specifying a brief which identifies the specific objectives of the assessment. If not, it is the consultants' duty to so specify the ESA

In the case of an ESA to provide an opinion about the suitability of the site for use, it would be conducted in accordance with NEPM (Site Assessment). Such ESA would not commence until a thorough site history assessment (Phase 1 Assessment: to identify the potential for significant contamination at a site) is conducted. However, where the history is unclear, a broad screening of chemical parameters can be used to test environmental media. This normally includes a broad range of organic and inorganic compounds and elements, often referred to as an Environmental Screen.

(In the case of an ESA for a purpose other than to provide an opinion about the suitability of the site for use, it is not always necessary to undertake a Phase 1 assessment.)

The ESA requires sampling of soil at representative locations across the site. A NATA accredited laboratory performs the analysis of soil. It is impractical for all of the soil to be assessed. The ESA is often based on a statistical method of grid or random sampling, augmented by targeted sampling at locations known or suspected to be contaminated. Guidance on sampling strategy and density is provided in Australian Standard AS4482.1–2005. However, some considerable degree of judgement is still required in the application of any sampling and testing strategy. For example the blanket application of the "hot spot" method presented in this standard is often inappropriate given its limitations.

The field program also investigates the likelihood of contamination below the site surface. Field investigations must sample and test fill as well as the natural soils. If contamination is found then it is common for further work to be undertaken to characterise, to the extent practical, its vertical and horizontal extent. However, where fill is encountered and testing shows it to be uncontaminated, it must be realised that the heterogeneous nature of the material might mean that not all pockets of contaminated material can be detected using normal sampling regimes.

EPA guidelines for auditors, that may be relevant for an ESA, indicate the need in all cases to consider the potential for groundwater contamination in any site. This does not mean all sites need to be drilled to sample groundwater, but it is most often the case. Most hydrogeological settings and groundwater conditions are complex and vary in space and time. The condition of groundwater is investigated to identify if any beneficial use or environmental value of groundwater is precluded due to contamination.

As previously stated for soil, all groundwater at the site cannot be tested. The environmental investigations are conducted in accordance with industry standards and guidelines (e.g. EPA Vic Pub 668). This provides a level of confidence that a sufficiently comprehensive assessment of the groundwater at the site is achieved.

Where an investigation shows that groundwater is polluted, consideration should be given to assessing the risks and the need for and practicality of any clean up.

4. Environmental Assessment Report

The ESA Report details the findings of the ESA. It provides summary information on the site definition, the reasons for the assessment and other relevant facts. It reviews the scope and quality of the site investigations, laboratory testing and data analyses undertaken. These reports also present a review of the contamination status of the site, the need for any further clean up, and an opinion on the suitability of the site for a range of beneficial uses and land uses such as “residential – low density”, “commercial” etc, as appropriate.

However, as noted above, some ESA have a narrow scope such as for classification of waste soil for removal from site, and do not make conclusions on suitability of site for use.

The ESA Report generally includes copies of other documents and reports, necessary to support the assessment findings, presented as appendices. These can contain more detailed information than the body of the ESA Report. Care should be taken to also read the appended documents and the ESA report in full.

Cardno generally issues reports in electronic form (e-Report) on CD ROM. ESA Reports are issued in this format as Adobe Acrobat™ PDF files. However, a paper copy of the executive summary of the ESA Report is generally issued to the client, and others as required by the brief or by regulation.

5. Limitations of Environmental Assessment Report

The ESA Report is prepared in a manner that can be easily read by a lay person with a legitimate interest in the contamination status of the site, such as the site owner or occupier, EPA and Local Planning Authority. The ESA report is not intended for use by other parties or for other purposes. Anyone who uses the assessment report for purposes other than specified in the report, does so at their own risk.

The site should only be used for one or more of the beneficial uses and land uses identified in the ESA as suitable.

The conditions and qualifications may apply to the suitability of the site for use, and it is the responsibility of the Client to be cognizant of and accept these in accepting the report. Cardno are only responsible for the issuing of the ESA report but accepts no liability for the costs incurred in the implementation of ESA findings.

The ESA provides a “snapshot” of the site conditions at the time of the site investigation. Consequently, the report may not be valid at a later time if there has been any change to the contamination status of the site in that time. Verification of the status of the site may be required in cases where a significant time has elapsed, or site conditions have changed since the assessment and audit.

The ESA is necessarily limited by constraints such as time, cost and available information; although normal professional practice at the time has been applied with all due care to prepare the report. A necessary requirement of this process is the horizontal and vertical interpolation of data from discrete locations. However, site conditions are generally not homogenous and some discrepancies will occur between the actual and predicted results at locations not directly sampled. There is a risk that contamination may occur at the site and not be identified by a competent investigation and assessment. The approach adopted in sampling (a combination of statistically based grid and judgmental sampling) seeks to reduce, but cannot eliminate, this risk.

Where unexpected occurrences of contamination arise, subsequent to the issue of the ESA Report, Cardno should be permitted to make an interpretation of these facts in relation to the ESA Report findings. Consequently, the Client should inform Cardno and seek their opinion. Cardno accepts no liability for costs incurred due to such

unexpected occurrences, given the inherent uncertainties in the assessment process.

Cardno uses information provided by other parties as the basis for the ESA, and reliance on this information is at the discretion of Cardno. However, however Cardno cannot guarantee any of the facts, findings or conclusions presented by other parties. Cardno will not be liable for the use of information, provided by others that is subsequently found to be intentionally misleading.

The ESA Report is not and does not purport to be anything other than a contaminated land ESA. It is not a geotechnical report and bore logs reproduced are for interpretation of the likely distribution of contamination. They are not intended for geotechnical interpretations and may not be adequate for this purpose.

The ESA Report is not intended to be a comprehensive analysis of the presence and associated risk of asbestos in buildings and services. Where asbestos in buildings and services is known or likely, the report may only caution that an appropriately qualified person be engaged to undertake demolition to avoid contamination of the site.

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13 August 2015

APPENDIX

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SAQP

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PFAS OMP Sampling and Analysis Quality Plan (SAQP)

RAAF Base Wagga Wagga

DEF19008

Prepared for

Department of Defence

20 October 2023

Cardno

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Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Cardno is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

7	24 October 2022	Revised Final	BW	BTK
8	15 June 2023	Revised Final	MTB	BW
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1 Introduction

Cardno, now Stantec (Cardno) have been engaged by the Australian Department of Defence ("Defence"to prepare a Sampling and Analysis Quality Plan (SAQP) as part of the Ongoing Monitoring Plan (OMP), the purpose of which is to continue the assessment of potential risks to human health and the environment from per- and polyfluoroalkyl substances (PFAS) in environmental media across the Defence estate. This assessment has been ongoing for several years as part of the PFAS Management Area Plan (PMAP), to track the trends in the extent and concentrations of PFAS impacts identified on and around RAAF Base Wagga (the Base), NSW (Figure 1, Appendix A).

The OMP SAQP applies to not only RAAF Base Wagga, but also the surrounding areas that, together with the Base, make up the "Monitoring Area", which is defined in Section 2.1.1.

The Base is located on Commonwealth Land and is regulated under Commonwealth environmental legislation.

The OMP (Jacobs, 2019a) outlines the rationale and scope for the monitoring of the concentrations and extent of PFAS in groundwater and surface water within the Monitoring Area. Findings from the monitoring over the two year initial implementation period will be used in the first review of the OMP to assess any changes to the nature and extent of PFAS impact, including potential risks to receptors.

1.1 Scope & Objectives

The objective of the SAQP is to present the specific monitoring locations, sampling methodologies and quality assurance / quality control (QA/QC) measures for the monitoring of the concentrations and extent of PFAS in groundwater and surface water at and around the Base under the OMP. These findings will inform risk management decisions by Defence and the New South Wales Government to protect human health and the environment.

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 fire-fighting foam (AFFF) has led to an identified potentially elevated risk to a receptor, or potential future risk to a receptor.

The scope of the monitoring as set out in the OMP is to:

- Monitor changes in PFAS concentrations in surface water discharge to the Council stormwater network from the Base as well as downstream locations along Marshalls Creek and at the confluence of Marshalls Creek and Murrumbidgee River.
- Further refine the understanding of the extent of groundwater contamination plume around the Gumly Gumly Wetland and monitor the movement of this plume.
- Further investigate the PFAS identified in the groundwater well to the east of the Base (MW223).
- Monitor changes in PFAS concentrations in Kyeamba Creek.
- Monitor changes in PFAS concentrations in the Murrumbidgee River.
- Monitor changes in PFAS concentrations in sewer discharged from the Base.
- Collect geological and hydrogeological data for the potential further development of the RAAF Base Wagga Groundwater Model.

1.2 Previous Reports

The following key reports prepared in relation to the PFAS Investigation have been used as a basis to develop the SAQP:

- Jacobs (2020), Ongoing Monitoring Program Groundwater Well Installation Report, December 2020

- Jacobs (2019a), *PFAS Ongoing Monitoring Plan*, September 2019
- Jacobs (2019b), *PFAS Management Area Plan (PMAP)*, September 2019
- Jacobs (2018a), *Detailed Site Investigation*, June 2018
- Enrisk (2018), Human Health and Ecological Risk Assessment for the RAAF Base Wagga PFAS Investigation, November 2018

1.3 Responsible Parties

Responsible parties and responsibilities associated with the implementation of the OMP are detailed in Table 1-1.

Table 1-1 Responsible Parties

Role	Responsibilities
Department of Defence – PFAS Investigation and Management Branch	▪ Implement the OMP. ▪ Engage suitably qualified environmental consultants/contractors to carry out the works specified in the OMP
RAAF Base Wagga – Base Support Manager and Environment and Sustainability Manager	▪ Review and approve all necessary permits required for implementation of the works outlined in the OMP.
Environmental Consultant	▪ Obtain necessary permits from RAAF Base Wagga and other relevant stakeholders such as Council, to implement the works outlined in the OMP. ▪ Liaise with State regulators (e.g. Department of Planning, Industry & Environment) to arrange sampling of off-Base waterways, as required. ▪ Undertake the monitoring activities outlined in this SAQP. ▪ Produce a factual report that summarises the data and findings of each monitoring event and is consistent with the requirements of this SAQP. ▪ Produce an ongoing monitoring interpretive report (OMIR) including recommendations for any potential changes in the location and frequency of sampling which may be incorporated in the revision of the OMP. ▪ Upload analytical data from each monitoring event to the relevant Defence ESdat database.
Department of Defence (lead) and Environmental Consultant	▪ Liaise with off-Base private property owners to arrange private property access to conduct sampling if necessary.
PMAP Lead Consultant	▪ Implement PMAP recommendations and undertake PMAP review. ▪ Undertake OMP review.

1.4 Relevant Guidelines

This SAQP has been prepared in general accordance with the current 'industry standards' for a site investigation for the purpose, objectives and scope identified in this report. These standards are set out in:

- Australian Standard AS 4482-2005 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 – Non-volatile and semi-volatile compounds (withdrawn as pending revision, referred to for 'state of knowledge').
- Department of Defence, Department of Energy (2018), *Quality System Manual Schedule B15, USEPA DQO Process.*
- Department of Defence (2019a), *Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring.*

> Department of Defence (2021a), *PFAS OMP Factual Report Guidance*, May 2021.

> Department of Defence (2021b), P*FAS OMP Annual Interpretive Report Guidance*, May 2021.

> Department of Defence (2021c), *Contamination Management Manual (DCMM), Annex L – Data Management*, August 2019, Amended June 2021.

> EPA NSW (2002), *The NSW State Groundwater Dependent Ecosystems Policy*, April 2002.

> EPA NSW (2004), Water Waste Resources Guidelines, *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales*, Publication 1669.2, March 2004.

> EPA NSW (2014), *Waste Classification Guidelines – Part 1: Classification of Waste,* November 2014.

> EPA NSW (2016), *Designing Sampling Programs for Sites Potentially Contaminated by PFAS.*

> Heads of Environmental Protection Authority's Australia and New Zealand (HEPA) (2020), *PFAS National Environmental Management Plan (NEMP) Version 2.0*, January 2020.

> National Environment Protection Council (NEPC) (1999), National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM).

> National Health and Medical Research Council (NHMRC) (2019), *Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water*, August 2019.

> USEPA (2006), Guidance for the Data Quality Objectives Process (EPA QA/G-4).

> USEPA (2002), Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8).

1.5 Standards of Assessment and Limitations

This SAQP has been prepared in general accordance with the current industry standards for an assessment of this type for the purpose, objectives and scope identified in this report.

This SAQP is not any of the following:

> An Environmental Audit Report as defined under the Contaminated Land Management Act 1997.

> A Geotechnical Assessment.

> A Detailed Site Investigation (DSI).

> A Detailed Hydrogeological Assessment.

> A Remediation Action Plan (RAP) report.

> A Site Management Plan (SMP).

2 Site Setting

2.1 Site Description

RAAF Base Wagga is located approximately 10 km east of the central business district of Wagga Wagga, NSW, and covers an area of 3.1 square kilometres. RAAF Base Wagga has operated as a Royal Australian Air Field since the 1920s.

The Base is situated to the south of Sturt Highway in the suburb of Forest Hill. It is located to the east of the residential area of Forest Hill.

The majority of the buildings and associated infrastructure and support services are located in the north to north-west portion of the Base and include:

> Various accommodation blocks.

> Buildings and facilities associated with administration, training, recreation, support services, and aircraft storage, maintenance and refuelling, in the central portion of the Base.

> Former golf course (no longer in use) in the north-eastern portion of the Base (Jacobs, 2018a).

2.1.1 Monitoring Area Description

The OMP SAQP applies to not only RAAF Base Wagga, but also the surrounding areas that, together with the Base, make up the "Monitoring Area". For the purposes of this report:

> RAAF Base Wagga is defined as "the Base", which also represents the "On-Base Monitoring Area" (Figure 1, Appendix A). The Base is inclusive of the RAAF base as well as an operational airfield, Wagga Wagga City Domestic Airport (WWCDA), which is operated by the Wagga Wagga City Council (Council).

> The "Off-Base Monitoring Area" comprise areas to the east, north, west and north-west of the Base (Figure 1, Appendix A).

> The "Monitoring Area" (MA) is comprised of the "On-Base Monitoring Area" and the "Off-Base Monitoring Area" (Figure 1, Appendix A).

2.1.2 Site Definition and Planning

A detailed description of the Base is provided in Jacobs PMAP (2019b). In summary, the Base is operational primarily for training activities such as trades, class room and outdoor training facilities, residential buildings, administration, recreation and support services (such as messes and firefighting). Facilities also include aircraft hangars, warehouses and refuelling facilities. The Base includes an operational airfield, namely the Wagga Wagga City Domestic Airport (WWCDA), which is operated by the Wagga Wagga City Council (Council) via a 30-year lease agreement (1 July 1995 to 30 July 2025) established between Defence and Council.

The Base location is presented in Figure 1, Appendix A. Key Base identification details are presented in Table 2-1.

Table 2-1 Site Identification Details

Details	Description
Site Address	RAAF Base Wagga, NSW, 2650
Land Description	RAAF Base Wagga
Owner	Department of Defence
Title Details	• Lots 1,2,3 and 4 in DP 1113351 • Lot 2 in DP848579 • Lots 62 and 141 in DP757232 • Lots 1 and 2 in DP85382 • Lot 1 in DP436207 • Lots 1 and 2 in DP819642 • Lot 1 in DP190467
Planning Zone / Land use	Commonwealth Land (CA)
Local Government Authority (LGA)	Wagga Wagga City Council
Source: Jacobs, 2019b	

2.1.3 Surrounding Land Uses and Zoning

The Base is Commonwealth owned land which is zoned as Special Activities Zone SP1. An exception is Lot 2 DP 819642 which is a disused railway line reserve, running east-west across the Base, owned by the NSW Government (RailCorp) and leased by Defence. Surrounding land uses are outlined in Table 2-2.

Table 2-2 Surrounding Land Uses

Direction	Land Use
North	▪ Sturt Highway, then farm lands ▪ Sewerage treatment plant ▪ Residential and minor commercial properties (Forest Hill) to the north-west, then Gumly Gumly Wetland
East	▪ Farm lands
West	▪ Residential and commercial properties to the north-west (Forest Hill), then Gumly Gumly Wetland ▪ The Murray Cod Hatcheries are located within the Gumly Gumly Wetland ▪ Farm lands (small-holdings), then town of Wagga
South	▪ Farm lands
Source: Google Maps, 2019; Jacobs, 2019b	

2.1.4 Environmental Setting

Key details defining the Base are summarised in Table 2-3, and selected features are presented in Figures 1 and 2, Appendix A.

Table 2-3 Key Monitoring Area Details

Setting	Description
Climate	Climate data measured at the Bureau of Meteorology (BoM) gauge 072150, Wagga Wagga AMO, located at the airport within the Base boundary is available from 1942 to present day. Mean annual temperatures ranged from 20.1 to 24.4°C. The annual mean rainfall is 574.3 mm and is spread evenly across the year, with slightly increased rainfall in from May to October. The prevailing wind direction in the morning (9 am) is from the east while in the afternoon (3 pm) the prevailing winds are from the west and south-west[1].
Topography & Bathymetry	The Base is situated within the Murrumbidgee Valley and therefore the local topography is relatively flat and has acted as the floodplain for the Murrumbidgee River. Ground elevation at the Base ranges from approximately 240 m Australia Height Datum (m AHD) in the south-east to approximately 200 m AHD in the north-west. The area surrounding the Base slopes gently down to Kyeamba Creek to the north-east and to Gumly Gumly Wetland and Murrumbidgee River to the north-west. To the north, there is a gentle slope up to an area of granite outcrop, from where it slopes down towards the Murrumbidgee River to the north and north-west.
Geology	Regional Geology The Base is underlain by alluvial and colluvial sediments (silts and clays) of Cainozoic age. These sediments are underlain by Ordovician-aged shale and siltstone, and by Silurian-aged Wantabadgery granite (1:100,000 Wagga Wagga and Kyeamba Valley geological map – Australian Geological Survey Organisation, Raymond 1993) Base Specific Geology During drilling as part of the DSI (Jacobs, 2018a) it was found that the alluvial/colluvial sediments appear to be about 60 m thick in the vicinity of the Base. The upper sediments (Cowra Formation) appear to be approximately 20 m thick. The deeper, coarser grained sediments (Lachlan Formation) are about 40 m thick. However, there is no distinct boundary between the two, apart from a change in colouration from red-brown sediments in the Cowra Formation to grey sediments in the Lachlan Formation.
Acid Sulphate Soil	A review of the Acid Sulphate Soils (ASS) risk mapping, available on the Australian Soil Resources Information System (ASRIS) atlas online database indicates that the Base and surrounds have an extremely low probability of ASS.
Hydrology	There are three principal surface water drainage pathways from the Base.: ▪ East: surface water from the Base drains via overland flow to a series of ephemeral farm dams, which then drain to Kyeamba Creek during extended periods of high rainfall. ▪ West: surface water from the Base drains via overland flow to a series of ephemeral farm dams, which then drain to Gregadoo Creek during extended periods of high rainfall.

Setting	Description
	▪ North-west: surface water from the Base drains via a stormwater channel to the Gumly Gumly wetland which then drain to Marshalls Creek during periods of high rainfall. Kyeamba Creek and Marshall Creek discharge to the Murrumbidgee River to the north and north-west respectively. Forest Hill Sewerage Treatment Plant (STP) approximately 1.7 km to the north of the Base may also be considered a receiving water body as sewage from the Base is discharged to the STP via the sewer network.
Hydrogeology	The hydrogeology of the Base consists predominantly of alluvial and colluvial sediments (silts and clays) with relatively deep aquifers (>20 m). The aquifers are typically recharged through surface water via rainfall in the local catchment. The regional water table within the sediments is mainly associated with the deeper Lachlan Formation. Perched water is present on-Base. However, this is discontinuous and does not appear to interact with the underlying aquifers (Jacobs, 2018a). ▪ **Depth to Groundwater** – groundwater in the Cowra formation was encountered between 168.9m and 192.6 mAHD in April 2023, with majority of well locations in this formation being dry. Groundwater in the Lachlan Formation was encountered between 169.1m and 188.4 mAHD. Groundwater gauging data from April 2023 indicate that depth to groundwater in the alluvium ranges from approximately 20 to 40 m below ground level (mbgl) on-Base. ▪ **Groundwater Flow Direction –** the groundwater flow is interpreted to be to the north-west, which is consistent with the flow direction of local creeks. ▪ **Groundwater Use** – A survey of properties surrounding the Base identified that mains water is supplied to most of the properties within the Monitoring Area for drinking and domestic supply (Jacobs 2019b). There are five off-Base bores owned by Defence that were historically used to supply water to the Base. One of the bores is still used to supply water for irrigation purposes (Jacobs 2019b)
Environmental Sensitive Areas	The sensitive environmental receptors to the area include (but are not limited to): ▪ Mammals (rabbits, kangaroos, possums, wallabies etc.) ▪ Birds ▪ Reptiles, amphibians & insects ▪ Semi-aquatic & aquatic biota ▪ Yabbies and fish ▪ Local waterways ▪ Grass, trees & other vegetation
Notes: 1. Bureau of Meteorology, 072150, 1941 to 2022 (BoM, 2023) http://www.bom.gov.au, accessed (21/03/2023) Further information can be found in the PFAS Ongoing Monitoring Plan, RAAF Base Wagga (Jacobs, 2019a)	

2.2 Conceptual Site Model

The Conceptual Site Model (CSM) for the Base was completed by Jacobs as part of the DSI (Jacobs, 2018a) to identify major/minor sources, migration pathways, exposure routes and receptors (current and future).

The CSM was based on numerous PFAS investigations, including:

> Jacobs (2018a) Comprehensive Investigation of Per- and Poly- Fluoroalkyl Substances (PFAS) at RAAF Base Wagga, Detailed Site Investigation, June 2018;

> Jacobs (2018b) Additional Sampling for the Human Health and Ecological Risk Assessment, November 2018;

> Jacobs (2018) Comprehensive Investigation of Per- and Poly- Fluoroalkyl Substances (PFAS) at RAAF Base Wagga – Stage 1 Groundwater Modelling Report, December 2018;

> Jacobs (2019b) *PFAS Area Management Plan*, September 2019;

- EnRisks (2018) Human Health and Ecological Risk Assessment for the RAAF Base Wagga PFAS Investigation, November 2018; and
- Golder Associates (2012) RAAF Base Wagga Stage 2 Environmental Investigation, October 2012.

2.2.1 Source Areas

Based on the findings of PMAP (Jacobs, 2019a) and the DSI (Jacobs 2018a), the following were reported to be On-Base primary source areas where PFAS-impacted surface water, groundwater, soil or sediment were identified (Figure 2, Appendix A):

- Former fire training area near the eastern end of the runway (RMV0093);
- Current Fire Station (RMV0097); and
- Fire Extinguisher Concrete Pad (RMV0098) and Former Fire Station Area.

An On-Base secondary source area was identified as follows:

- Aircraft Parking Area to the south of Building 88.

Off-Base secondary source areas include the following:

- Former Sewage Treatment Plant (STP) and associated settling lagoons
- Murray Cod Hatcheries
- Gumly Gumly Wetland
- Nearby farm dams

The lateral and vertical extents of detected PFAS in soil were generally defined around the impacted areas. For groundwater, the PFAS extent is defined by the monitoring well network, however, impacts are not fully delineated to below the limit of reporting..

2.2.2 Migration Pathway

The following migration pathways have been identified:

- Surface water and stormwater drainage from the Base to the north-west to the Gumly Gumly wetland and on to Marshalls Creek via a channel. During periods of high rainfall, water from the wetland then flows on to Marshalls Creek which ultimately flows into the Murrumbidgee River. This is a significant migration pathway.
- Drainage to the east to Kyeamba Creek via a series of ephemeral dams, and drainage to the west to Gregadoo Creek via a series of ephemeral dams, have been identified as less significant pathways, with PFAS impact limited to farm dams and soil in close proximity to the Base.
- Vertical migration of PFAS in soil and surface water to the Cowra Formation, and lateral migration via groundwater flow.
- There is some vertical migration of PFAS from the Cowra Formation to the Lachlan Formation, however, this is not considered to be a significant pathway due to the Cowra Formation being dominated by dense high plasticity clays, which combined with the overall thickness of this formation, acts as an aquitard.
- Migration of PFAS impacts from source areas into the on-Base sewers and subsequent transport to the Forest Hill STP.

2.2.3 Receptors

The following potential off-Base receptors have been identified:

- Livestock with access to water along the three drainage pathways (Gumly Gumly Wetlands and Marshalls Creek, Kyeamba Creek, and Gregadoo Creek).
- Consumers of livestock with access to PFAS impacted surface water or consumers of home-produced food using PFAS impacted surface water or soil (not currently known to occur).

- Terrestrial and aquatic fauna and flora, in particular within Gumly Gumly Wetlands and Murray Cod Hatcheries (aquatic).
- Consumers of certain fish and yabbies sourced from local waterways around the Base.
- Groundwater users in surrounding properties and the Riverina Water County Council (RWCC) East Wagga Borefield.
- Consumers of crops irrigated by treated effluent (not currently known to occur).
- Recreational users of surface waters receiving run-off from the Base.

Further details are included within the DSI (Jacobs, 2018a) and Human Health and Ecological Risk Assessment (HHERA) (EnRisks, 2018).

3 Data Quality Objectives

This SAQP has been developed based on a set of Data Quality Objectives (DQOs) in reference to the DQOs presented in the OMP (Jacobs, 2019a), and based on guidance presented in the US Environmental Protection Agency (EPA 2006), and NEPM 2013 (Schedule B2).

Data Quality Objectives (DQOs) are qualitative and quantitative statements derived from the outputs of the first six steps of the seven step DQO process that:

- Clarifies the study objective.
- Defines the most appropriate collection of data as relevant to the study objective.
- Determines the conditions from which to collect data;
- Specifies tolerable limits on decision errors, which will be used as the basis for establishing the quantity and quality of data, needed to support the decision.

The DQOs are detailed in Table 3-1.

Table 3-1 Data Quality Objectives

Data Quality Step	Description
Step 1: State the Problem	PFAS source zones in soil and perched groundwater at the Base are contributing to PFAS discharges in surface water and sewer from the Base. These discharges have led to risks to human health and the environment. Actions will be implemented to reduce these discharges and provide precautionary advice to the community in order to limit exposures. Monitoring is needed to assess the effectiveness of these actions and to provide data for future risk management.
Step 2: Identify the Decision	The goals of the monitoring program are: ▪ to further refine the understanding of the distribution and variability of PFAS in the environment; ▪ monitor changes in response to management actions and due to other conditions; ▪ to evaluate if any potential migration of PFAS impacts within groundwater is occurring; ▪ collect additional data to inform future management actions including the potential refinement of the RAAF Base Wagga groundwater model.
Step 3: Identify the Information Inputs	The information inputs are: ▪ Existing data relevant to PFAS in soil, waters and biota obtained through the DSI and HHERA; ▪ Surface water and groundwater flow regimes identified in the DSI and further refined as part of the Stage 1 Groundwater Model; ▪ Location and types of human and environmental receptors as defined in the DSI and HHERA.

Data Quality Step	Description
Step 4: Define the Boundaries of the Study	The study area for the OMP includes surface water and groundwater at the Base, key surface water drainage pathways and groundwater between the Base and the Murrumbidgee River. Surface water sampling will focus on discharges from the Base to the Gumly Gumly Wetland and downstream along Marshalls Creek to the confluence of Marshalls Creek and the Murrumbidgee River. Surface water sampling is also proposed at Kyeamba Creek in order to confirm the DSI findings that this is not a significant pathway for PFAS transport from the Base. Sampling of farm dams around the Base, including the dams referred to as the Gregadoo Creek pathway, is not proposed. Overland flow to these dams and between the dams only occurs during extended periods of high rainfall, the PMAP management actions do not seek to reduce PFAS transport in these directions and sampling of the farm dams has already been undertaken as part of the DSI and HHERA. It is considered unlikely that additional data would result in changes to the proposed management actions. In relation to groundwater, on-Base sampling will include wells screened in the Cowra Formation and the Lachlan Formation. The off-Base sampling will focus on the Lachlan Formation as this is the target formation of water supply in the area. Sampling of groundwater in the underlying granite will only be undertaken at a new sampling location to the east of the Base in order to further investigate the impacts at MW223 identified in the DSI. In relation to temporal boundaries, an initial period of two years of monitoring has been proposed. A review of the data can then be undertaken to refine the OMP.
Step 5: Develop the Analytical Approach	The purpose of this step is to define the parameters of interest, specify action levels and combine the outputs of the previous DQO steps to develop a series of options if certain trigger events occur. The key decision rules for the OMP are: 1. Have the analytical data collected as part of the OMP met the Data Quality Indicators (DQI) developed as part of the SAQP? If yes, then the data can be used for decision making. If no, then an assessment of the need to collect additional data will be required. 2. Does the data indicate a change to the risks defined in the DSI and HHERA? If yes, then further risk assessment will need to be carried out. This may lead to a need to revise the PMAP. If no, then continue monitoring as per the OMP. 3. Does the data conform with the CSM as outlined in the PMAP? If yes, then continue monitoring as per the OMP. If no, then further risk assessment will need to be carried out. This may lead to a need to revise the PMAP. 4. Is the data meeting the DQOs as outlined in the OMP? If yes, then continue monitoring as per the OMP. If not, then a revision to the OMP should be undertaken.
Step 6: Specify Performance or Acceptance Criteria	The investigation criteria adopted for the DSI will be used to determine if data collected as part of the OMP indicates a change in the risk to human health or environmental receptors. As data is collected for the OMP, an analysis of trends will be undertaken with potential outliers identified. This analysis will include data collected as part of the DSI and HHERA as well as consideration of whether the data is reasonable in relation to the CSM. As more time series data is collected, a statistical approach to determining trends may become possible.

Data Quality Step	Description
Step 7: Develop the Plan for Obtaining the Data	The scope of the OMP has been designed in consideration of historical investigations and findings (i.e. DSI, groundwater assessments) in the context of developing responses to the objectives outlined in Step 2 of the DQO Process. The OMP scope for the first two years of monitoring is outlined in Section 5. Following the initial implementation period of 2 years (and review following each monitoring event), the available data will be reviewed and evaluated to determine if any changes to the scope of monitoring are required in order to meet the objectives to provide a better understanding of PFAS concentration fluctuations and potential risks to receptors. As additional information is gathered during the course of this investigation/monitoring, it may be beneficial for the proposed scope of works to be altered from the initial design. Changes to the proposed monitoring may be made based on risk profile reviews and updated CSM, in consultation with Defence and the PMAP Lead Consultant. Other measures adopted to optimise the collection of data to meet the DQO's include: ▪ Use of data loggers; ▪ The use of laboratories that are NATA accredited for PFAS analysis to ensure that laboratory LORs meet the adopted assessment levels to the extent possible; ▪ Working closely with the analytical laboratories and sampling equipment suppliers to ensure that appropriate procedures and processes are developed; ▪ Experienced field scientists; ▪ Basing the sampling on the CSM at the time of implementation of the OMP, then updating the CSM and sampling program when new data becomes available. ▪ Adoption of robust field and laboratory quality assurance/ quality control protocols; and ▪ Collection of field and analytical data in accordance with the PFAS NEMP (HEPA 2018), and ASC NEPM (NEPC 2013).

An assessment of the Data Quality Indicators (DQIs) relating to both field and laboratory procedures will be undertaken with appropriate documentation provided for all environmental media assessed. The DQIs adopted for the SAQP are summarised in Table 3-2.

Table 3-2 Data Quality Indicators

Data Quality Indicator	Detail
QA Documentation	Provision of appropriate work plans, DQI and DQO defined for the Base and all QA/QC aspects documented.
Bias	A measure of the potential distortion in an analysis, which can result in errors in one direction (e.g. one laboratory consistently higher results or consistent poor spiked matrix recovery). Bias will be assessed with reference to the analysis of spiked matrix samples.
Representativeness	A qualitative measure of the confidence that data is representative of each medium present on the Base. Use of appropriate and documented sampling methods, sample handling, preservation and transport, and holding times.
Precision	A quantitative measure of data variability or reproducibility, measured by the calculation of % Relative Percent Difference (RPD) values for duplicate samples (i.e. measure of agreement). Precision in DQI can be measured as follows: • Percentage of the mean of the measurement such as %RPD. The %RPD will be calculated for the field and secondary duplicate (i.e. inter and intra-laboratory analysis); and • Use of similar analytical method and instrument (e.g. for inter-laboratory assessment). The %RPD will be considered as acceptable if the values are less than 30% (NEPC 2013). Should there be a result that is greater than 30% difference, then a "review should be conducted of the cause (e.g. instrument calibration, appropriateness of method used)" (NEPC 2013). Laboratory analysis of intra- and inter-laboratory samples (1 per 10 samples collected) to be collected.

Data Quality Indicator	Detail
Accuracy	A quantitative measure of the closeness of data to a 'true value', measured by the analysis of spike, blank and laboratory control samples (LCS). The LCS consists of a standard reference material or a matrix of known concentration. For the purpose of assessing accuracy it is required that at least one LCS for each process batch[1] be analysed (NEPC 2013).
Comparability	A qualitative measure of the confidence that data may be considered to be equivalent for each sampling and analytical event. By use of standard procedures, comparable methods, qualified personnel and review of sample integrity. When all results have been received, Cardno will undertake a full review of the data for any anomalies in consideration of historical data at each location (where available), such as first-time detections or exceedances being reported at locations which have not had detections or exceedances previously. If potentially anomalous data is identified or suspected, further confirmatory measures will be undertaken such as re-extraction and reanalysis of the sample by the laboratory and/or additional data quality review.
Completeness	A measure of the amount of usable data (expressed as a percentage - %) from a data collection activity, based on completeness of test program, overall QA/QC completeness and validity of data set.

Notes:
1. The NEPM Schedule B3 – Guideline on Laboratory Analysis of Potentially Contaminated Soil defines a laboratory process batch to consist of up to "20 samples that are similar in term of matrix and test procedure, and are processed as one unit for the QC purposes" (NEPC, 2013).

4 Ongoing Monitoring Program Sampling Location Rationale and Methodology

4.1 Monitoring Schedule

The OMP monitoring schedule is presented in Table 4-1 below.

Table 4-1 RAAF Base Wagga OMP Monitoring Schedule

Matrix	Location	Interval[1]	Monitored Parameters
Surface Water	Surface water on and off-Base	Biannual: May – October November – April	Field: Water quality parameters[2] Laboratory: PFAS Suite (see Appendix B)
Groundwater	Groundwater on and off-Base	Biannual: May – October November – April	Field: Physical parameters[2] Field: Water levels Laboratory: PFAS Suite (see Appendix B)

Source: Jacobs 2020

Notes:
1. Individual Remediation Action Plans and/or investigations associated with PMAP actions may alter the frequency of monitoring.
2. Water quality parameters include pH, electrical conductivity, dissolved oxygen, temperature and redox potential.

4.2 Groundwater Monitoring

4.2.1 Groundwater Monitoring Locations

The network of on-Base and off-Base groundwater monitoring wells, and the sampling rationale, as per the PFAS OMP (Jacobs, 2019a) and the OMP Groundwater Well Installation Report (Jacobs, 2020), is summarised in Table 4-2. MW258 and MW259 are new groundwater monitoring wells installed by Jacobs (Lead Consultant) in July 2023, located on RWCC land. They are "sentinel" wells installed to assess PFAS concentrations upgradient of the East Wagga borefield. Monitoring will provide ongoing measurement of PFAS concentration within groundwater, in addition to the quality (water quality parameter field

measurements) of groundwater. Gauging data will also be used to evaluate whether any significant changes have occurred in the flow direction of groundwater. Groundwater monitoring well locations are shown on Figure 3, Appendix A.

Table 4-2 RAAF Base Wagga Groundwater Monitoring Network

Area	No. of Monitoring Locations	Monitoring Locations	Justification
On-Base (along Base boundary)	6	MW301, MW303, MW305, MW307, MW309, MW311,	Monitoring Cowra Formation (shallow aquifer) to assess potential off-Base migration from source areas.
	7	MW300, MW302, MW304, MW306, MW308, MW310, MW243	Monitoring Lachlan Formation (deep aquifer) to assess potential off-Base migration from source areas.
Gumly Gumly Wetland	5	MW200, MW204, MW233, MW312, MW313	Assess changes in PFAS concentrations in environmentally sensitive area.
Down-gradient of Gumly Gumly Wetland	16	Cowra Formation: MW239, MW240, MW245, MW248, MW250, MW251, MW254, MW256, MW257 Lachlan Formation: MW238, MW244, MW247, MW249, MW252, MW253, MW255	Assess changes in PFAS concentrations down-gradient of environmentally sensitive area.
Off-Base to the north and north-west of Base	4	MW214[1], MW231, MW235, MW246	Assess PFAS concentrations in groundwater downgradient of Base
Drinking Water Supply bores to the north and north-west of Base	5	MW209, MW210, MW211, MW212, MW213	Assess PFAS concentrations in groundwater downgradient of Base, close to the Murrumbidgee River.
Sentinel wells up-hydraulic-gradient of the Drinking Water Supply bores	2	MW258, MW259	Assess PFAS concentrations in groundwater downgradient of Base and upgradient of the RWCC East Wagga borefield.

Area	No. of Monitoring Locations	Monitoring Locations	Justification
Property to the east of the Base	2	MW241, MW242	Assess PFAS concentrations in groundwater residing in the Lachlan Formation and Wantabadgery Granite aquifers. It is understood that the wells at this location target a north-south orientated dyke at a point where the Kyeamba Creek drainage pathway from the Base crosses the Sturt Highway.
Note: 1. MW214 is the current production bore supplying irrigation water to the Base.			

4.2.2 Groundwater Sampling Methodology

Groundwater monitoring will be undertaken by no purge HydraSleeve® method, as detailed in Table 4-3.

Table 4-3 Groundwater Monitoring Wells – Sampling Method

Activity	Details
Well Gauging	Standing Water Level (SWL) will be gauged using an interface probe, and measured against a specified mark at the top of the well casing.
Groundwater water quality parameter field measurements (field parameters)	Groundwater field parameters will be recorded with a water quality meter following sample collection, using water remaining within the HydraSleeve®. The following field parameters will be recorded using a water quality meter: ▪ pH ▪ Electrical Conductivity (EC) ▪ Oxidation Reduction Potential (ORP) ▪ Dissolved Oxygen (DO) ▪ Temperature ▪ Once field parameters have stabilised, measurement will be recorded on field data records. All field instruments (e.g. water quality meter) will be calibrated by Cardno (if Cardno equipment is used), or the equipment supplier to optimise the accuracy of the measurements taken. The water quality meter will be bump tested daily and re-calibrated as required. **Note:** Due to comments received from Defence following the E7 event at RAAF Base Wagga, Cardno will undertake repairs during the next monitoring event upon the concrete base at MW244 to ensure well integrity.
Deployment of HydraSleeve®	HydraSleeve® will be deployed close to the base of wells, taking care not to disturb any sediments that may have accumulated in the base of the well, or a minimum of 2.5m within the screen interval. A top weight will be utilised if water depth of screen require compression of the HydraSleeve®. Used HydraSleeves® will be replaced with a new HydraSleeve® after sample collection at each location.

Activity	Details
	Available well construction details, including screen intervals, are presented in Appendix C.
Retrieval of HydraSleeve® (Sample Collection)	HydraSleeve® sampling devices will be left in wells for a minimum of 4 hours when deployed with bottom weights only, to allow restabilisation of the well following the slight disturbance caused by sampler deployment. For wells with a shallow water column, (nominally less than 2.5 m in height, although depends on the length of the HydraSleeve®), HydraSleeve® sampling devices will be deployed with both top and bottom weights, and will be left in the well for a minimum of 24 hours, to allow the top weight time to compress the HydraSleeve® into the bottom of the well and restabilisation of the well following the slight disturbance caused by sampler deployment. Samples will be collected using a continuous pull method at a rate of approximately 30 cm per second, allowing the water to pass through the check valve into the sample sleeve. Samples will be discharged immediately (to minimise changes in chemistry) via discharge tube.
Sample collection by bailer	Where insufficient water is retrieved with the HydraSleeve® or where the water column is insufficient for the use of HydraSleeve®, samples will be collected by bailer. Wells will be purged a minimum of 3 bore volumes and until parameters stabilise, or until dry, whichever is sooner, prior to sample collection. Groundwater field parameters will also be recorded periodically during purging with a water quality meter.
Sample collection from fully encased wells	Some off-Base wells are fully encased and do not allow direct access to deploy a HydraSleeve® or bailer. Water from these wells is extracted by mechanically powered pumps and sample collection is completed from a designated tap or outlet. Prior to sampling, the pump is allowed to run for at least one minute to purge stagnant water within the well and associated piping. Groundwater field parameters will also be recorded with a water quality meter.
Sample identification, preservation transport and holding times	Each sample will be labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming will be in accordance with Annex L of the DCMM. Samples will be collected directly into appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under COC documentation. Sample containers, preservation procedures, sample storage requirements and holding times will be undertaken in accordance with the requirements set out in Australian Standard AS/NZS 5567.1:1998 and AS 4482.1.

Deployment of data loggers	Data loggers for monitoring of water levels have been installed in the following 13 groundwater wells:
	5th May 2020
	• On-Base Lachlan Formation wells:
	  ○ MW243 (northern boundary of Base)
	  ○ MW304 (western boundary of Base)
	• Off-Base Lachlan Formation wells:
	  ○ MW215 (adjacent to Base irrigation bore MW214 to the north of the Base)
	  ○ MW242 (between Base and Kyeambra Creek; possible flow in this direction)
	  ○ MW312 (hydraulically down-gradient of Base and located on margin of Wetland)
	  ○ MW238 (between Base and Murrumbidgee River; down-gradient of Base and Wetland)
	  ○ MW244 (close to Murrumbidgee River and town supply bores; down-gradient of Base and Wetland)

Activity	Details

	• Off-Base Cowra Formation wells:
	  ○ MW239 (paired with MW238)
	  ○ MW245 (paired with MW244)
	
	19th March 2021
	• Off-Base Lachlan Formation wells:
	  ○ MW247 (next to Marshalls Creek; down-gradient of Base and Wetland)
	  ○ MW249 (sentinel well for RWCC[1] East Wagga borefield; down-gradient of Base and Wetland)
	
	• Off-Base Cowra Formation wells:
	  ○ MW248 (paired with MW247)
	  ○ MW250 (paired with MW249)

Retrieval of data from loggers	Data loggers will be left in the wells as specified in the OMP and Well Installation Report (Jacobs, 2020). The data will be used to gain further hydrogeological understanding of the Base and to inform future management actions including the potential refinement of the RAAF Base Wagga groundwater model.
Field Records	Field records will include the following information: ▪ Sampling time, date and name of the sampler ▪ Weather conditions ▪ Sample collection method. ▪ Sampling equipment decontamination procedures where non-disposable sampling equipment is utilised ▪ Calibration records ▪ Bump test records All sample documentation including field notebooks, reporting records, Chain of Custody (COC) and equipment calibration certificates and procedures will be retained within project files.
Decontamination	Used HydraSleeves® will be replaced with a new HydraSleeve® after sample collection at each location, thus removing the need for decontamination. All re-usable sampling equipment (such as the interface probe) will be thoroughly washed using phosphate-free detergent (Liquinox), then double rinsed with de-ionised water before the sample collection.
Laboratory Testing	All groundwater samples will be analysed for the full PFAS analytical suite (see Appendix B). The laboratory Limit of Reporting (LOR) for groundwater, PFAS – Full Suite - 28 Analytes, is 0.01-0.1 µg/L.
Laboratory Testing – Quality Control	Groundwater QC samples will be collected at the following frequencies: ▪ Field duplicate (intra-laboratory) samples of 1 per 10 water samples (or 1 per batch if the batch is less than 10 samples) to be sent to the primary laboratory. ▪ Field split (inter-laboratory) samples of 1 per 10 water samples to be sent to the secondary laboratory. ▪ Rinsate blank sample of 1 per day to be collected off re-used sampling equipment (e.g. interface probe) ▪ Trip blank samples of 1 per day to be included in the chilled sample containers upon transport to the laboratory. ▪ QC samples will be tested for a full PFAS analytical suite (see Appendix B).
Laboratory Accreditation	All groundwater analysis will be undertaken by the following NATA-accredited laboratories: ▪ Primary analysis will be undertaken by ALS Laboratories (Springvale, Victoria) ▪ Secondary analysis will be undertaken by Eurofins (Dandenong South, Victoria).

Note:
1. RWCC - Riverina Water County Council

4.3 Surface Water Monitoring

4.3.1 Monitoring Locations

The surface water locations sampled as per the OMP (Jacobs, 2019a) are presented on Figure 4 (Appendix A) and are summarised in Table 4-4. Surface water monitoring will be conducted to provide ongoing measurements of PFAS concentrations within surface water pathways that are considered a primary pathway for PFAS exposure to on- and off-Base receptors (Jacobs, 2019a).

Table 4-4 Summary of Surface Water Monitoring Locations

Area	No. of Monitoring Locations	Monitoring Locations	Rationale
Surface Water outflows – drains discharging from the Base	2	SW104, SW206	To monitor the concentration of PFAS in stormwater discharged from the Base.
Surface Water Outflows – drain parallel to Forest Hill Rural Fire Service	1	SW218	To evaluate whether the fire station is contributing to PFAS discharging ultimately into the Gumly Gumly Wetland.
Marshalls Creek downstream of Gumly Gumly Wetland	4	SW234, SW262, SW294, SW310	Provide spatial coverage of PFAS concentrations in the Marshalls Creek drainage pathway.
Murrumbidgee River	3	SW212, SW261, SW286, SW309	Quantify PFAS concentrations within the river ; SW309 is a sentinel monitoring location for the drinking water supply.
Kyeamba Creek	3	SW236, SW240	Provide spatial coverage of PFAS concentrations in this drainage pathway
Forest Hill Sewage Treatment Plant	3	SW228, SW288, SW289	To monitor changes in PFAS concentrations in treated sewage effluent originating from the sewage treatment plant.

4.3.2 Surface Water Level Parameters

In addition to PFAS analysis, the following parameters are to be recorded during each surface water monitoring event:

> Field parameters (i.e. pH, EC, ORP, DO, and temperature) using a water quality meter.

4.3.3 Surface Water Sampling Methodology

The methodology for the surface water monitoring is detailed in Table 4-5.

Table 4-5 Surface Water Monitoring Locations – Sampling Method

Item	Details
Surface Water field parameters	Surface water field parameters (i.e. pH, EC, ORP, DO, and temperature) will be recorded at the time of sampling using a pre-calibrated water quality meter. The water quality meter will be bump tested daily and re-calibrated as required. Field observations such as colour, odours, suspended solids, sheen presence, condition of the water body that was sampled from such as the type (lake, stream etc.) and channel width will also be recorded on field sampling sheets, as applicable. Flow rate will also be quantitatively recorded where possible using the Float Method (whereby the time it takes a buoyant object to float 10 m downstream is measured and converted to a m/s flow rate), with qualitative flow rates to be recorded where quantitative measurements are unable to be taken by field staff (such as when environmental conditions significantly limit visibility or there are access constraints).
Sampling Method	Where possible, surface water samples will be collected directly into laboratory supplied sample containers using a 'Grab' (manual) sample method via a long-handled sampling device. The sample container is secured to the end of the sampling device and is then lowered into the water, oriented with the capped opening facing downwards to avoid the collection of surface films. Where depth permits, the sample container should be positioned at least 10 cm below the surface water level and above the sediment bed before reorienting the sample container so that the capped opening is facing upwards, allowing it to fill. Samples will be collected in accordance with Australian/New Zealand Standards (AS/NZS 5667.1:1998) Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.
Sample Collection	Water samples will be placed directly into appropriately labelled, laboratory-supplied sample bottles. Sample containers will include water resistant labels attached to the sample bottles.
Sample identification, preservation, transport and holding times.	Each sample will be labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming will be in accordance with Annex L of the DCMM. Samples will be contained in appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under COC documentation. Sample containers, preservation procedures, sample storage requirements and holding times will comply with the requirements set out in "Australian Standard AS/NZS 5567.1:1998 and AS 4482.1".
Field Records	Field records will include the following information: ▪ Sampling time, date and name of the sampler ▪ Weather conditions ▪ Sample collection method ▪ Sampling equipment decontamination procedures where non-disposable sampling equipment is utilised ▪ Calibration records ▪ Bump test records All sample documentation including field notebooks, reporting records, COC and equipment calibration certificates and procedures will be retained within project files.
Decontamination	All re-usable sampling equipment (such as a long-handled sampling device) will be thoroughly washed using phosphate-free detergent (Liquinox), and subsequently double rinsed with de-ionised water before the sample collection.
Laboratory Testing	All surface water samples will be analysed for the full PFAS analytical suite (see Appendix B). The LOR for surface water, PFAS – Full Suite (28 Analytes), is 0.01-0.1 µg/L.
Laboratory Testing – Quality Control	Surface water QC samples will be collected at the following frequencies as detailed in the SAQP:

Item	Details
	▪ Field duplicate (intra-laboratory) samples of 1 per 10 water samples (or 1 per batch if the batch is less than 10 samples) to be sent to the primary laboratory. ▪ Field split (inter-laboratory) samples of 1 per 10 water samples to be sent to the secondary laboratory. ▪ Rinsate blank sample of 1 per day to be collected off re-used sampling equipment. ▪ Trip blank samples of 1 per day to be included in the chilled sample containers upon transport to the laboratory. QC samples will be tested for a full PFAS analytical suite (see Appendix B).
Laboratory Accreditation	All surface water analysis will be undertaken by the following NATA-accredited laboratories: ▪ Primary analysis will be undertaken by ALS Global Laboratories. ▪ Secondary analysis will be undertaken by Eurofins.

4.4 Quality Control Contingency Measures

In the event there are any issues identified with quality control samples, such as detects being reported in a blank, Cardno will request the laboratories to undertake a detailed review of the results, and to carry out re-analysis of the sample (if necessary) to confirm the detect. In the event that the detect in a blank is confirmed, Cardno will notify Defence and include a discussion as to the potential cause or source of the detect in the blank sample, if it can be determined, in the QA/QC evaluation prepared for each factual report. The QA/QC evaluation will also include discussion of any RPD exceedances, internal laboratory quality outliers or other data quality issues which are identified during the sampling event, and whether any of these issues are considered to impact on the overall reliability and usability of the data set.

4.5 Waste Management

All liquid wastes generated from the OMP activities will be temporarily stored on-Base (in an agreed location as approved by Base) within either a wastewater drum or wastewater container and disposed off-Base to a licensed facility. Disposal of the liquid waste is anticipated to occur once the drum(s) or container(s) are full, or as required and will be organised by Cardno.

Any solid waste generated during the sampling event will be disposed of either off-Base or in appropriate bins on-Base, as approved by Base Support.

4.6 Data Management

All data collected as part of the monitoring program will be reviewed and managed in accordance with the requirements of Annex L of the DCMM (Defence, 2021c), and uploaded into Defence's Environmental Data Management Software (EDMS). Data management will include the following:

> The Defence ESdat email address (DERP.LabReports@esdat.com.au) will be included on CoCs as a laboratory report recipient,

> The laboratory Project ID and the laboratory provided ESdat files will be populated to match the Project ID setup in the Defence ESdat,

> The location code and sample naming conventions outlined in Annex L of the DCMM will be followed,

> Field data will be uploaded to Defence's EDMS,

> Laboratory data will be uploaded to Defence's EDMS, associated QA/QC data will be reconciled, and the laboratory data will be approved.

5 Assessment Criteria

5.1 Groundwater and Surface Water

The assessment levels adopted for groundwater and surface water in this SAQP are based on the Heads of Environmental Protection Authorities Australia and New Zealand (2020) PFAS National Environmental Management Plan (NEMP; HEPA 2020), National Health and Medical Research Council's Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water (NHMRC 2019), and findings of previous site assessments (e.g. previous DSIs). This is summarised in Table 5-1. Screening levels will be reviewed and updated (if deemed necessary) as part of the OMP review process.

Table 5-1 PFAS Criteria for Groundwater and Surface Water

Exposure Scenario	Adopted Assessment Criteria		Guidance
	PFHxS / PFOS	PFOA	
	µg/L		
Human Health - Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Human Health - Surface Water Recreational	2[2]	10	HEPA 2020
Ecological (95% Species Protection)	0.13[3]	220	HEPA 2020

Notes:

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2019b).

6 Deviations From the OMP

Deviations from the original OMP (Jacobs, 2019a) which have occurred are summarised in Table 6-1.

Table 6-1 Deviations from the OMP

Well ID	Status	Comments	Date of Change	Replacement Well
MW208	Not sampled	Property access not granted.	March 2020	NA
MW239	New monitoring well	New monitoring well installed for the OMP on 25 November 2019, not included in the original OMP.	March 2020	NA
MW245	New monitoring well	New monitoring well installed for the OMP on 27 February 2020, not included in the original OMP.	March 2020	NA
MW246 to MW257	New monitoring well	New monitoring wells installed for the OMP between 20 May and 18 September 2020, not included in the original OMP.	April 2021	NA

Well ID	Status	Comments	Date of Change	Replacement Well
MW258 and MW259	New monitoring well	New monitoring wells installed between 4 July and 5 July 2023, not included in the original OMP.	September 2023	NA

7 Reporting

7.1 Factual Reporting

A factual report will be produced at the completion of each monitoring event that summarises the data and findings of each monitoring event. The report will be prepared in accordance with the Defence *PFAS OMP Factual Report Guidance* document (Department of Defence, 2021a). Each factual report will present the findings and contain the following information:

- Introduction.
- Scope of work completed.
- Field activities undertaken and description of sampling methodologies used.
- Field observations (e.g. condition of monitoring wells, description of purged water) and water quality field parameter measurements.
- Use of appropriate nomenclature of sampling locations as per Defence Contamination Management Manual (DCMM) Annex L.
- 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.
- Evaluation of the applicability of adopted assessment criteria.
- Review of the suitability of the data for assessment purposes (QA/QC evaluation).
- Summary tables presenting gauged groundwater levels.
- Presentation of inferred groundwater contours for the shallow and deep aquifers and inferred groundwater flow directions in figures.
- Summary tables of analytical results in comparison to adopted assessment criteria generated through management of data on the Defence ESdat database, and naming of sampling locations as per DCMM Annex L.
- Figures showing results in accordance with the OMP Factual Report preparation guidance (no red lines or red dots to be used on figures).
- Laboratory reports, COC documentation, field sampling records, data validation and QA/QC details, equipment calibration certificates and other relevant documentation.
- Any deviations from the SAQP encountered during completion of the sampling event.

In the event that further investigation, management and/or remediation are required, recommendations will be presented in a separate ‘technical memorandum’.

7.2 Interpretive Reporting

Upon completion of each year’s monitoring period an OMIR will be prepared. The report will be prepared in accordance with the Defence *PFAS OMP Annual Interpretive Report Guidance* document (Department of Defence, 2021b). As a minimum, each interpretive report should include the following:

- The factual information described in Section 7.1.
- Evidence of compliance with the requirements of the SAQP and meeting stated objectives of the OMP.
- Relevant figures depicting sampling locations and site-specific hydrogeological features (no red lines or dots to be used on figures).
- Use of appropriate nomenclature of sampling locations as per Defence Contamination Management Manual (DCMM) Annex L.

- Laboratory results and analysis including comparison with relevant screening criteria as identified in each OMP; data to be managed through the Defence ESdat database, and naming of sampling locations as per DCMM Annex L.
- Assessment and commentary on appropriate Quality Assurance/ Quality Control (QA/QC) procedures.
- A discussion of analytical results in relation to the following, taking into account the trigger levels and response measures set out in Section 4.3 of the OMP (Jacobs, 2019a):
  - Trends in PFAS concentrations, including an assessment of temporal changes and/or changes to the extent of PFAS impacts. Trends should be assessed using an appropriate statistical analysis approach (e.g. trend plots), with a specified level of confidence based upon the number of monitoring rounds completed.
  - Consideration, based on data trends, as to whether any of the existing remediation / management measures should be re-assessed, with a view to potential modification, supplementation or cessation.
  - Assessment of whether changes to the CSM and/or risk assessment are required.
  - Whether recalibration or changes to the groundwater model are required to provide a better understanding of the potential future extent of PFAS impact in groundwater.
- Based on the data obtained, an assessment of the OMP sampling requirements with a view to establishing whether:
  - The number of locations monitored could be reduced, such as where PFAS concentrations are stable and are considered to present a low risk to receptors.
  - Additional monitoring locations are required, including the installation of new monitoring wells or sampling of additional existing wells (and/or private bores) to provide better understanding of the nature, extent or magnitude of PFAS impacts in a particular portion of the Monitoring Area.
  - The frequency of monitoring should increase or decrease to provide better understanding of PFAS concentration fluctuations and potential risks to receptors.
  - Monitoring of additional media should be included in the OMP. For example, if PFAS concentrations in groundwater and/or surface water increase such that PFAS concentrations in the surface waters of the Murrumbidgee River increase significantly (that is, above 0.1 µg/L), it may be necessary to collect fish samples to assess whether PFAS concentrations in fish flesh or liver exceed relevant screening levels.
- An overview of contextual and ancillary information such as remedial works or construction and maintenance activities undertaken in the Monitoring Area during the reporting period, which may impact the CSM or the monitoring results.
- All deviations from the SAQP encountered in the previous year's monitoring will be documented, along with a statement of how these deviations impact on the data quality objectives or overall objectives of the OMP.
- A statement as to whether the risk profile has changed overall, or at any specific location in the Monitoring Area (on-Base and off-Base). Based on potential changes to the risk profile, recommendations would be made as to whether this should trigger an OMP and/or PMAP review, or other actions.
- The sampling event Factual Reports and SAQP for the relevant year of monitoring will be appended to the OMIR.

In addition to the OMIR, a Factsheet summarising the 12-month period of sampling and findings will be prepared to accompany the publication of the OMIR.

7.3 Provision of Results to Private Property Owners

In addition to the reporting of groundwater data collected from private bores in the factual reports and OMIRs described in Section 7.1 and Section 7.2, the analytical results of private bore sampling will also be reported to the property landowners, by way of a factual results letter. The results letters will be prepared by Cardno in

consultation with Defence and delivered by Defence to the property owners within six weeks of sample collection. The factual results letters will include the following information, as a minimum:

- A brief description of the purpose of the OMP;
- The PFAS assessment levels relevant at the time of sampling;
- The laboratory LORs;
- The analytical results of the samples collected;
- A description of how the data will be used; and
- Contact details of the appropriate Defence representative.

In the event that the results exceed screening criteria, a follow-up consultation will be conducted by Defence with the property owner by telephone unless otherwise directed.

Note: Identifying data for private properties, such as addresses, will not be included on the Defence ESdat database. However, the groundwater and surface water data will be included in the ESdat database.

7.4 SAQP Review

Prior to each monitoring event, the SAQP will be reviewed to ensure it complies with the following guidelines:

- PFAS National Environmental Management Plan (NEMP) Version 2.0, HEPA, 2020;
- National Environment Protection (Assessment of Site Contamination) Measure (NEPM), National Environment Protection Council (NEPC), 2013;
- Department of Defence, 2016. Routine Environment Water Quality Monitoring Manual;
- Standards Australia 1998. AS/NZ 5667:1998 Water quality – sampling;
- Australian and New Zealand Guidelines, 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality; and
- State guidelines: Environment Protection Authority (EPA) or equivalent state environmental regulators relevant guidelines e.g. EPA NSW (2014), Waste Classification Guidelines – Part 1: Classification of Waste, November 2014.

Any changes to the SAQP identified as part of the review are to be documented by way of a revision of the SAQP.

8 References

General References

1. Australian Standard AS 4482-2005 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 – Non-volatile and semi-volatile compounds.
2. Australian Water Quality Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ, 2000).
3. Department of Defence, Department of Energy (2018), *Quality System Manual Schedule B15, USEPA DQO Process.*
4. Department of Defence (2019a), *Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring.*
5. Department of Defence (2021a), *PFAS OMP Factual Report Guidance*, May 2021.
6. Department of Defence (2021b), *PFAS OMP Annual Interpretive Report Guidance*, May 2021.
7. Department of Defence (2021c), *Contamination Management Manual (DCMM), Annex L – Data Management*, August 2019, Amended June 2021.
8. EPA NSW (2002), *The NSW State Groundwater Dependent Ecosystems Policy*, April 2002.
9. EPA NSW (2004), Water Waste Resources Guidelines, *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales*, Publication 1669.2, March 2004.
10. EPA NSW (2014), *Waste Classification Guidelines – Part 1: Classification of Waste,* November 2014.
11. EPA NSW (2016), *Designing Sampling Programs for Sites Potentially Contaminated by PFAS.*
12. The Heads of EPAs Australia and New Zealand (HEPA; 2018) *PFAS National Environmental Management Plan (NEMP)*, January 2018.
13. National Environment Protection Council (NEPC), 1999, *National Environmental Protection (Assessment of Site Contamination) Measure* (as amended), registered May 2013.
14. National Health and Medical Research Council (2011 – updated 2018) *National Water Quality Management Strategy Australian Drinking Water Guidelines 6*, August 2018.
15. National Health and Medical Research Council (NHMRC), August 2019, *Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water*.
16. Standards Australia/Standards New Zealand (1998) AS5667.1:1998 '*Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*.
17. USEPA (2006), *Guidance for the Data Quality Objectives Process (EPA QA/G-4)*.
18. USEPA (2002), *Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8).*

Site Specific References

19. EnRisks (2018) *Human Health and Ecological Risk Assessment for the RAAF Base Wagga PFAS Investigation*, Prepared for: Jacobs Group (Australia) Pty Limited and the Australian Government Department of Defence. JCOBS/18/WAGGAR001, 6 November 2018.
20. Golder Associates (2012) *RAAF Base Wagga Stage 2 Environmental Investigation*, October 2012.
21. Jacobs (2018a) *Comprehensive Investigation of Per- and Poly-Fluoralkyl Substances (PFAS) at RAAF Base Wagga, Detailed Site Investigation*, IA147400-003-N-RPT-005-Rev4, 16 August 2018.

22. Jacobs (2018b) *Comprehensive Investigation of Per- and Poly- Fluoroalkyl Substances (PFAS) at RAAF Base Wagga - Stage 1 Groundwater Modelling Report*, IA147400-008-N-RPT-002-Rev5, December 2018.

23. Jacobs (2019a) *RAAF Base Wagga; PFAS Ongoing Monitoring Plan*, September 2019.

24. Jacobs (2019b) *PFAS Management Area Plan*, September 2019.

25. Jacobs (2020) *RAAF Base Wagga; Ongoing Monitoring Program Groundwater Well Installation Report,* 3 December 2020.

APPENDIX

A

FIGURES

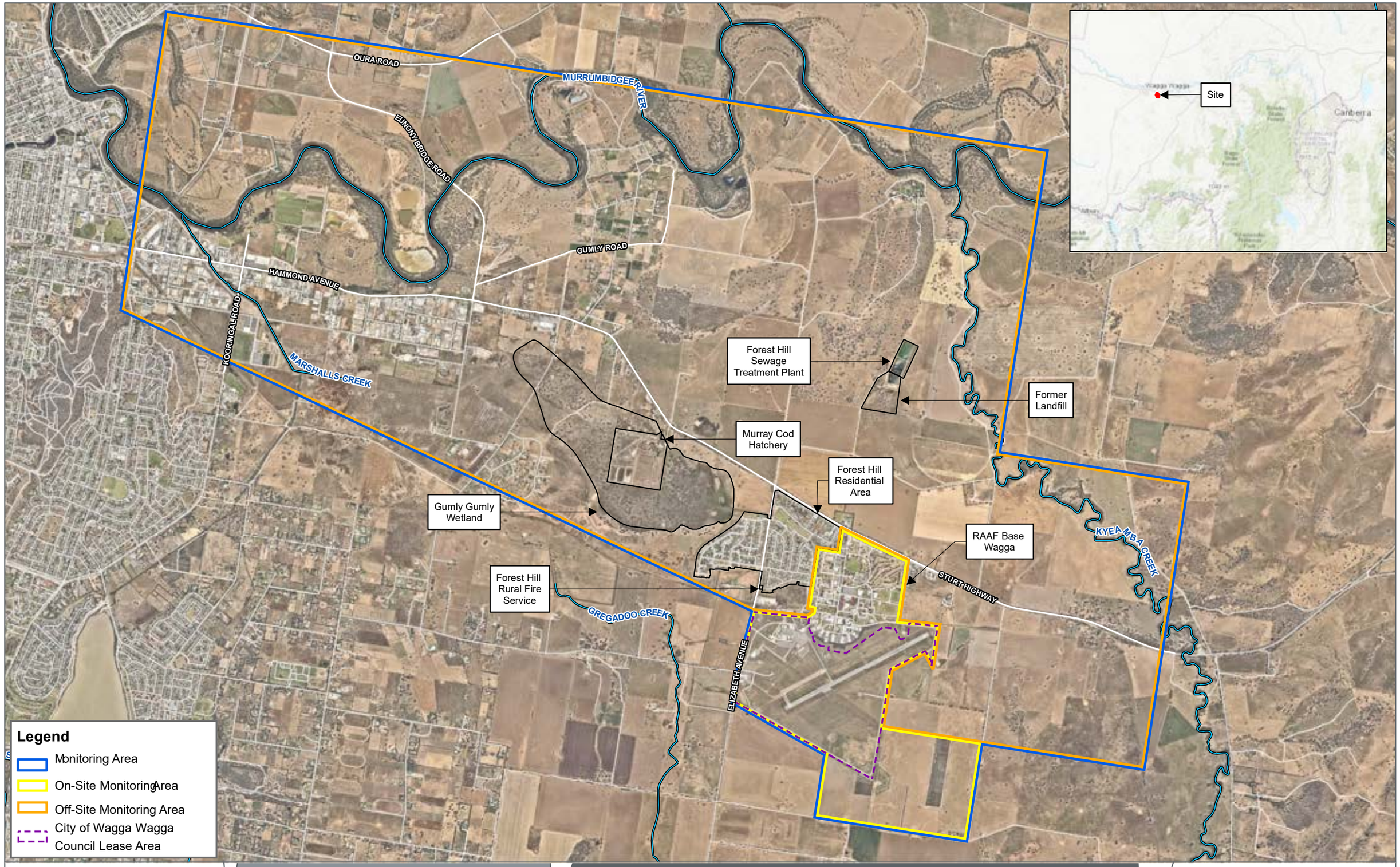

FIGURE 1

1:40,000 Scale at A3

Metres

0 1,000 2,000

Site Locality Plan

ONGOING MONITORING PLAN
RAAF BASE WAGGA, NSW
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2021-04-15 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-032-SiteLocalityPlan_WW.mxd 03
Aerial Imagery Supplied by Nearmap (December, 2020)

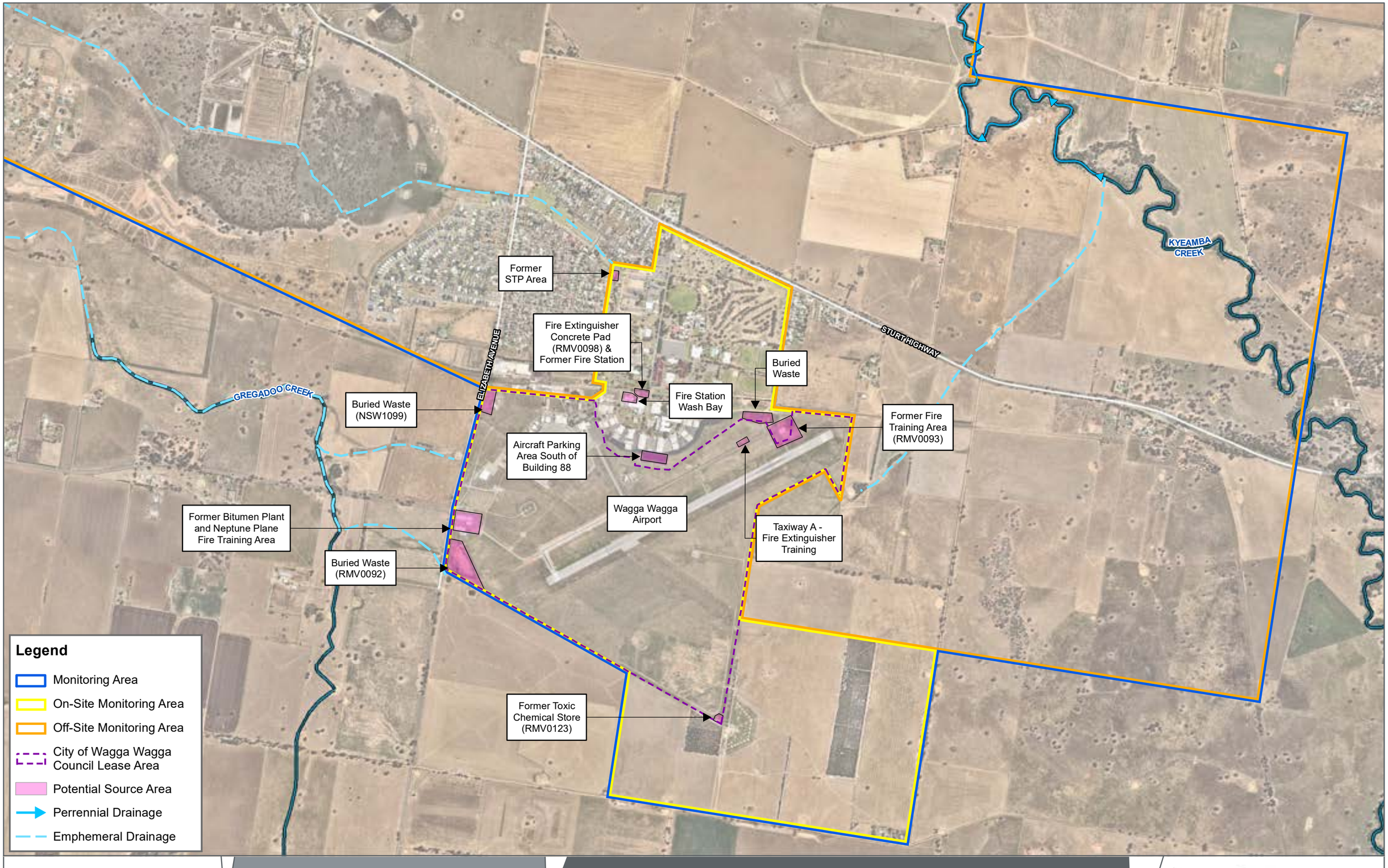

FIGURE 2

1:20,000 Scale at A3

Metres

0 500 1,000

Site Features

ONGOING MONITORING PLAN
RAAF BASE - WAGGA
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2021-04-15 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-033-SiteFeatures_WW.mxd 02
Aerial Imagery Supplied by Nearmap (December, 2020)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
GREGADOO CREEK
ELIZABETH AVENUE
STURT HIGHWAY
MURRUMBIDGEE RIVER
GARCIAS CREEK
KYEAMBA CREEK

MW213
MW211
MW252
MW212
MW249
MW251
MW250
MW258
MW244
MW245
MW259
MW248
MW247
MW253
MW254
MW240
MW235
MW210
MW209
MW231
MW233
MW255
MW256
MW238
MW239
MW257
MW214
MW200
MW312
MW204
MW313
MW246
MW300
MW301
MW243
MW303
MW302
MW242
MW241
MW308
MW309
MW310
MW311
MW304
MW305
MW306
MW307

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area

Groundwater Monitoring Well

- Cowra Formation
- Lachlan Formation
- Wantabadgery Granite

FIGURE 3

1:40,000 Scale at A3

Metres

0 1,000 2,000

Groundwater Monitoring Locations

ONGOING MONITORING PLAN
RAAF BASE - WAGGA
DEPARTMENT OF DEFENCE

N

Cardno — Stantec

Map Produced by Cardno now Stantec
Date: 2023-09-22 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-0380-GWBoreLocations_WW.mxd 01
Aerial Imagery Supplied by Metromap (March, 2023)

OURA ROAD
EUNONY BRIDGE ROAD
GUMLY ROAD
HAMMOND AVENUE
KOORINGAL ROAD
MARSHALLS CREEK
ELIZABETH AVENUE
STURT HIGHWAY
GREGADOO CREEK
KYEAMBA CREEK
MURRUMBIDGEE RIVER
GARCIAS CREEK

SW261
SW262
SW309
SW294
SW234
SW212
SW286
SW289
SW228
SW236
SW288
SW310
SW240
SW218
SW206
SW104

Legend

- Monitoring Area
- On-Site Monitoring Area
- Off-Site Monitoring Area
- Surface Water Monitoring Locations

FIGURE 4

1:40,000 Scale at A3

Metres

0 800 1,600

Surface Water Monitoring Locations

ONGOING MONITORING PLAN
RAAF BASE - WAGGA
DEPARTMENT OF DEFENCE

N

Cardno

Map Produced by Cardno
Date: 2021-04-16 | Project: DEF19008
Coordinate System: GDA 1994 MGA Zone 55
Map: DEF19008-GS-035-SWBoreLocations_WW.mxd 01
Aerial Imagery Supplied by Nearmap (March, 2020)

APPENDIX

B

FULL PFAS ANALYTICAL SUITE

PFAS Analytical Suite

Group	Analyte
Perfluoroalkane Carboxylates (PFCAs)	Perfluorobutanoic acid (PFBA)
	Perfluoropentanoic acid (PFPeA)
	Perfluorohexanoic acid (PFHxA)
	Perfluoroheptanoic acid (PFHpA)
	Perfluorooctanoic acid (PFOA)
	Perfluorononanoic acid (PFNA)
	Perfluorodecanoic acid (PFDA)
	Perfluoroundecanoic acid (PFUnA or PFUnDA)
	Perfluorododecanoic acid (PFDoA or PFDoDA)
	Perfluorotridecanoic acid (or PFTriDA PFTrDA)
	Perfluorotetradecanoic acid (PFTeDA)
Fluorotelomer Sulfonates (FTSs)	1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2 FTS)
	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2 FTS)
	1 H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2 FTS)
	1H, 1H, 2H, 2H-perfluorododecane sulfonate (10:2 FTS)
Perfluroalkyl sulfonates (PFSAs)	Perfluorobutane sulfonic acid (PFBS)
	Perfluoropentane sulfonic acid (PFPeS)
	Perfluorohexane sulfonate, or perfluorohexane sulfonic acid (PFHxS)
	Perfluoroheptane sulfonate (PFHpS)
	Perfluorooctane sulfonate, or perfluorooctane sulfonic acid (PFOS)
	Perfluorodecane sulfonic acid (PFDS)
Perfluorooctane sulfonamidoethonals and perfluorooctane sulfonamidoacetic acids	N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)
	N-ethyl perfluoro-1-octane sulfonamide (N-EtFOSA)
	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)
	N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)
	2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)
	N-ethyl-perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)

APPENDIX C

WELL CONSTRUCTION DETAILS

Location Code	Property	Easting	Northing	TOC (mAHD)	Depth of well (mbgl)	Screen interval (mbgl)	Aquifer
MW200	Off-base	540504.969	6111262.417	183.137	N/A	N/A	Lachlan
MW204	Off-base	540098.391	6110889.93	184.119	N/A	34.0 - 43.0	Lachlan
MW209	Off-base	542509.039	6114393.772	N/A	N/A	42.3-54.5	Lachlan
MW210	Off-base	540670.134	6114434.248	N/A	N/A	49 - 53, 58 - 60, 63 - 67	Lachlan
MW211	Off-base	535731.869	6113725.746	181.707	N/A	N/A	Lachlan
MW212	Off-base	535690.1	6113485.033	181.215	N/A	N/A	Lachlan
MW213	Off-base	536665.916	6114233.718	180.533	N/A	N/A	Lachlan
MW214	Off-base	542678.689	6111403.829	186.043	N/A	43.6-52.70	Lachlan
MW231	Off-base	540938.044	6113482.173	N/A	N/A	46.90-56.30	Lachlan
MW233	Off-base	539794.47	6112439.904	N/A	N/A	12.5 - 15.5	Cowra
MW235	Off-base	538253.336	6113062.591	N/A	N/A	14.3 - 17.7	Lachlan
MW238	Off-base	540680.52	6112223.6	182.88	71	N/A	Lachlan
MW239	Off-base	540679.791	6112218.397	182.8	20.2	N/A	Cowra
MW240	Off-base	538087.96	6112263.43	182.54	26	N/A	Cowra
MW241	Off-base	544120.21	6109532.09	200.07	74.5	N/A	Granite
MW242	Off-base	544122.45	6109540.11	199.89	73.5	N/A	Lachlan
MW243	On-base	542976.97	6110069.23	211.48	53.7	N/A	Lachlan
MW244	Off-base	537007.56	6113057.61	180.37	60.3	N/A	Lachlan
MW245	Off-base	536996.47	6113060.76	180.37	20.7	N/A	Cowra
MW246	Off-base	541737.871	6110580.212	189.563	71	22-48	Lachlan
MW247	Off-base	536050.951	6112506.299	181.343	34	26-33	Lachlan
MW248	Off-base	536049.397	6112509.06	181.361	23.5	9.5-22.5	Cowra
MW249	Off-base	536082.812	6113454.968	180.008	59	41-59	Lachlan
MW250	Off-base	536087.341	6113452.451	179.936	24.5	13.5-24	Cowra
MW251	Off-base	536569.189	6113765.545	178.394	24	11-23	Cowra
MW252	Off-base	536569.976	6113769.891	178.607	60	30-60	Lachlan
MW253	Off-base	537469.028	6112456.611	180.991	53	41-47	Lachlan
MW254	Off-base	537469.851	6112462.06	181.122	24.5	13-23	Cowra
MW255	Off-base	539219.759	6112296.567	182.094	57	42-52	Lachlan
MW256	Off-base	539217.619	6112291.105	182.128	25	11-23	Cowra
MW257	Off-base	538861.387	6111683.414	182.37	16	11-16	Cowra
MW258	Off-base	535907.627	6112894.103	181.38	27	19.5-25.5	Lachlan
MW259	Off-base	535902.153	6112900.197	181.48	17	10-16	Cowra
MW300	On-base	542273.696	6110126.281	200.538	57	30.9-33.9, 36.9-39.9, 42.9-54.9	Lachlan
MW301	On-base	542281.239	6110125.846	200.705	18	8.5-17.5	Cowra
MW302	On-base	542353.34	6109471.929	209.607	63.87	35.8-44.8, 59.8-62.8	Lachlan
MW303	On-base	542358.332	6109470.448	209.568	25	9-15, 21-24	Cowra
MW304	On-base	541365.892	6108801.043	211.767	71	29-41, 44-53	Lachlan
MW305	On-base	541363.165	6108795.486	211.774	24	14-23	Cowra
MW306	On-base	542796.358	6107013.686	233.058	60	47-59	Lachlan
MW307	On-base	542791.094	6107014.46	232.904	30	8.5-11.5, 14.5-20.5, 26.5-29.5	Cowra
MW308	On-base	543139.618	6109380.459	213.901	66.11	33-36, 39-57	Lachlan
MW309	On-base	543133.545	6109377.744	213.826	24	12-21	Cowra
MW310	On-base	543561.014	6108970.468	210.274	56	38-56	Lachlan
MW311	On-base	543562.725	6108981.359	210.651	21	8-14, 17-20	Cowra
MW312	Off-base	541038.582	6111042.064	182.971	60	21-59	Lachlan
MW313	Off-base	541036.419	6111048.697	182.992	11.5	7-11	Cowra
N/A = data not available							

About Cardno

Cardno is a professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD].

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APPENDIX

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ESA LIMITATIONS

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Stantec